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REDACTED – FOR PUBLIC INSPECTION

January 20, 2016

BY ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Re: Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149

Dear Ms. Dortch:

In accordance with the *Protective Order* in the above-captioned proceeding,[1] DISH Network Corporation ("DISH") hereby submits the attached redacted versions of the enclosed ex parte letter and accompanying Declaration of William P. Zarakas. DISH has denoted with "**{{BEGIN HCI END HCI}}**" symbols where Highly Confidential Information has been redacted. Highly Confidential versions of this letter and accompanying Declaration are being simultaneously filed with the Commission.

Please contact me with any questions.

Respectfully submitted,

Pantelis Michalopoulos
Stephanie A. Roy
Counsel to DISH Network Corporation

Enclosure

[1] *Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations*, MB Docket No. 15-149, *Protective Order*, FCC 15-110 (Sept. 11, 2015) ("*Protective Order*").

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Re: Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 15-149

Dear Ms. Dortch:

DISH Network Corporation ("DISH") submits this letter and accompanying Declaration prepared by its expert economist, Mr. William Zarakas, to show that: the Applicants' broadband "churn" numbers show New Charter **{{BEGIN HCI**

END HCI}} and, as other confidential documents show, **{{BEGIN HCI**

END HCI}}. DISH also writes to ask the Commission to scrutinize very carefully all interactions and communications between Charter and programmers for any efforts by Charter to hamper programmers from giving OVDs rights to their content.

Churn. The Applicants have claimed that New Charter will lack an incentive to degrade competitive OVDs because this would deliver a self-inflicted wound to New Charter's own broadband service, as it would cause subscribers to leave in significant numbers. But Mr. Zarakas' analysis of the Applicants' own broadband churn data shows that even during the well-publicized period during which Netflix was throttled on major cable systems in 2014, including on Applicants' systems, there was **{{BEGIN HCI**

END HCI}}.[1] There is no reason to believe that similar degradation by the hand of New Charter will inflict any greater pain on New Charter's broadband business. Rather, New Charter will be able to have its cake and eat it, too: hurt competitors of its video business without hurting its broadband business.[2] The merger only increases Charter's incentive for doing so: with lower average programming costs than its constituent companies would have enjoyed on their own, New Charter will bring up its margins for video service—the very margins that degradation of rival OVDs is designed to protect.

Duopoly and Usage Based Pricing. New Charter's incentive to disable, rather than just hurt, its competitors will also grow with its enlarged ability to do so. New Charter will doubtless exploit the opportunity to engage in tacit coordination with its partner-in-duopoly Comcast, with which it will control **{{BEGIN HCI END HCI}}** of all high-speed broadband households in the nation. And it will do so by implementing UBP immediately after the anemic condition that the Applicants have proposed expires. The documents establish the Applicants' propensity for both of these types of conduct. They show that the Applicants have **{{BEGIN HCI END HCI}}**. This evidence suggests that New Charter will not wait long before implementing the **{{BEGIN HCI END HCI}}**. The Applicants are even more likely to focus on coordination under the influence of Charter's largest and most influential shareholder Dr. John Malone.[3] Dr. Malone has been described as "keen to see the industry consolidate, noting that cooperation would complement mergers."[4] It would certainly complement this merger. Dr. Malone's keenness for coordination was also noted in the Justice Department's 1998 antitrust complaint, which successfully stopped Dr. Malone from conspiring with other cable operators and with News Corp. to kill in its infancy the competition against cable operators that DISH had introduced in

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[1] Declaration of William P. Zarakas, MB Docket No. 15-149, ¶¶ 4-5, 21 (Jan. 20, 2016) ("Zarakas Declaration").

[2] *See* Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, FCC, MB Docket No. 15-149 (Dec. 14, 2015).

[3] *See* Oppositions to Petitions to Deny and Response to Comments, MB Docket No. 15-149, at 45-46 (Nov. 2, 2015) ("Opposition").

[4] Shalini Rmachandran, *Malone Urges Cable-Programming Ventures*, Wall Street Journal (Oct. 10, 2013), http://www.wsj.com/news/articles/SB10001424052702304520704579127562313986176.

the 1990s.[5] The Commission should not allow the Applicants to do now to over-the-top ("OTT"), the new kid on the video block, what the Justice Department and the Commission itself had prevented Dr. Malone from doing then to DISH. Other documents show that the Applicants have also **{{BEGIN HCI** **END HCI}}**.[6] Seen in the glare of this evidence, the three-year constraint on UBP proposed by the Applicants[7] evokes the three-year cycle of price increases complained of by consumers[8] and **{{BEGIN HCI**

END HCI}}.[9]
Beginning UBP at the expiration of that condition dovetails well with that cycle.

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[5] Complaint, *United States v. Primestar, Inc.*, 1:98-cv-01193, ¶¶ 46, 50 (May 12, 1998).

[6] *See* Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, FCC, MB Docket No. 15-149 (Dec. 14, 2015).

[7] 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, at 18-19 (June 25, 2015) ("Application").

[8] *See, e.g.*, *Charter Communications Review*, Reviews.com (Nov. 5, 2015), http://www.reviews.com/cable-internet/charter-communications/ (reporting Charter's prices "for cable Internet advertised on Charter's websites only last for 12 months. These prices then increase, and they go up again after two years of service. After the second price increase, the prices finally remain stable."); *Charter Communications: Consumer Complaints & Reviews*, Consumer Affairs (Jan. 12, 2016), http://www.consumeraffairs.com/cable_tv/charter.html (complaining monthly bill continued to increase over the course of the contract); *Charter Communications – 2 year Price Guarantee/What a Joke*, Pissed Customer (June 10, 2010), http://charter-communications.pissedconsumer.com/2-year-price-guarantee-what-a-joke-20100610185337.html (complaining that promotional offer was short-lived and monthly bill continued to increase over the course of the contract).

[9] **{{BEGIN HCI**

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Interactions with Programmers. A mounting volume of evidence points to an active effort by Charter to discourage programmers from granting OVDs rights to programmer content, an effort that appears to include the extreme of outright threatening behavior. The confidential evidence cited by DISH in its prior submissions[10] is magnified in severity by the concerns expressed by a number of programmers last week,[11] as well as by aggressive warnings issued in public statements to programmers by Charter management. As BTIG Research reported, Charter "essentially threatens programmers" if they try to go direct-to-consumer OTT, rather than through Charter.[12] In fact, Charter's words seem to amount to real threats, not even thinly veiled ones. Here are two examples:

> Anybody who sells their content over the top and also expects to continue to exist within a bundle sold to cable or satellite providers is really deluding themselves;[13]

> If I were a content company, I'd think long and hard about, whether I wanted to give up access to 100 million homes and whether I wanted to give up my advertising model, and go to a direct to consumer SVOD, subscription-video-on-demand model without advertising, I think I'd think long and hard about that.[14]

In DISH's view, unless a full picture of Charter's interactions with programmers affords a more benign interpretation of these words, Charter should be prevented from expanding the leverage with which to threaten programmers in order to dissuade them from licensing their content to *Sling TV* and other OVDs.

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[10] *See* Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, FCC, MB Docket No. 15-149 (Dec. 7, 2015); Letter from Pantelis Michalopoulos and Stephanie Roy, Counsel to DISH Network Corporation, to Marlene Dortch, Secretary, FCC, MB Docket No. 15-149 (Dec. 21, 2015).

[11] *See* Notice of Ex Parte Meeting, Steven Bradbury, Counsel to Home Box Office, Inc., to Marlene Dortch, FCC, MB Docket No. 15-149, at 1-2 (Jan.13, 2016).

[12] *See* Richard Greenfield, *Will Tom Rutledge's Harsh OTT Comments Doom Charter's Acquisition of Time Warner Cable*, BTIG (Jan. 15, 2016) ("BTIG Research"), http://www.btigresearch.com/2016/01/15/will-tom-rutledges-harsh-ott-comments-doom-charters-acquisition-of-time-warner-cable/?print=true.

[13] *Id.*

[14] *Id.*

Customer Churn Will Not Discipline New Charter

Broadband providers, particularly the Comcast-New Charter duopoly, can and will act to forestall competition from OTT rivals. Contrary to Applicants' contentions, their subscribers' desire for a good broadband experience will exercise little, if any, discipline over New Charter's actions.[15]

Mr. Zarakas' analysis of the Applicants' churn data proves that their customers rarely leave voluntarily. In fact, the Applicants' churn is **{{BEGIN HCI END HCI}}** they portray to the Commission. While Applicants report that their typical monthly churn for 2014 was "substantial" at **{{BEGIN HCI END HCI}}**,[16] this number does not adequately reflect the churn level for those customers who **{{BEGIN HCI**

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[15] *See Protecting and Promoting the Open Internet, Report and Order on Remand, Declaratory Ruling, and Order*, 30 FCC Rcd. 5601, 5631-32 ¶ 81 (2015) ("*2015 Open Internet Order*") ("The broadband provider's position as gatekeeper is strengthened by the high switching costs consumers face when seeking a new service. . . . Ultimately, when consumers face this kind of friction in switching to meaningful competitive alternatives, it decreases broadband provider' responsiveness to consumer demands and limits the provider's incentives to improve their networks."). High switching costs, imperfect information, and a lack of reasonable broadband substitutes all prevent consumers from disciplining the behavior of broadband providers. *See id.*

> Among the costs that consumers may experience are: high upfront device installation fees; long-term contracts and early termination fees; the activation fee when changing service providers; and compatibility costs of owned equipment not working with the new service. Bundled pricing can also play a role, as "single-product subscribers are four times more likely to churn than triple-play subscribers." These costs may limit consumers' willingness and ability to switch carriers, if such a choice is indeed available. Commenters also point to an information problem, whereby consumers are unsure about the causes of problems or limitations with their services-for example, whether a slow speed on an application is caused by the broadband provider or the edge provider-and as such consumers may not feel that switching providers will resolve their Internet access issues.

[16] Fiona Scott Morton, Public Interest Statement Concerning the Merger of Charter, Bright House, and Time Warner Cable, MB Docket No. 15-149, ¶ 55 (June 24, 2015) ("Morton Declaration") (Exhibit D to Application).

END HCI}}.[17] The lowest category of churn for the Applicants is consistently **{{BEGIN HCI** **END HCI}}**.[18] The Applicants' **{{BEGIN HCI**

END HCI}}.[19]

Take a scenario in which churn should be among the highest levels: degradation of streaming video service *visible* to the customer. Even in the face of such degradation, the Applicants' data reveal that **{{BEGIN HCI**
END HCI}}.[20]

From November 2013 to March 2014, Netflix experienced significant degradation over TWC's network. In a properly functioning market, churn would increase during this period of poor performance. **{{BEGIN HCI**
END HCI}}[21]

Even if we assume that most broadband customers understand the reason for a poor broadband experience—a very large assumption—switching is most often impossible because there is no reasonable broadband alternative in the marketplace. Most consumers have no alternative to the Applicants' offerings for high-speed broadband access.[22] As Chairman Wheeler recently explained, at 25 Mbps "there is simply no competitive choice for most Americans," and at 4 to 10 Mbps, most Americans are faced with a "'duopoly,' a marketplace that is typically

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[17] *Id.*

[18] *See, e.g.*, **{{BEGIN HCI**

END HCI}}

[19] *See* Zarakas Declaration ¶¶ 4, 10-11, Tables 2A, 2B. In fact, the data show that customers are least likely to disconnect **{{BEGIN HCI**

END HCI}}.

[20] *See* Zarakas Declaration ¶¶ 5, 17-21.

[21] *See Id.*

[22] At 25 Mbps, only 33 percent of New Charter customers will have any alternative available. FCC, Charter-TWC-BHN Broadband Subscriber Data, MB Docket No. 15-149, at Exhibit 3a (Nov. 13, 2015).

characterized by less than vibrant competition."[23] Even where there is a competitive option, high switching costs can limit the consumer's ability to switch ISPs.[24]

The effect of competition (or, rather, the lack thereof) on churn plays out in the Applicants' own data. Highly Confidential documents show that where there is a reasonable alternative, **{{BEGIN HCI**
END HCI}}.[25] The Applicants know all of this full well. In fact, internal documents show that **{{BEGIN HCI**

END HCI}}[26] In markets where several overbuilders are present, **{{BEGIN HCI**

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[23] Tom Wheeler, Chairman, FCC, Prepared Remarks at the 1776 Headquarters, Washington DC: The Facts and Figures of Broadband Competition, at 4 (Sept. 4, 2014), *available at* http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0904/DOC-329161A1.pdf ("Wheeler Remarks").

[24] *See supra* note 10; *2015 Open Internet Order*, 30 FCC Rcd. at 5631-32 ¶ 81 ("45 percent of households have only a single provider option for 25 Mbps/3 Mbps broadband service, indicating that 45 percent of households do not have any choices to switch to at this critical level of service.").

[25] **{{BEGIN HCI** **END HCI}}**

[26] **{{BEGIN HCI**

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[27] **{{BEGIN HCI**

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END HCI}}[28] The message of this, of course, is that, even in the absence of these **{{BEGIN HCI END HCI}}**, TWC suffers **{{BEGIN HCI END HCI}}** voluntary churn in markets without direct, high-speed competition.

This is a Merger to Duopoly

As DISH has explained, the transaction will create a dominant duopoly, with New Charter and Comcast together controlling more than **{{BEGIN HCI END HCI}}** percent of the high-speed broadband homes in the United States.[29] This market concentration is more than enough to raise anticompetitive concerns generally,[30] and concerns about duopoly structures in particular.[31] The higher the market concentration and the fewer the rivals, the greater the opportunities and incentives for the remaining firms to coordinate overtly or tacitly.[32] In general, the larger the number of firms in an industry, the greater the difficulty in achieving solidarity and

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[28] **{{BEGIN HCI**

END HCI}}

[29] *See* DISH Petition at 27-32; DISH Reply at 17-25; Letter from Stephanie A. Roy, Counsel to DISH Network Corp., to Marlene Dortch, FCC, MB Docket No. 15-149, at 2 (Nov. 23, 2015).

[30] *See, e.g., United States v. Philadelphia Nat'l Bank,* 374 U.S. 321, 335 (1963); *FTC v. PPG Indus.,*798 F.2d 1500, 1503 (D.C. Cir. 1986); DOJ and FTC, Horizontal Merger Guidelines § 7.1 (2010), *available at* http://www.justice.gov/atr/horizontal-merger-guidelines-08192010#7.

[31] *See, e.g.,* Memorandum Opinion, *United States v. H&R Block et al.*, No. 1:11-cv-00948 (Nov. 10, 2011) (finding that merger of H&R Block and TaxAct would result in coordinated effects in the online do-it-yourself tax preparation market where the combined company and its market-leading rival, Intuit, would control 90 percent of that market, without considering that the new H&R Block would have offered both brick-and-mortar and online tax preparation services while Intuit was operating entirely online); Complaint, *United States v. Anheuser-Busch InBEV SA/NV et al.*, No.1:13-cv-00127 (Jan. 31, 2013) (alleging coordinated effects in challenge to merger of InBEV and beer manufacturer Modelo, which would have resulted in a 72 percent combined market share of InBEV and MillerCoors-InBev's largest beer competitor-in the market for beer, where the merged company would have offered a wide range of beverages and MillerCoors competed in the beer market only).

[32] *See, e.g., FTC v H.J. Heinz Co.*, 246 F.3d 708, 714 (D.C. Cir. 2001); *FTC v. University Health, Inc.,* 938 F.2d 1206, 1218 n. 24 (11th Cir. 1991); *PPG,* 798 F.2d at 1503.

avoiding price rivalry.[33] In a duopoly, however, firms can collectively pursue economic profit through conscious parallelism, interdependent behavior, or tacit collusion.[34] Firms that engage in coordinated interaction may be able to predict accurately, even absent an express agreement, how their competitors will react to changes in price. This is exactly why mergers that create or reinforce such market structures are disfavored.[35]

These concerns are not merely hypothetical. Applicants' own documents indicate that a New Charter will not only be able, but will be willing, to march alongside Comcast in tacit coordination to the detriment of competition and consumers alike. As a Charter shareholder and financial advisor told board members, a merger with TWC would **{{BEGIN HCI**

END HCI}}[36] In fact, he warned Charter that **{{BEGIN HCI**

END HCI}}[37]

These same documents reveal that the Applicants have already **{{BEGIN HCI**
END HCI}}:

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[33] Lawrence Sullivan, Antitrust 342 (1977).

[34] *Id.* at 339.

[35] 4 Phillip E. Areeda, Herbert Hovenkamp, John L. Solow, Antitrust Law ¶ 901b2, at 9 (rev. ed. 1998).

[36] **{{BEGIN HCI**
END HCI }}

[37] *Id.*

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[38] **{{BEGIN HCI**

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[39] **{{BEGIN HCI**

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[40] **{{BEGIN HCI**

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One of the key advantages that the instant transaction affords New Charter is the ability to achieve many of these same objectives without any formal relationship or explicit communication subject to antitrust scrutiny. Instead, New Charter and Comcast could simply "follow the leader" with little chance that the remaining few players in the industry would not fall in line.[42]

The prospects for such coordinated and anticompetitive behavior are particularly acute here with New Charter being subject to the influence of Dr. Malone.[43] Dr. Malone is well known as a vocal advocate of consolidation and coordination in the cable industry, dating back to the

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[41] **{{BEGIN HCI** **END HCI}}**

[42] *See* Lawrence Sullivan, Antitrust 342 (1977); *Clamp-All Corp. v. Cast Iron Soil Pipe Inst.*, 851 F.2d 478, 484 (1st Cir. 1988) ("One does not need an agreement to bring about . . . [a] follow-the-leader effect in a concentrated industry.").

[43] Dr. Malone's influence of New Charter will provide the vehicle for coordinating the industry against competitive entry again. While Applicants maintain that "business decisions within New Charter will be controlled on a day-to-day basis by the managerial leadership, not by Dr. Malone," Opposition at 51, a review of the basic facts of the transaction shows that Malone will have a substantial role in the combined entity. Through his 46.6 percent voting interest in Liberty Broadband, (which owns a 25.7 percent interest in Charter) and various proxies, Malone would have an attributable interest in **{{BEGIN HCI** **END HCI}}** of New Charter. *See* Oppositions to Petitions to Deny and Response to Comments, MB Docket No. 15-149 (Nov. 2, 2015) ("Opposition"). If the transaction is consummated, Liberty Broadband will be entitled to designate **{{BEGIN HCI** **END HCI}}** directors to New Charter's board, **{{BEGIN HCI** **END HCI}}** Liberty Broadband would hold approximately 18 to 19 percent of the common stock of New Charter, and 25 percent of the voting power of New Charter. Public Interest Statement at 15; Charter Response to RFI at 110. It would be difficult for New Charter to ignore the long-held views of one of its biggest shareholders and **{{BEGIN HCI** **END HCI}}.**

1980s.[44] In the 1990s, Dr. Malone feared that cable's control over video was threatened by what he called the "rat zapper" (Direct Broadcast Satellite or "DBS").[45] When News Corp. and Echostar consummated a deal to enter the video distribution market as an effective DBS provider, Dr. Malone reacted.[46] He enticed News Corp. into breaching its deal with Echostar (now DISH) in favor of joining the anticompetitive Primestar venture. Dr. Malone's Primestar gambit ultimately failed in the face of the U.S. Justice Department's antitrust review and the Commission's scrutiny, precisely because it was designed solely to keep competitive upstarts from competing with incumbent cable operators.[47]

Dr. Malone has never disavowed his preference for a fraternity of cable companies working together to thwart competition. Indeed, his *express* preference appears to be the duopolistic market itself. A journalist recently reported that "Mr. Malone . . . is still keen to see the industry consolidate, noting that cooperation would complement mergers. '*The fewer big players, the easier it is to get alignment*,' [Dr. Malone] said."[48] Considering that Comcast is run

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[44] Transcript of Liberty Media Investment Day, CQ-Roll Call (Oct. 10, 2013) (Malone: "I think I kind of invented—or at least the Justice Department thought I did—vertical integration in the cable business.").

[45] Stephen Keating, Cutthroat: High Stakes and Killer Moves on the Electronic Frontier 115 (1999) ("Keating").

[46] Complaint, *United States v. Primestar, Inc.*, 1:98-cv-01193, ¶¶ 46, 50 (May 12, 1998).

[47] Keating at 16.

[48] Shalini Rmachandran, *Malone Urges Cable-Programming Ventures*, Wall Street Journal (Oct. 10, 2013), http://www.wsj.com/news/articles/SB10001424052702304520704579127562313986176; *see also* Claire Atkinson, *John Malone Blasts Cable's Answer to Netflix*, NYPost, http://nypost.com/2015/06/02/john-malone-blasts-cables-answer-to-netflix/ (June 2, 2015) ("'It is still an opportunity to cooperate across these consolidated platforms in business to business, and have a national branded consistent business,'" rather than each operator sticking to its own footprint, Malone said."). Dr. Malone continues to actively pursue deals that bring greater alignment to the cable industry and its constituent components. In addition to his 28 percent voting interest in Discovery Communications, Dr. Malone recently acquired a seat on the board of directors of Lionsgate and is attempting to parlay that into potential deals with premium cable channel Starz (of which he already owns a 33 percent stake) or AMC Networks. *See* Michael J. De La Merced, *John Malone Takes a Stake and a Board Seat at Lionsgate*, New York Times (Feb. 11, 2015), http://dealbook.nytimes.com/2015/02/11/john-malone-takes-a-stake-and-a-board-seat-at-lionsgate; Shalini Rmachandran, *Liberty's John Malone Eyes Content*

by a Malone disciple who has referred to and "deferred to Malone as 'captain of the cable train,'"[49] New Charter and Charter would be almost certain to *align* with themselves with one another.

As a Duopolist, New Charter's Ability and Incentive to Thwart Rival OTTs Increases

As duopolists, New Charter and Comcast could employ both defensive and offensive strategies against OTT rivals. For example, by employing the same platform for OTT delivery, the duopolists could leverage their control over **{{BEGIN HCI END HCI}}** of U.S. high speed broadband households to set the *de facto* technical standard for OTT delivery, crowding out competing players by controlling the economies of scale and attendant standardization efforts. Joint implementation of UBP would protect the companies' traditional cable video services.

Charter has already shown UBP will likely be its preferred means to preserve its declining video revenues.[50] Notably, the lower programming costs that Charter hopes to achieve through this merger will have the effect of *increasing* Charter's incentive to take advantage of the duopoly market. This is because New Charter's average margin for video will expand as a result of these lower costs, and thus New Charter will have a larger profit stream to protect. By merging and implementing UBP, and enjoying the resulting effects these actions have on rival OTT providers, New Charter will once again be able to have its cake and eat it, too.

But UBP need not carry the load alone. If the two companies were to adopt and use the same streaming protocols—for example, were New Charter to use Comcast's Xfinity Stream TV

Consolidation, Wall Street Journal (Jan 3, 2015), http://www.wsj.com/articles/libertys-john-malone-eyes-content-consolidation-1433360774 ("Lions Gate could buy Starz and potentially other free radicals in the industry, Mr. Malone said."). There have also been rumors linking Malone to a takeover of CBS, which would be as problematic as Comcast's takeover of NBC. *Does John Malone Have His Eye on CBS?*, Denver Business Journal (Apr. 14, 2015), http://www.9news.com/story/news/2015/04/14/john-malone-cbs/25765367/.

[49] Keating at 228.

[50] *See* Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, FCC, MB Docket No. 15-149 (Dec. 14, 2015).

service to deliver content to its 19.4 million broadband customers, the result would be the creation of a *de facto* national standard for OVD video.[51]

Such a plan is exactly what Dr. Malone has proposed publicly. During an investor conference, Dr. Malone said that "cable companies could solve the problem of high programming costs by acquiring content for an Internet-based service under one brand that they would sell in a bundle with broadband," and specifically used Xfinity as an example of a "video streaming product one day being shared with the rest of the cable industry to become a national brand."[52] And as Dr. Malone said last fall, if he had his way, he would "get together with Comcast and have a common [] access platform that includes all of our cable stuff, and HBO, and Starz, and Showtime, and all the broadcasters . . . and let's offer that to all the other guys, all of our brethren in the cable industry."[53]

Indeed, in an email to Charter's Tom Rutledge in July 2015, Dr. Malone wrote:

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Mr. Rutledge responded:

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END HCI}}[54]

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[51] Matt Strauss, *Introducing a New Streaming Service from Comcast*, Comcast Blog (July 12, 2015), http://corporate.comcast.com/comcast-voices/a-new-streaming-tv-service-from-comcast.

[52] Liana B. Baker, *U.S. Cable Companies Should Create Netflix Rival: Malone* Reuters (Oct. 10, 2013) http://www.reuters.com/article/us-liberty-netflix-idUSBRE9990OC20131010. *See* Transcript of Liberty Media Investment Day, CQ-Roll Call (Oct. 10, 2013) (Malone: "I see no reason why a vehicle, whether it's Xfinity or the equivalent, can't be syndicated.").

[53] Vanity Fair, *Chairmen of Discovery and Liberty Media Stay Tuned on Television*, YOUTUBE, at 00:21:40 - 00:22:40 (Oct. 8, 2015), https://www.youtube.com/watch?v=Hsbfnu8KUVg.

[54] **{{BEGIN HCI**

The Commission Should Scrutinize Charter's Interactions with Programmers

The Commission should take a close look at all communications between Charter and programmers for attempts to impede programmers from providing content to OTTs. DISH has presented evidence from Charter's internal communications that Charter was concerned about *Sling TV* as a major competitive threat.[55] As a response to the introduction of *Sling TV*, Charter executives **{{BEGIN HCI**

END HCI}}.[56] Programmers obviously got the message because **{{BEGIN HCI**

END HCI}}[57] Such concerns were borne out in the recent meeting between Commission staff and Time Warner Inc./HBO. As representatives from HBO explained, statements made by Charter "raise concerns because they suggest that a combined Charter/Time Warner Cable would be inclined to take action directed at programmers in response to the development of 'over the top' or 'OTT' services with the purpose and/or effect of slowing down the development of OTT options to the detriment of consumers."[58]

Charter CEO Tom Rutledge has made similar statements in public. BTIG Research analyst and blogger Richard Greenfield took a look at several statements by Rutledge, including

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[55] *See* Letter from Pantelis Michalopoulos and Stephanie Roy, Counsel to DISH Network Corporation, to Marlene Dortch, Secretary, FCC, MB Docket No. 15-149 (Dec. 21, 2015).

[56] **{{BEGIN HCI**

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[57] **{{BEGIN HCI**

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[58] *See* Notice of Ex Parte Meeting, Steven Bradbury, Counsel to Home Box Office, Inc., to Marlene Dortch, FCC, MB Docket No. 15-149, at 1-2 (Jan.13, 2016).

both before and after the announcement of the current transaction, and concluded that, "Rutledge raises the 'threat' that if a programmer offers content OTT, they risk being dropped from the Charter video bundle."[59] For example, before regulatory scrutiny of the proposed transaction, Rutledge told CNBC that: "anybody who sells their content over the top and also expects to continue to exist within a bundle sold to cable or satellite providers is really deluding themselves."[60] Rutledge also appeared to threaten to drop programmers from the Charter bundle if they offer content OTT: "to the extent that people go a la carte direct . . . they may or may not be carried in the future as a result of that."[61]

In the world of business threats, words *are* actions. For instance, BTIG Research analysts' review of these and other public statements by Rutledge led them to warn programmers that Rutledge "will make them suffer,"[62] to highlight Rutledge's behavior for Charter and TWC investors, and to appeal to regulators to protect the future of OTT video by preventing Rutledge from controlling a significant percentage of broadband customers.[63] Unless Charter's conduct convincingly shows these words to have some other meaning than their facial examination suggests, Charter should be prevented from gaining even more leverage over programmers.

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[59] *See* BTIG Research.

[60] *See* Tom DiChristopher, *Over-the-top HBO Will Not Kill the Cable Bundle: Plepler*, CNBC (Nov. 20, 2014), http://www.cnbc.com/2014/11/20/over-the-top-hbo-will-not-kill-the-cable-bundle-plepler.html.

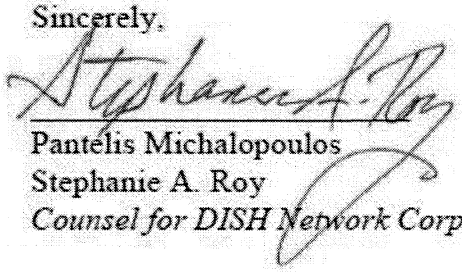
[61] Charter Communications, Inc. 3Q15 Earnings Conference Call (Aug. 4, 2015), http://seekingalpha.com/article/3396305-charter-communications-chtr-thomas-m-rutledge-on-q2-2015-results-earnings-call-transcript?part=single.

[62] *See* BTIG Research.

[63] *See id.*

The proposed transaction would create a duopoly with players that have every reason to take advantage of their chokehold over the broadband pipe to forestall the development of a competitive OVD market. Without competitors to discipline the behavior of New Charter or Comcast, the merger will allow the cable train onto a one-way track toward coordinated sabotage of the video marketplace.

Sincerely,



Pantelis Michalopoulos
Stephanie A. Roy
Counsel for DISH Network Corporation

REDACTED-FOR PUBLIC INSPECTION

Declaration of William P. Zarakas
Analysis of Internet Churn:
Time Warner Cable, Bright House Networks and Charter Communications

I. Introduction

1. My name is William P. Zarakas. I am a Principal with The Brattle Group, an economics consulting firm, where I work primarily on economic and regulatory matters concerning the communications and energy industries. I have been involved in the economic analysis of issues facing these industries for roughly 30 years. I have provided reports and/or testimony before the Federal Communications Commission, the Federal Energy Regulatory Commission, the Securities and Exchange Commission, the Copyright Royalty Judges (Library of Congress), the U.S. Congress, state regulatory agencies, arbitration panels, foreign governments and courts of law.

2. I have worked extensively on matters concerning: costs, prices and rates for utility and telecommunications services; business and asset valuations, including the valuation of wireless spectrum; the impacts of mergers on markets and upon costs of service; the determination of royalties and the distribution of cable and satellite television retransmission fees to content providers; the value of reliability in utility services; and the impact of disruptive technologies on regulated industries, most recently involving the effect of distributed energy resources on utility costs and rates. Prior to my tenure with The Brattle Group, I held senior positions at other economic and management consulting firms. My curriculum vitae is included as **Attachment A** to this declaration.

3. I have been asked by counsel for DISH Network Corporation ("DISH") to review and analyze the churn rates for internet subscriptions that Time Warner Cable's (TWC), Advance/Newhouse Partnership's (Bright House), and Charter Communications' (Charter), collectively the Applicants, have provided to the FCC.[1] **{{BEGIN HCI**

END HCI}} Counsel for DISH requested that I focus my analysis primarily on voluntary disconnects, because this category of disconnect excludes customer departures due to non-service related events, e.g., moving and/or failure to pay bills.

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[1] *See* Letter from William T. Lake, FCC, to Steven Teplitz, TWC, MB Docket No. 15-149, Information and Data Request, Request 81(c) (Sept. 21, 2015); Letter from William T. Lake, FCC, to Steven Horvitz, Bright House, MB Docket No. 15-149, Information and Data Request, Request 60(c) (Sept. 21, 2015); Letter from William T. Lake, FCC, to Catherine Bohigian, Charter, MB Docket No. 15-149, Information and Data Request, Request 108(c) (Sept. 21, 2015).

Counsel also requested that I further analyze the behavior of TWC's monthly voluntary internet churn for the period November 2013 to February 2014.

4. The analysis that I present in Section II below indicates that the Applicants **{{BEGIN HCI**

END HCI}},[2] **{{BEGIN HCI** **END HCI}}**

5. **{{BEGIN HCI**

END HCI}}

II. The Applicants' Voluntary Broadband Churn {{BEGIN HCI END HCI}} Over the Course of the Study Period

6. Cable companies measure churn as the number of customers who terminate service (or "disconnect") divided by the total number of subscribers at the end of the preceding month. Each of the Applicants provided a breakdown of internet customer disconnects which was

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[2] **{{BEGIN HCI**

END HCI}}

then aggregated into "voluntary" and "involuntary" categories. {{BEGIN HCI

END HCI}}[3] {{BEGIN HCI

END HCI}}

7. Customers of the Applicants may subscribe to stand-alone broadband service, but more frequently subscribe to bundles of services (e.g., cable television services together with internet service). {{BEGIN HCI

END HCI}}

8. **Table 1** shows the total number of TWC, Bright House, and Charter residential broadband subscribers from {{BEGIN HCI END HCI}} as well as a break down into a stand-alone category. The table indicates that the number of internet customers served by each of the three companies has {{BEGIN HCI END HCI}} over the study period. On a combined basis, the residential internet customers served by the Applicants {{BEGIN HCI

END HCI}}

9. The table also shows that the share of residential customers subscribing to internet services on a stand-alone basis has {{BEGIN HCI

END HCI}} On a combined basis, the share of stand-alone subscribers {{BEGIN HCI

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[3] Time Warner Cable Inc. Response to the Information and Data Requests Issued to Time Warner Cable Inc. on September 21, 2015 by the Federal Communications Commission, Supplemental Narrative Response (Oct. 16, 2015), Supplemental Response to Specification 81(d), pp. 34-35; and Bright House Networks 60d – Disconnect Description for C.2.

[4] {{BEGIN HCI

END HCI}}

END HCI}} Finally, **Table 1** shows that the Applicants' total number of residential broadband subscribers has **{{BEGIN HCI**

END HCI}}

10. Calculations of churn for residential internet customers for the three companies are provided in **Table 2A** and **Table 2B**. **Table 2A** provides the monthly churn for primary residential customers, broken down into voluntary and involuntary churn components. **Table 2B** shows a similar breakdown for residential customers who subscribe to internet services on a stand-alone basis. **{{BEGIN HCI**

END HCI}}

11. **{{BEGIN HCI**

END HCI}}

12. **{{BEGIN HCI**

END HCI}}

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[5] Second Supplemental Response of Charter Communications, Inc. to Information and Data Requests Dated September 21, 2015 In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership for Consent to Transfer Control of Licenses and Authorization, MB Docket No. 15-149 (Oct. 27, 2015), Response to Attachment C.2 "Disconnects Data," p. 11.

13. Churn rates can also be displayed graphically. **Figures 1A** and **1B** plot the level of voluntary residential broadband churn for TWC, Bright House, and Charter from **{{BEGIN HCI**

END HCI}}

14. **{{BEGIN HCI**

END HCI}}

15. **{{BEGIN HCI**

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16. Tables 1, 2A and 2B and Figures 1A and 1B demonstrate that the residential customers who leave the Applicants' systems on a voluntary basis **{{BEGIN HCI**

END HCI}} Furthermore, the analysis above indicates that the monthly churn rates among the Applicants' residential customers have **{{BEGIN HCI**

END HCI}}

III. TWC's Voluntary Churn Has Been {{BEGIN HCI END HCI}} by Netflix Speed

17. The Applicants have represented that they need to maintain high quality broadband services in order to retain their customers. Specifically, they assert that they have no incentive to impair the video services provided over the Applicants' facilities by OVDs because the Applicants' customers would opt to terminate their subscriptions, and the

Applicants would lose a "substantial number of profitable broadband subscribers."[6]
{{BEGIN HCI

END HCI}}

18. Customer response can be tested empirically by examining "normal" voluntary churn rates compared to churn rates during periods in which broadband speeds are diminished. Diminished broadband speeds can have an effect on a range of applications used by customers, notably the quality of video services provided by OVDs. Counsel identified November 2013 to February 2014 as a period in which TWC customers experienced diminished speeds in downloading Netflix, and requested that I analyze the impact on changes in customer churn.

19. I used a simple regression to test the hypothesis that residential internet subscribers will churn away if broadband service is diminished (and access to OVD services is compromised). I specify this regression with monthly voluntary residential broadband churn as the outcome (or dependent) variable and three explanatory (or independent) variables: (i) a "throttle" variable; (ii) a time trend indicating the month and year and that measures any general trends in voluntary residential broadband churn over time; and (iii) TWC's corresponding voluntary residential broadband churn rate 12 months earlier. This latter variable accounts for systematic seasonal variations in voluntary churn.

20. I ran two general regressions, one for total voluntary residential broadband churn and another for stand-alone voluntary residential broadband churn. In addition, I ran the regression using two variations of the Netflix speed variable (creating a total of four regressions). The first variation on the Netflix speed variable involved setting a dummy variable equal to 1 during the period from November 2013 to February 2014; for the second variation, I set the Netflix speed variable equal to the average monthly speed of Netflix's traffic on TWC's network. These regressions were specified so that the coefficients for the Netflix speed variable indicate whether, after controlling for general time trends and seasonality, a reduced Netflix speed on TWC's network led to any significant increase in

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[6] Statement of Dr. Fiona Scott Morton re the Merger of Charter, TWC, and BHN, MB Docket No. 15-149, ¶ 120 (Nov. 2, 2015) ("Morton Reply Declaration") (Exhibit A to Opposition to Petitions to Deny and Response to Comments In the Matter of Applications of Charter Communications, Inc., Time Warner Cable Inc., and Advance/Newhouse Partnership For Consent to the Transfer of Control of Licenses and Authorization, MB Docket No. 15-149 (Nov. 2, 2015) ("Opposition")). The Applicants also assert that an OVD foreclosure would compromise their future growth prospects. Morton Reply Declaration ¶ 126.

TWC's voluntary residential broadband churn. For reference purposes, I refer to these regressions as follows:

- Regression Set 1: regression for total and voluntary monthly residential internet churn in which the Netflix speed variable is a dummy variable equal to 1 during the period from November 2013 to February 2014;
- Regression Set 2: regression for total and voluntary monthly residential internet churn in which the Netflix speed variable is set equal to the average monthly speed of Netflix's traffic on TWC's network.

21. The results of these regressions are presented in **Table 3**. **{{BEGIN HCI**

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TABLES AND FIGURES REDACTED IN THEIR ENTIRETY

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* * *

The foregoing declaration has been prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.

Executed on January 20, 2016.

William Zarakas

William P. Zarakas
Principal
The Brattle Group

WILLIAM P. ZARAKAS

Principal

Cambridge, MA | +1.617.864.7900 | Bill.Zarakas@brattle.com

William P. Zarakas is a Principal with The Brattle Group, an economics consulting firm, and an expert on economic and regulatory matters involving the communications and energy industries. He has worked on a wide range of issues concerning the telecommunications and media industries, including cost and pricing analyses in regulated industries, economic feasibility analyses associated with building-out broadband infrastructure, valuation of wireless spectrum, and, analyses rates and the distribution of royalties in the cable and satellite television industries.

Mr. Zarakas also has extensive experience in analyzing the economics and regulation of utility infrastructure and the evolving factors that are affecting utility business models. Recent applications of this focus include the impacts distributed generation resources on utility business models and cost-benefit analyses relating to utility investments in smart grids and system resiliency. Mr. Zarakas also works on matters pertaining to the regulatory frameworks, notably with respect to performance based regulation, and the valuations of utility assets and businesses. He has also examined the impacts of investment levels, operational performance, operating cost levels, and rates on utility equity prices and on customer satisfaction.

Mr. Zarakas has provided testimony and expert reports before the Federal Communications Commission, the Federal Energy Regulatory Commission, the Securities and Exchange Commission, the Copyright Royalty Judges (Library of Congress), the U.S. Congress, state regulatory agencies, arbitration panels, foreign governments and courts of law. He has led (and authored reports concerning) special investigations on behalf of corporate boards of directors and audits of management practices and operational and financial performance on behalf of regulatory commissions. He holds an M.A. in economics from New York University and a B.A., also in economics, from the State University of New York.

Communications Economics and Valuations

- Competition Modeling. Provided testimony concerning vertical foreclosure and Nash bargaining models in the Application of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Comcast to Assign or Transfer Control of Licenses, Federal Communications Commission, MB Docket No. 10-56.
- Cost Modeling: Developed model that estimated the cost of deploying mobile broadband in rural areas, on behalf of GCI. Authored expert report and presented model and conclusions to the FCC In The Matter Of Connect America Fund and Universal Service Reform – Mobility Fund.
- Royalty Distribution: Analyzed costs and value of retransmitted television programming in cable and satellite video markets and determined distribution of copyright royalty fees among content providers. Authored expert report Before The Copyright Royalty Judges, Library of

Congress, Washington D.C. In The Matter of Distribution of the 2004 and 2005 Cable Royalty Funds, Docket No. 2007-3 CRB CD 2004-20. June 1, 2009

- Spectrum Valuation: Directed, authored reports, and/or provided expert testimony in cases involving valuations of wireless spectrum valuation. Cases involved determining market comparable values and performing discounted cash flow (DCF) and econometric-based analyses. Analyses were conducted on behalf of communications carriers, regulatory and governmental agencies in the U.S. and abroad, capital management companies, financial institutions and debtors.
    - Conducted analyses and authored expert report estimating value of Mobile Satellite Service (MSS) spectrum (i.e., the 2 GHz Band from 2000-2020 MHz and 2180-2200 MHz, the Big LEO from 1610-1626.5 MHz and 2483.5-2500 MHz, and the L-band from 1525-1559 MHz and 1626.5-1660.5 MHz) in several matters, including matters involving the Terrestar bankruptcy. Analyses included impact of incorporating FCC authorized ancillary terrestrial component (ATC) into MSS mobile broadband networks.
    - Analyzed spectrum values in the 2.3 and 2.5 GHz bands for the U.S. market.
    - Analyzed value of Advanced Wireless Services (AWS; 1.7 / 2.1 GHz) band for the U.S. market.
    - Analyzed value of unpaired 2.1 GHz spectrum for the U.S. market.
    - Analyzed value of 2.3 GHz (WCS) 3.5 GHz (FWA) spectrum in Canadian market.
    - Authored report concerning market comparable analysis of U.S. PCS market.
    - Provided expert testimony concerning potential value of wireless spectrum in the 700 MHz band.
    - Analyzed value of Specialized Mobile Radio (SMR) and Private Land Mobile Radio Services (PLMRS) spectrum on behalf of utility operating companies in the U.S. market.
    - Analyzed value of narrowband PCS and IVDS spectrum portfolio.
    - Directed, led analysis and authored report concerning valuations of wireless spectrum in the Middle East-North African (MENA) region for an international wireless operator.
    - Directed, led analysis and authored report concerning impact of additional wireless operators on spectrum values for the telecommunications regulator in the Kingdom of Jordan.

- Pole Attachments: Analyzed and provided testimony concerning the determination of the rates for pole attachments under the FCC's Cable Rate and Telecom Rate Formulas as applied to electric utility distribution assets. Virginia Cable Telecommunications Association v. Virginia Electric and Power, 2001.
- International Arbitration (satellite communications): Authored expert report concerning the impact of an alleged breach of contract on lost profits in a 23 country business operation concerning a satellite communications business. Performed detailed financial modeling to determine revenues, net income and net present value using risk adjusted discount rates for a satellite service provider.
- Commercial Litigation (broadband communications): Provided expert testimony concerning the estimate of commercial damages stemming from an alleged breach of contract associated with relocating infrastructure assets. Public Service Company of New Mexico vs. Smith Bagley, Inc. and Lite Wave Communications LLC In The United States District Court For The District of New Mexico. March 2007.
- Commercial Litigation (wireline communications): Developed analysis and supported expert testimony concerning damages associated with cable breaks and disruption of wholesale transport services. Analysis involved estimating lost profits and determining replacement cost of temporarily lost capacity. MCI WorldCom Network Services, Inc. v. MasTec, Inc. before the United States District Court Southern District of Florida, Case No. 01-2059-CIV-GOLD. May 2002.
- Asset Valuations: Directed and led multiple valuation analyses of telecommunications assets and businesses. Projects included valuations of infrastructure assets in multiple markets worldwide. Projects required comprehensive discounted cash flow and net present value analyses, as well as regression and statistical analyses of comparable market transactions. Projects resulted in valuations used in support of negotiations and/or in commercial litigation.

Rate, Cost, Pricing and Regulatory Analyses

- Performance Based Ratemaking Analyses. Conducted for utilities and regulators on matters concerning incentive regulatory frameworks as well as targeted performance incentives. Recent examples of authored expert reports and testimony: Massachusetts D.P.U. 12-120 and Hawaii Docket No. 2013-1041.

- Incentive Analysis for Electric Distribution Reliability. Comprehensive analysis of approaches to setting electric distribution reliability standards on behalf of the Australian Energy Market Commission (AEMC).
- Incentive Regulation. Comprehensive analysis of incentive systems to be applied to incumbent local exchange telephone carriers (ILECs) on behalf of the New York State Department of Public Service; involved modeling determining total factor productivity (TFP) based on empirical analysis and consideration of projected performance improvement initiatives.
- Electric Distribution Resiliency Analysis. Comprehensive benefit cost analysis employing value of lost load (VOLL) methodology conducted for Public Service Electric & Gas (PSE&G) in NJ BPU Docket No. EO13020155 and GO13020156.
- Cost and Rate Analyses:
    - Conducted for electric utilities concerning deployment of upgraded transmission and distribution infrastructure and smart grid applications.
    - Conducted on behalf of telecommunications and broadband companies in the United States, Europe and Asia concerning cost-of-service and incremental pricing principles for communications services products.
    - For a municipality deploying a Wi-Fi network by using street lights and utility infrastructure; analysis included determination of cost of service.
    - Expert Witness in multiple U.S. state regulatory proceedings concerning analysis of rates for unbundled network elements (UNEs), undertaken in fulfillment of requirements associated with the Telecommunications Act of 1996, using the Total Element Long Run Incremental Cost (TELRIC) methodology.
- Financial and Pricing Analyses: Conducted comprehensive financial analysis for a broadband communications provider in the U.S. market, including: developing projections of demand, price elasticities, revenue and capital and operating costs, and pricing points.
- Transfer Pricing: Performed comprehensive studies of affiliate transactions and cost allocations between holding companies and operating subsidiaries on behalf of telecommunications carriers and electric and gas utilities. Report filed before state regulatory commissions and the Federal Communications Commission.

- Performance Analysis: Analyzed wholesale access performance measurement systems on behalf of SBC (now AT&T). Project scope included analysis of the statistical validity of performance measures agreed upon by SBC and regulators as part of approval of SBC's provision of long distance services (as part of proceedings concerning Section 271 of the Telecommunications Act of 1996) or are the outcome of negotiations among various parties regarding proposed mergers. Work focused on detailed statistical testing of performance measures to determine whether measures reflected RBOC performance and supported regulatory goals of increased consumer welfare in local exchange markets.
- Regulatory Frameworks: Directed and led multiple engagements on behalf of telecommunications carriers, utilities and regulatory commissions concerning the analysis of changes in regulatory frameworks, including: theoretical and quantitative analysis of the impact of adoption of earnings-based and price-based incentive rate plans upon retail prices and service quality; and a study of the impact of alternative regulatory frameworks on ILEC deployment of advanced telecommunications services, performed on behalf of a state regulatory commission.

Utility Strategic and Management Analysis

- Investment Analysis: Authored expert report concerning the impact investments in electric and gas utility infrastructure on system reliability and resiliency, especially following major weather events. Primary area of analysis involved estimation of economic value of investments to customers using value of lost load (VOLL) metrics for electric system investments and consumer surplus and value added metrics for gas system investment.
- Strategic Option Analysis: Directed Strategic Organizational Analysis for the Long Island Power Authority. Project involved definition and analysis of organizational options (privatization, municipalization and outsourced management services arrangements) available to LIPA going forward. Options were evaluated based on rate impacts and risk factors, including risks associated with organizational transformation. Project required extensive modeling of LIPA operations and financing scenarios, as well as analysis of power and transmission markets. Project work also involved interaction with LIPA's management team, its Board of Trustees and Board sub-committees.
- Merger Analysis: Authored expert reports concerning prospective merger savings and divestiture losses for electric and gas utilities. Scope of work included analyses involved in determining the operating and capital impacts of mergers under multiple scenarios, and also

involved the anticipated economic inefficiencies resulting from forced divestiture. Reports authored included studies of merger efficiencies and reports concerning Economic Loss Studies included in U-1 filings before the U.S. Securities and Exchange Commission. Economic Loss Studies are required under PUHCA Section 11 (b) (1) Clauses A, B, and C when utility merger results in the establishment of a registered holding company with electric and gas businesses. Work in these areas included detailed analyses of current and hypothetical future electric and gas utility operations.

- Benchmarking Analysis: Conducted transmission and distribution (T&D) function benchmarking study for a major Midwestern U.S. electric utility. Study involved comprehensive analysis of capital and operating costs and reliability and the impact that changes in expenditure would likely have upon earnings and shareholder value as well as distribution system reliability.
- Valuation: Directed and advised board of directors of a major generation and transmission (G&T) cooperative and its member electric distribution cooperatives on matters concerning: asset valuations, risk management strategy, merger and acquisition options, and outlook for retail electric markets.
- Feasibility Analyses: Conducted financial analyses and economic feasibility studies of new business opportunities for electric and gas utilities (e.g., fuel cell and distributed generation technologies and alternative fuel transportation) on behalf on numerous clients.
- Transfer Pricing: Authored reports and provided expert testimony on matters of affiliate transfer pricing, corporate overhead allocation, cost allocation, and cross-subsidization, performed on behalf of electric utilities and regulatory commissions. Also, analyzed business separation and affiliate safeguards regarding flow of information, systems access, marketing controls, employee and intellectual transfers and cost allocations for U.S. utilities.
- Rate Analysis: Conducted analyses of major utility capital investment, demand and consumption and cost-of-service performed on behalf of multiple electric and gas utilities and applied in utility rate cases before state and federal regulatory commissions
- Valuation: Performed asset valuation project on generation, transmission and distribution assets for a U.S. municipal electric utility. Determined original, trended original and replacement costs, as well as development of depreciation costs. Analyses used in developing electric rates and in proceeding on municipal special franchise taxes.

- Shareholder Value Analysis: For an east coast electric utility, analyzed impact on stock prices of new and potential markets (for core and non-core utility services), pricing strategies, underlying costs, and regulatory options.
- Margin Analysis: Conducted revenue and margin, geographic impacts and value analysis of utility energy efficiency initiatives on behalf of a major west coast electric utility.

Forensic Analysis and Special Investigations

- Forensic Analysis and Special Investigation: Directed consulting team and authored report for the forensic analysis of the economics, financial reporting and accounting associated with allegation of accounting and financial improprieties by Global Crossing. Worked on behalf of the Special Committee on Accounting Matters composed of a subset of (and reporting to) the Board of Directors of Global Crossing Ltd. Analysis involved determination of basis for revenue recognition for concurrent (i.e., "swap") transactions. Analysis included in report by the Special Committee entitled "The Concurrent Exchange of Fiber Optic Capacity and Services Between Global Crossing and its Carrier Customers." January 2003.
- Commercial Litigation: Directed expert consulting team in litigation matter concerning the deployment schedule of bandwidth on a major undersea cable project. Case involved allegations of breach of contract. Case work involved modeling of undersea fiber optic bandwidth in major undersea crossings and financial analysis of project viability.
- Forensic Analysis and Securities Litigation: Directed consulting team and led technical analysis concerning accounting and financial disclosure on behalf of the defendant in a class action against corporate officers, directors, controlling shareholders and the company's outside auditors alleging violations of the Securities Act of 1993 and the Securities Exchange Act of 1934. Scope of case involved accounting and disclosure treatment of complex leases.
- Special Investigations and Audits: Directed project teams, led technical analysis and authored reports in multiple special investigations and audits of management, operations and finance and accounting on behalf of regulatory utility commissions. Special investigations and audits involved allegations of improper cross subsidization and/or transfer pricing practices by regulated utilities (telecommunications, electric and/or natural gas) and their effect on rates charged to consumers. Special investigations and audits were conducted for regulatory commissions in Alabama, Kentucky, Maryland, New York and Pennsylvania.

Financial and Business Analyses

- Commercial Litigation: Developed expert report concerning damages associated with alleged breach of contract concerning gaming licenses in Asian casino markets. Analysis involved estimating projected cash flows under current and "but-for" scenarios.
- Economic Impact Analysis: Directed analysis and authored report regarding the effects of changes in regulatory fees and taxes on mobile prices, penetration and the macro economies of 22 countries in the Middle East and Africa. Study, conducted on behalf of a major mobile operator, involved detailed analysis of the relationships between marginal cost and prices, market structure and concentration, and empirical relationships concerning mobile penetration and GDP.
- Demand Analysis: Directed analysis and modeling of multiple projects involving the estimation and projection of segmented customer demand.
    - Analyzed U.S. subscriber market for video services.
    - Analyzed subscriber demand for communications services in the United States, Europe, Asia and the Middle East.
    - Led comprehensive analysis of current and projected market shares and competition in the consumer and business markets for network devices. Scope of work included geographic and customer segmentation; modeling included estimation of revenue and margins by segment.
- Consumer Welfare Analysis: Directed multiple analyses of impact of changes in market structure upon consumers.
    - Performed empirical analysis on panel of approximately 50 countries to demonstrate the effect of changes in levels of competition on prices, investment and other areas of consumer welfare for the global mobile telecommunication industry.
    - Directed analysis and authored white paper on empirical analysis concerning the impact of changing the price of wholesale access and levels of investment in the U.S. telecommunications market. Results reported in white paper entitled: "Structural Simulation of Facility Sharing: Unbundling Policies and Investment Strategy in Local Exchange Markets."
- Business Case Analysis: Directed and led multiple projects concerning the financial feasibility of entering new lines of business.

- Led feasibility study concerning development of publishing business for a major communications company. Work required comprehensive financial modeling.
- Performed comprehensive financial analysis for an infrastructure support company. Scope of work included market and competitive analyses, projections of market shares, cash flow modeling and pricing analysis.
- Performed comprehensive business case analysis of entry into the broadband market (including voice, internet access and video services) on behalf of a major U.S. electric utility. Scope of work included technology assessment and detailed financial modeling. Work included customer and geographic segmentation, pricing scenarios and elasticity analysis.
- Led comprehensive financial analysis concerning the deployment of a broadband communications network for an Asian electric utility. Related work included assessing transfer pricing methodologies regarding the use of utility assets, resources and easements by the broadband affiliate.
- Directed and led analysis of business diversification for multiple electric utilities. Business opportunities analyzed included dark fiber construction and third party use of utility poles, towers and conduit. Scope of analysis included financial modeling and transfer pricing.

TESTIMONY

Declaration of William P. Zarakas Before the Federal Communications Commission in the matter of Verizon Virginia. LLC and Verizon South, Inc., Complainants, v. Virginia Electric and Power Company d/b/a Dominion Virginia Power, Docket No. 15-90, File No. EB-15-MD-006 (November 18, 2015).

Declaration of William P. Zarakas and Matthew Aharonian (May 22, 2015) in the United States Court for the District of Columbia Circuit United States Telecom Association, Petitioner, v. Federal Communications Commission and the United States of America, Respondents, Case No. 15-1063 (and consolidated cases).

Analysis of the FCC's Vertical Foreclosure and Nash Bargaining Models Applied To The Proposed Comcast-Time Warner Cable Transaction (December 21, 2014) and Supplemental Declaration: Analysis of the FCC's Vertical Foreclosure and Nash Bargaining Models Applied To The Proposed Comcast-Time Warner Cable Transaction (March 5, 2015) in Application of Comcast Corporation, General Electric Company and NBC Universal, Inc. for Comcast to Assign or Transfer Control of Licenses, Federal Communications Commission, MB Docket No. 10-56.

Before the Public Utilities Commission of the State of Hawaii, In The Matter of Public Utilities Commission Instituting an Investigation to Reexamine the Existing Decoupling Mechanisms for Hawaiian Electric Company, Inc., Hawaii Electric Light Company, Inc., and Maui Electric Company, Limited, Docket No. 2013-1041, On Behalf of the Hawaiian Electric Companies. Report: "Targeted Performance Incentives: Recommendations to the Hawaiian Electric Companies," Prepared For The Hawaiian Electric Companies, William P. Zarakas and Philip Q Hanser, September 15, 2014.

Before the New Mexico Public Regulatory Commission, In The Matter Of The Application of TECO Energy, Inc., New Mexico Gas Company, Inc. and Continental Energy Systems, LLC, For Approval of TECO Energy Inc.'s Acquisition of New Mexico Gas Intermediate, Inc. and For All Other Approvals and Authorizations Required To Consummate and Implement The Acquisition, Utility Case No. 13-00231-UT, On Behalf of TECO Energy, Inc., New Mexico Gas Company, Inc. and Continental Energy Systems, LLC, Joint Applicants. March 2014.

"Analysis of Benefits: PSE&G's Energy Strong Program," by Peter Fox-Penner and William P. Zarakas. In the Matter of the Petition of Public Service Electric and Gas Company for Approval of the Energy Strong Program, NJ BPU Docket No. EO13020155 and GO13020156.

"Review and Analysis of Service Quality Plan Structure In The Massachusetts Department of Public Utilities Investigation Regarding Service Quality Guidelines For Electric Distribution Companies and Local Gas Distribution Companies." Philip Q Hanser, David E. M. Sappington and William P. Zarakas, Massachusetts D.P.U. 12-120, March 2013.

"Alaska Mobile Broadband Cost Model, Before The Federal Communications Commission In The Matter Of Connect America Fund and Universal Service Reform – Mobility Fund. WC Docket No. 10-90 and WT Docket No. 10-208A." William P. Zarakas and Giulia McHenry, February 2013

Expert Report of William P. Zarakas In The United States District Court For The Northern District of Florida MCI Communications Services, Inc., Plaintiff v. Murphree Bridge Corporation, Defendant, Case No. 5:09-cv-337, February 19, 2010.

Testimony of William P. Zarakas Before The Copyright Royalty Judges, Library of Congress, Washington D.C. In The Matter of Distribution of the 2004 and 2005 Cable Royalty Funds, Docket No. 2007-3 CRB CD 2004-20. June 1, 2009.

Declaration of William P. Zarakas In The Circuit Court of Fairfax County, Virginia In The Matter of Sharon Dougherty, Plaintiff Vs. Thomas J. Dougherty, Defendant Case No. CL 2007-008757. October 2008.

Expert report provided in Public Service Company of New Mexico vs. Smith Bagley, Inc. and Lite Wave Communications LLC In The United States District Court For The District of New Mexico. March 2007.

Expert report entitled "Comparative Market Value Analysis of Upper 700 MHz Public Safety Spectrum" in FCC WT Docket no. 96-86 (In the Matter of The Development of Operational, Technical and

Spectrum Requirements for Meeting Federal, State and Local Public Safety Communications Requirements Through the Year 2010). June 2006.

Expert report entitled "Analysis of Potential Lost Profits Associated With The Alleged Breach of Contract Between Orbcomm and Orbcomm Asia Limited" before the American Arbitration Association. May 2006.

Direct testimony before the Federal Communications Commission in the matter of *Petition of ACS of Anchorage, Inc. Pursuant to Section 10 of the Communications Act of 1934, as amended, for Forbearance from Sections 251(c)(3) and 251(d)(1) In the Anchorage LEC Study Area*, WC Docket No. 05-281, January 9, 2006.

Expert report co-authored with Dorothy Robyn Before the U.S. House of Representatives Committee on Energy and Commerce and the U.S. Senate Committee on Commerce, Science and Transportation regarding the value of wireless spectrum in the 700 MHz band. Letters, May 18, 2005.

Direct and rebuttal testimony before the Federal Communications Commission in the matter of *Virginia Cable Telecommunications Association v. Virginia Electric and Power Company, d/b/a Dominion Virginia Power and Dominion North Carolina Power*, PA No. 01-005, December 21, 2001.

Expert report Before the U.S. Securities and Exchange Commission included in Form U-1 Application/ Declaration Under The Public Utility Holding Company Act of 1935 in the combination of Energy East Corporation with RGS Energy Group, Inc. (June 20, 2001) in Exhibit J-1, entitled "Analysis Of The Economic Impact Of A Divestiture Of The Gas Operations Of Rochester Gas And Electric Corporation," May 15, 2001.

Expert report Before the U.S. Securities and Exchange Commission included in Form U-1 Application/ Declaration Under The Public Utility Holding Company Act of 1935 in the acquisition by Sierra Pacific Resources of Portland General Electric Company, 2000 in Exhibit H-1, entitled "Analysis Of The Economic Impact Of A Divestiture Of The Gas Operations Of Sierra Pacific Resources," January 31, 2000.

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