Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In The Matter of	)	
	)	GN Docket No. 14-28
Protecting and Promoting the Open Internet	)	
	)	
Framework for Broadband Internet Service	)	GN Docket No. 10-127
	)	

COMMENTS OF CHARTER COMMUNICATIONS, INC.

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Charter Communications, Inc. ("Charter") respectfully submits these comments in response to the Notice of Proposed Rulemaking and Public Notice in the above-captioned proceedings.[1]

INTRODUCTION AND EXECUTIVE SUMMARY

Charter supports an open Internet and seeks to provide a robust broadband service that enables consumers to have a high-quality experience accessing the content of their choice in the manner of their choosing. To this end, Charter offers 100 Mbps to its subscribers and this year is increasing the minimum speed it offers to 60 Mbps without data caps or similar restrictions. Like other Internet Service Providers (ISPs), Charter does not block lawful content or engage in pay-for-prioritization. Instead, Charter's investment in its network and service offerings has helped foster innovation and the dynamic Internet consumers experience today.

Preserving the vitality of today's Internet ecosystem is a critically important policy goal. The current regulatory environment has produced a "virtuous cycle" of investment and

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[1] *In re Protecting and Promoting the Open Internet*, Notice of Proposed Rulemaking, 29 FCC Rcd 5561 (2014) ("*Notice*"); *see also Wireline Competition Bureau Seeks to Refresh the Record in the 2010 Proceeding on Title II and Other Potential Legal Frameworks for Broadband Internet Access Service; Pleading Cycle Established*, Public Notice, GN Docket No. 10-127, DA 14-748 (rel. May 30, 2014).

innovation that has brought immense benefits to consumers and innovators alike, enabling high-bandwidth applications such as Netflix to thrive and transform from a mail-order DVD business to an online video provider with 34 million subscribers (8 times the size of Charter). The continued success of the Internet ecosystem requires a careful balancing of numerous considerations, including facilitating consumer access to high-quality, affordable broadband service, avoiding disruption of the interconnecting networks that successfully power today's Internet, and preserving the investment incentives needed to meet ever-growing capacity demands—all while operating within the boundaries of the Commission's delegated statutory authority. The Commission's *Notice* reflects a diligent attempt to balance these considerations to generate a sensible set of rules for the Internet going forward. Charter lauds the Commission for the effort and consideration that went into the *Notice*, as well as the Commission's openness to considering and seeking comment on a wide range of various policy proposals.

Many of the ideas contemplated in the *Notice* represent thoughtful attempts to ensure that the Internet retains its current openness, without disrupting its vibrant growth. However, as with any notice that seeks input on a wide range of competing approaches on an exceedingly complex issue, some of the proposals put forward, particularly by some of the commenters in this proceeding, are highly problematic. Adoption of such proposals would result in ineffective, costly, and counterproductive policies that would undermine the Commission's efforts to promote a vibrant, fast, and open Internet. Given the importance of the Internet to consumers and the economy, Charter urges the Commission to consider carefully any proposals that would significantly impact the vigorous and open Internet that consumers currently enjoy and expect.

Any new rulemaking by the Commission in this area should be made against a simple backdrop: the Commission's historic approach of minimal regulation of broadband providers has

been immensely successful. This consciously adopted approach has used market forces to aggressively drive broadband deployment, increase speeds and promote innovative new services. Targeted regulations along with growing competition in the market have enhanced consumer protection. Contrary to the doom-and-gloom predictions of many advocates of public-utility-style regulation of broadband providers (many of whom would stand to benefit commercially from such increased regulation), the Internet is open and thriving today—and is doing so even absent the extensive regulation of broadband providers for which such regulatory advocates have been calling. When the existing regulatory environment is working already, the Commission should tread very carefully and be wary of creating costly new requirements that could upset the balance that has served the country well for all these years.

Two of the proposals discussed in the *Notice*, in particular, raise concern. First, reclassifying broadband as a Title II service—upending a decade-old regulatory regime—would harm broadband deployment and consumer services in ways that will far outweigh any benefits the Commission might derive from such an approach. Second, Charter views transparency as critical to a well-functioning marketplace, enabling the kind of light touch regulatory environment that a vibrant Internet requires. However, sustaining the success of the Commission's transparency rules requires that its disclosure requirements continue to be tailored to provide information that is actually useful to consumers and that can be meaningfully collected without undue burden. Several of the specific new transparency proposals stray from this effective approach. With respect to both classification of broadband and transparency, the Commission should help preserve the open Internet and the current, investment-friendly climate by steering clear of burdensome new requirements with little value to consumers or the Internet ecosystem.

I. THE OPEN INTERNET HAS BEEN FLOURISHING UNDER THE EXISTING CLIMATE OF "LIGHT TOUCH" REGULATION.

The Commission should approach this rulemaking with a note of caution: the Internet ecosystem in the United States today is thriving, and significant changes in the regulatory environment would derail what has been a success story in difficult economic times. Consumers are receiving ever-increasing performance from their connections, prices are falling, access is expanding, and innovation is flourishing. Contrary to the advocacy of some, including those who stand to benefit commercially from aggressive regulation, the Internet is open precisely because market forces and targeted regulation have made it so, not because of the sorts of restrictive regulations for which they are calling. Thus, while the Commission considers the possibility of additional regulations on the Internet ecosystem, it should heed the old maxim of "if it ain't broke, don't fix it" and be wary of disrupting the current climate of openness, innovation, and investment in order to address dangers that experience has shown to be more hypothesized than real.

A. The U.S. Internet Ecosystem Is Thriving.

Today's Internet marketplace is dynamic, innovative, and, most importantly, consumer-friendly. There is robust competition between and among wireline and wireless services; as the Commission acknowledges "[w]hole new product markets have blossomed in recent years, and the market for applications has both diversified and exploded;"[2] and there has been "tremendous growth in the online voice and video markets."[3]

Charter's experience bears this out. Charter's systems are widely dispersed across twenty-nine states. A substantial majority of Charter's subscribers live outside of the nation's

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[2] *Notice*, 29 FCC Rcd at 5571 ¶ 31.

[3] *Id.* at 5572 ¶ 32.

twenty largest designated market areas ("DMAs"). More than half of the counties that Charter serves are majority rural, and the cities it serves are primarily smaller cities. Yet Charter invested in and rebuilt these systems, deployed 100 Mbps downstream to consumers across its footprint, and has continuously increased the speed tiers it offers to its 4.5 million residential broadband customers: by the end of 2014, 60 Mbps will be the *slowest* speed it offers to 94 percent of homes passed. Charter also offers 802.11ac WiFi routers that have been found to be the fastest in the industry.[4] Importantly, at no point has Charter been accused of any instance of blocking, discrimination, or any of the various other evils predicted by advocates of more stringent broadband regulation.

Charter's growth and consumer-first business practices are representative of the Internet ecosystem as a whole. A recent report prepared by the Progressive Policy Institute ("PPI") concluded that "[U.S.] networks are faster, our prices more competitive, and our investments larger than most of the world's other major industrial nations"; and that consequently "U.S. broadband is provided in a dynamic, quickly changing market marked by dynamic shifts in products, services, and competitors, and breakneck innovation."[5] And indeed, across metrics, the U.S. Internet ecosystem is experiencing robust growth—growth that has occurred largely in the absence of top-down regulation of ISPs' operations.

Speed: U.S. retail broadband speeds are among the fastest in the world. Among G-7 nations—our principal trade partners and competitors—we rank second, behind only Japan,

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[4] *See* Press Release, *Charter Announces Launch of 802.11ac WiFi router - Capable of Providing the Fastest WiFi*, PR Newswire (April 17, 2014, 11:30 AM), http://www.nasdaq.com/press-release/charter-announces-launch-of-80211ac-wifi-router--capable-of-providing-the-fastest-wifi-20140417-00772#ixzz370MM8EIg.

[5] Everett Ehrlich, Progressive Policy Institute, *The State of U.S. Broadband* 2 (2014) ("PPI Report"), *available at* http://www.progressivepolicy.org/wp-content/uploads/2014/06/2014.06-Ehrlich_The-State-US-Broadband_Is-it-competitive-are-we-falling-behind.pdf.

where much higher population density and urbanization make broadband deployment significantly less cost-intensive.[6] Indeed, although a few countries have average connection speeds higher than the United States (which ranks tenth worldwide, according to Akamai's Fourth Quarter 2013 *State of the Internet Report*),[7] they are comprised in large part of either highly urbanized Asian economies with lower deployment costs or countries with significant direct government broadband subsidies.[8] According to the SamKnows reports, the United States also consistently performs well in terms of *reliability* of broadband speed *at advertised levels*, which may matter more to residential consumers.[9] Moreover, the average subscribed speed is now up to 21.2 Mbps—an average annualized speed increase of about 36 percent from 2012.[10]

Price: The United States also excels in affordability for fixed broadband. The expanding investment of U.S. broadband providers in new technologies and plants has driven prices downward—and caused broadband to become much more affordable than in many of our principal foreign competitors and trade partners. Although service levels for broadband services are structured differently in various economies, standardized pricing (using the indexing method

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[6] *Id.*

[7] Akamai, *Akamai's State of the Internet Q4 2013 Report* 17 (2014), *available at* http://www.akamai.com/dl/akamai/akamai-soti-q413.pdf?WT.mc_id=soti_Q413.

[8] PPI Report, *supra*, at 5; *cf.* Martin H. Thelle & Bruno Basalisco, Copenhagen Economics, *Europe Can Catch Up with the US: A Contrast of Two Contrary Broadband Models* 3 (June 2013) ("Thelle & Basalisco, *Broadband Models*"), *available at* http://www.copenhageneconomics.com/Website/News.aspx?PID=3058&M=NewsV2&Action=1&NewsId=708 (explaining that, given demographic, wealth, and geographic circumstances (including population density) there should be "less telecoms infrastructure deployment per household in the US than in the EU," but finding, instead that "the US generally comes out better in terms of broadband, supply, quality and price as of 2013").

[9] *See* Office of Engineering and Technology and Consumer and Governmental Affairs Bureau, FCC, *2014 Measuring Broadband America Fixed Broadband Report* 11, 14 (2014), *available at* http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf ("*2014 Report*").

[10] *Id.* at 13.

developed by the International Telecommunications Union) shows that "U.S. fixed broadband is the most affordable among [a] group of larger industrial nations."[11] Additionally, "the United States has been found to have the lowest entry-level prices for wired broadband access in the OECD,"[12] with entry-level prices particularly critical for helping to close the digital divide.[13]

Investment: In terms of investment, too, the U.S. broadband market is thriving. The raw numbers are simply stunning, with the U.S. broadband industry having invested $1.2 trillion in wireline, wireless, and cable since the 1996 Act, and with recent annual overall investments of over $60 billion.[14] Furthermore, as a share of GDP, broadband investment in the United States is higher than in Japan, Canada, and the other European G-7 nations.[15] One explanation for the different investment levels in the United States and Europe is the different regulatory and competition models: "as of the end of 2012, the U.S. [light touch regulatory] approach promoted broadband investment, while the European [public-utility] approach *had the opposite effect*

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[11] PPI Report, *supra*, at 7.

[12] *Id.*

[13] *See, e.g.*, Katherine Bates et al. ICF Int'l, *Closing the Digital Divide: Promoting Broadband Adoption Among Underserved Populations* 1 (2012), *available at* http://www.nlc.org/Documents/Find%20City%20Solutions/Research%20Innovation/Infrastructure/Closing_Digital_Divide_Promoting_Broadband_Adoption_Underserved_Populations.pdf.

[14] *See* US Telecom, *Broadband Investment*, http://www.ustelecom.org/broadband-industry/broadband-industry-stats/investment (last visited July 18, 2014); *see also Notice*, 29 FCC Rcd at 5571 ¶ 30 ("According to a June 2013 report by the White House Office of Science and Technology Policy, . . . nearly $250 billion in private capital has been invested in U.S. wired and wireless broadband networks since 2009. USTelecom reports that broadband capital expenditures have risen steadily, from $64 billion in 2009 to $68 billion in 2012." (footnote omitted)); *id.* ("Annual investment in U.S. wireless networks grew more than 40 percent between 2009 and 2012, from $21 billion to $30 billion, and exceeds investment by the major oil and gas or auto companies.").

[15] PPI Report, *supra*, at 8.

($562 of broadband investment per household in the U.S. vs. $244 per household in Europe)."[16] Put simply, the growth of investment in U.S. broadband has taken place in the private marketplace without the need for government intervention or regulation.

Competition: These investments are creating a marketplace that is increasingly competitive. In many Charter markets, it competes with other wireline broadband providers, such as AT&T and Verizon. Moreover, as wireless broadband technology and capacity expands, LTE increasingly presents a nationwide competitive choice that can be used for many of the same applications as wired broadband. There are now more than 62 million connected 4G devices in the United States,[17] and 89 percent of U.S. consumers have mobile broadband subscriptions.[18] Fifty million of them watched video on their phones in 2013.[19] And wireless broadband is steadily increasing in both speed and capacity: CTIA predicts that the average mobile data connection speed will reach 14.4 Mbps by 2017.[20] Cisco predicts aggregate

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[16] Christopher S. Yoo, *U.S. vs. European Broadband Deployment: What Do the Data Say?* i (June 2014), https://www.law.upenn.edu/live/files/3352-us-vs-european-broadbanddeployment (emphasis added); *see also* Thelle & Basalisco, *Broadband Models*, *supra*, at 6 ("A decade after US and EU broadband policies took two diverging paths, investment levels are very different. In fact, the latest available OECD estimates show that investment in telecommunications networks in the US per capita is more than 50 [percent] higher than in Europe (US$ 197 to US$ 129).").

[17] CTIA, Ex Parte Communication at 2, GN Docket No. 09-51, WT Docket No. 13-135 (Nov. 13, 2013) ("CTIA *Ex Parte*"), *available at* http://www.ctia.org/docs/default-source/default-document-library/networks.pdf?sfvrsn=0.

[18] CTIA, *89 Percent of US Are Mobile Broadband Subscribers*, CTIA Resource library (Nov. 13, 2013), http://www.ctia.org/resource-library/facts-and-infographics/archive/us-mobile-broadband-versus-oecd.

[19] CTIA, *50 Million Americans Watched Video via Mobile Phones*, CTIA Resource Library (Apr. 16, 2014), http://www.ctia.org/resource-library/facts-and-infographics/archive/50-million-video-via-mobile (data as of 2013).

[20] CTIA *Ex Parte*, *supra*, at 2.

smartphone traffic will grow more than 10 times by 2018.[21] AT&T now markets "Wireless Home Phone and Internet" nationwide, and Verizon, a "4G LTE Broadband Router," as complete substitutes for wireline access, claiming broadband speeds of up to 12 Mbps downstream by 5 Mbps upstream.[22]

B. The Existing Regulatory Regime Has Protected, and Will Continue to Protect, the Openness of the Internet.

As described above, the Internet today is healthy, vibrant, and open. And this thriving ecosystem is the product of marketplace discipline and the Commission's existing regulations. As the Commission is well aware, there have been no enforceable rules against either "blocking" or "discrimination" since the *Verizon* decision,[23] and yet there still has been no indication of either practice.[24] This is hardly surprising. Consumers continue to demand Internet openness, creating powerful financial and reputational incentives for ISPs to offer it. Furthermore, the

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[21] Cisco, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2013-2018* (Feb. 5, 2014), http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white_paper_c11-520862.html.

[22] AT&T, *AT&T Wireless Home Phone and Internet Frequently Asked Questions*, http://www.att.com/shop/en/Upper_Funnel_Promo_Modals/home_phone_promo_modals/wireless-home-phone-internet-faqs.html (last visited July 14, 2014); Verizon, *Home Services*, http://www.verizonwireless.com/wcms/consumer/home-services.html?tab=2 (last visited July 14, 2014).

[23] *Verizon v. FCC*, 740 F.3d 623 (D.C. Cir. 2014) (affirming in part, and vacating in part, the Commission's *Open Internet Order*, *In re Preserving the Open Internet Broadband Industry Practices*, Report and Order, 25 FCC Rcd 17,905 (2010)); *see also Notice*, 29 FCC Rcd at 5563 ¶ 3.

[24] Indeed, the only recent instances of Internet blocking have been by content providers blocking consumers from accessing their content based on the ISP they were using. *See, e.g.*, Todd Spangler, *Why the FCC Is Not Taking Action to End the CBS Blackout on Time Warner Cable*, Variety (Aug. 16, 2013), *available at* http://variety.com/2013/biz/news/why-the-fcc-is-not-taking-action-to-end-the-cbs-blackout-on-time-warner-cable-1200579806/. While some advocates have pointed to the recently announced Comcast-Netflix interconnection arrangement as evidence that ISPs are beginning to exert their "market power" or "gatekeeper monopoly power," that arrangement has nothing to do with either blocking or discrimination—it involved a disagreement about interconnection, not the "last mile" that is the focus of this proceeding. *Notice*, 29 FCC Rcd at 5582 ¶ 59.

FCC's existing disclosure and transparency rules, adopted as part of the *Open Internet Order* in 2010, require ISPs to disclose their traffic management practices. These disclosure obligations are complemented by a growing number of free, online tools for consumers to evaluate their broadband service. Such regulations and tools allow consumers (and advocates) to monitor whether ISPs engage in practices of which they disapprove.[25] The public response to this *Notice* demonstrates that consumers, and the media, will continue to play an active role in policing such conduct.

The effectiveness of the market in policing ISP behavior is not new. During the evolution of the modern Internet, there has *never* been a sustained period during which there have been legally enforceable rules regarding blocking or discrimination by ISPs.[26] Yet the "virtuous cycle" of continuous investment and innovation has been able to develop and flourish in this environment of self- and market-based regulation.

Charter has pledged, as have other ISPs, not to block access to lawful online content or services.[27] And although there has been concern among some advocates of regulation about the

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[25] 47 C.F.R. § 8.3.

[26] *Notice*, 29 FCC Rcd at 5582 ¶ 9 ("Although the Commission has emphasized for almost a decade the importance of legally enforceable standards, the [D.C. Circuit] has twice invalidated the Commission's attempts . . . ."). To be sure, the Commission also has imposed open Internet requirements on particular carriers through licenses and merger-review proceedings, *see id.* at 5566-67 ¶¶ 14-16, but such individualized actions are not tantamount to an open Internet *policy* capable of determining investment and innovation on an industry-wide basis.

[27] *See* Press Release, *Statement of NCTA President & CEO Michael Powell Regarding Today's Decision by the U.S. Court of Appeals for D.C. Circuit* (Jan. 14, 2014), *available at* https://www.ncta.com/news-and-events/media-room/content/statement-ncta-president-ceo-michael-powell-regarding-today%E2%80%99s-decision-us-court-appeals-dc ("The cable industry has always made it clear that it does not—and will not—block our customers' ability to access lawful Internet content, applications or services."); *Net Neutrality: Hearing Before the S. Comm. on Commerce, Sci., & Transp.*, 109th Cong. 21 (Feb. 7, 2006) (statement of Kyle McSlarrow, President & CEO, National Cable & Telecommunications Ass'n), available at http://www.gpo.gov/fdsys/pkg/CHRG-109shrg30115/pdf/CHRG-109shrg30115.pdf ("[L]et me be clear, NCTA's members have not, and will not, block the ability of their high-speed Internet

possibility of so-called "pay-for-priority" arrangements, the Commission has acknowledged that such arrangements have not, in fact, materialized.[28] Although the Commission has expressed concern about the *possibility* that ISPs might have the ability and incentive to compromise the free availability of content online, such possibility is hardly unique to ISPs: countless other entities in the Internet ecosystem have similar incentives and arguably greater power to act on them. The Internet of today is markedly different from what existed when the open Internet principles were first adopted by the Commission in 2005. For instance, the largest edge providers, such as Google, Apple, Amazon, and Facebook, are responsible for a huge portion of Internet traffic,[29] and often control substantially larger shares of their respective markets (*e.g.*, for search, long- and short-form Internet video, online commerce, etc.) than most ISPs control in

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service customers to access any lawful content, application, or services available over the public Internet."); *see also* Charter Communications Network Management Practices, *available at* https://www.charter.com/browse/content/network (last visited July 14, 2014) ("Charter Communications Network Management Practices").

[28] *See Notice*, 29 FCC Rcd at 5574 ¶ 36 (acknowledging that even in 2010, "[t]he record contained *no evidence* of U.S. broadband providers engaging in pay-for-priority arrangements" and that "such arrangements would be a significant departure from historical and current practice" (emphasis added) (internal quotation marks omitted)).

[29] *See* Bret Swanson, Entropy Economics, *How the Net Works* 4-6 (Feb. 21, 2014), *available at* http://entropyeconomics.com/wp-content/uploads/2014/02/How-the-Net-Works-A-Brief-History-of-Internet-Interconnection-EE-02.21.14.pdf (describing rise of Internet hyper giants: Microsoft, Facebook, Amazon, and Apple); *see also* Drew Fitzgerald & Daisuke Wakabayashi, *Apple Quietly Builds New Network*, Wall St. J. Online (Feb. 3, 2014, 7:40 PM), http://online.wsj.com/news/articles/SB10001424052702304851104579361201655365302?mg=reno64wsj&url=http%3A%2F%2Fonline.wsj.com%2Farticle%2FSB10001424052702304851104579361201655365302.html. *See generally* Arbor Networks, *Two-Year Study of Global Internet Traffic Will Be Presented at NANOG47*, Press Release (Oct. 13, 2009), *available at* http://www.arbornetworks.com/news-and-events/press-releases/2009-press-releases/1810-two-year-study-of-global-internet-traffic-will-be-presented-at-nanog47 (describing release of the "largest study of global Internet traffic," which found, among other things, that Internet "'hyper giants' . . . generate and consume a disproportionate [share] of all Internet traffic").

the market for retail broadband access.[30] Moreover, such edge providers unquestionably have the ability and incentive to engage in forms of blocking and discrimination to protect their own, or their affiliates', commercial interests, such as through prioritizing search results and other forms of information filtering,[31] or by blocking access to their content by the customers of ISPs as a means of obtaining leverage in commercial negotiations.[32] The point is not that the

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[30] For example, Google's share of the search market, as measured by percentage of search queries, is over 65 percent, whereas Bing's share (Google's closest competitor) is under 20 percent. *See* comScore, *comScore Releases March 2014 U.S. Search Engine Rankings*, Press Release (Apr. 15, 2014), *available at* https://www.comscore.com/Insights/Press-Releases/2014/4/comScore-Releases-March-2014-U.S.-Search-Engine-Rankings. Similarly, "Facebook remains the dominant player in the social networking space. Some 71[] [percent] of online adults are now Facebook users, a slight increase from 67[] [percent] of online adults who used Facebook as of late 2012." Maeve Duggan & Aaron Smith, Pew Research, Internet Project, *Social Media Update 2013*, (Dec. 30, 2013), http://www.pewinternet.org/2013/12/30/social-media-update-2013/. And as measured by downstream volume, Netflix continues to dominate the video streaming market, notwithstanding Amazon's increasing share; Netflix is responsible for 57.5 percent of such traffic, compared to YouTube's 16.9 percent and Amazon's 3.0 percent. *See* Mark Fisher, Qwilt, *Amazon Rising—Amazon's Streaming Video Surpasses Hulu and Apple* (Apr. 4, 2014), http://qwilt.com/amazon-rising-amazons-streaming-video-surpasses-hulu-and-apple/. By way of contrast, Comcast, the largest ISP, currently has a market share of 24 percent in terms of fixed broadband subscribers, pending its proposed merger with Time Warner Cable ("TWC"), *see* Leichtman Research Group, Inc., *Research Notes 2Q* 2014 7 (June 2014), *available at* http://www.leichtmanresearch.com/research/notes06_2014.pdf. and, in the event that merger is consummated, the combined company would still have a market share of only 35.5 percent, *see* Comcast Corporation, Charter Communications, Inc. & Time Warner Cable Inc., Ex Parte Communication at 2, MB Docket No. 14-57 (June 27, 2014), *available at* http://apps.fcc.gov/ecfs/document/view?id=7521373487. Indeed, the current *aggregate* market share of the largest cable companies (*i.e.*, even absent the Comcast-TWC merger and related divestitures) is only 58 percent. *See* Leichtman Research Group, Inc., *Research Notes*, *supra*, at 7. *See generally* Zach Christenson, *If ISPs Are Too Powerful, Isn't Amazon?,* Real Clear Policy (June 3, 2014), http://www.realclearpolicy.com/blog/2014/06/03/if_isps_are_too_powerful_isnt_amazon_962.html.

[31] *See, e.g.*, Naomi Shavin, *Are Google and Amazon the Next Threat to Net Neutrality?,* Forbes Online (July 2, 2014, 6:46 PM), http://www.forbes.com/sites/naomishavin/2014/07/02/are-google-and-amazon-the-next-threat-to-net-neutrality/.

[32] *See, e.g.*, Spangler, *supra* (noting that "CBS.com began blocking all Time Warner Cable broadband customers from access[ing] full-length episodes" and that "[t]he blockade affects Time Warner Cable high-speed Internet customers nationwide, even those who have a different TV provider"); Brian Stetler, *Internet is a Weapon in Cable Fight*, NY Times, Oct. 19, 2010

Commission should be creating regulatory requirements up and down the Internet ecosystem, but rather that market forces have proven effective at policing whatever incentives might exist for any player in the Internet ecosystem—whether ISP, edge provider, or otherwise—to engage in conduct that threatens its openness.

II. "RECLASSIFICATION" OF BROADBAND INTERNET SERVICES UNDER TITLE II CONTINUES TO SUFFER FROM LEGAL DEFECTS AND WOULD HAVE UNINTENDED DISRUPTIVE CONSEQUENCES BEYOND THE SCOPE OF THE REGULATIONS CONTEMPLATED BY THE NOTICE.

Most troubling in the *Notice* is the prospect that the Commission might abandon its traditional reliance on market discipline and instead fundamentally revamp the regulatory framework for broadband. The Commission's 2002 decision in the *Cable Modem Declaratory Ruling* that broadband Internet service would be treated as an information service, and not a telecommunications service subject to Title II requirements,[33] has been successful in creating a climate of regulatory predictability and substantial private investment. Trying to fit broadband under the Commission's Title II authority would upend this climate, creating a prolonged period of legal uncertainty that would dampen investment and ultimately harm consumers.

A. Last-Mile ISPs Continue to Integrate Functionalities into Retail Internet Service that Make Reclassification Inappropriate.

At the outset, the *Notice* asks whether there have been "changes to the broadband marketplace that should lead [it] to reconsider" its prior classification of broadband access as an information service.[34] Not only have there been no such marketplace changes to merit

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(noting extension of News Corporation's blackout of content to Cablevision subscribers attempting to access content online through Fox.com and Hulu); *available at* http://www.nytimes.com/2010/10/20/business/media/20hulu.html.

[33] *In re Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities*, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd 4798 (2002).

[34] *Notice*, 29 FCC Rcd at 5614 ¶ 150.

reclassification, the current Internet classification has allowed the Internet to evolve in a manner that has enabled broadband access service to become even *more* like an information service and *less* like a telecommunications service, reinforcing the Commission's existing regulatory framework.

End users that request specific information through their broadband connections (*e.g.*, content from an edge provider), do not, in any meaningful way, specify or need to limit the location from which such information is retrieved. They specify the information they want to retrieve (*e.g.*, content from a particular newspaper's website), but other parties managing the network make determinations as to the most expedient source from which the communication might flow. For instance, edge provider content today may be stored on and transmitted from the edge provider's servers, but it may also reside on redundant locations such as third-party CDNs and ISP caches designed to speed users' access to the content.[35]

This evolution in the Internet has legal significance. Retrieving information requested by a user, from a location of the choosing of third parties or the ISP itself, is not "telecommunications" (*i.e.*, "transmission, between or among points *specified by the user*")[36] but rather lies at the core of the definition of an "information service": the "capability for . . . retrieving . . . information via telecommunications."[37]

Moreover, the correctness of the *Cable Modem Declaratory Ruling* continues to be borne out in other regards as well. Broadband Internet access continues to comprise features such as

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[35] The *Cable Modem Declaratory Ruling* recognized this development with the role of ISP caching, which has since become (along with analogous network features such as CDNs and CDN collocation) a critical part of the Internet infrastructure. *See Cable Modem Declaratory Ruling*, 17 FCC Rcd at 4809-11 ¶ 17 & n.76; *id.* at 4836-37 ¶ 67.

[36] 47 U.S.C. § 153(50) (emphasis added).

[37] *Id.* § 153(24).

network management, security, and Domain Name Service ("DNS"), each constituting the literal "offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications" under the Act.[38] These features of broadband Internet access, which previously led the Commission to classify it as an information service, have not materially or fundamentally changed. Accordingly, it is far from certain that the Commission even *could* reclassify broadband access as a telecommunications service today. At the very least, any such decision would face serious legal hurdles and litigation that would leave the industry in regulatory limbo for years.

B. Extension of Title II Requirements, Even with Forbearance, Would Disrupt Settled Expectations and Subject Internet Access Providers to Prolonged Periods of Uncertainty.

In addition to the legal arguments for maintaining the Commission's existing legal framework for broadband services, there are practical and policy reasons to stay the course. In the twelve years since the *Cable Modem Declaratory Ruling*,[39] broadband providers have made massive investments in reliance on the expectation of an open, minimally regulated broadband marketplace. As noted in Part I, those long-term, billion-dollar investments have fueled, among other things, a massive nationwide expansion of broadband that has brought rising speeds and falling prices to ever-expanding segments of the population. Changing the rules midstream to classify broadband service as a "telecommunications service" under Title II would inequitably frustrate the expectations that informed these investments, while exposing broadband providers to a substantial range of new legal and regulatory risks that disincentivize further investment.

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[38] 17 FCC Rcd at 4820 ¶ 34 (quoting 47 U.S.C. § 153(20)).

[39] *See Verizon*, 740 F.3d at 631-32 (discussing regulatory history and citing Commission orders).

Where, as here, a "prior policy has engendered serious reliance interests that must be taken into account," it "would be arbitrary or capricious to ignore such matters."[40]

Moreover, Title II is a poor fit for today's broadband marketplace. It was enacted to regulate the then-existing monopoly telephone companies. This comprehensive statutory scheme contains dozens of reinforcing and interrelated substantive and administrative requirements,[41] virtually all of which, even the Commission itself recognizes, have little sensible application to Internet providers today.[42] There is accordingly no serious proposal before the Commission to apply Title II wholesale to broadband services in the manner in which it was originally intended to operate.[43] Yet even more modest proposals to use the Commission's forbearance authority to mitigate the consequences of classifying broadband services under Title II create risks that the Commission should not underestimate.

At the outset, one consequence of Title II reclassification would be to create a new legal landscape in which broadband providers would be subject to vague statutory prohibitions that their prices, terms, and conditions of service be "just and reasonable," and that they not engage in "unjust and unreasonable" discrimination among customers.[44] The Commission has undertaken decades of work to fully flesh out the meaning of those terms in the telephony

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[40] *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515-16 (2009).

[41] 47 U.S.C. § 201 *et seq.*

[42] *Notice*, 29 FCC Rcd at 5615-16 ¶¶ 153-55; *see also In re Framework for Broadband Internet Service*, Notice of Inquiry, 25 FCC Rcd 7866, 7895, 7797-99, 7902 ¶¶ 68, 74-76, 86 (2010).

[43] As the National Cable and Telecommunications Association points in out in its comments, public utility–style regulation has historically resulted in under-investment in other contexts, such as the electrical grid, water supply system, and transportation infrastructure. *See* National Cable & Telecommunications Association, Comments at 23-24, GN Docket Nos. 14-28, 10-127 (June 15, 2014). The Commission surely wants to avoid such consequences in the broadband context, where substantial investment is still needed.

[44] 47 U.S.C. § 201 (pricing, terms and conditions, and compulsory service); *id.* § 202 (nondiscrimination).

market. In the very different broadband marketplace, those terms are entirely undefined—and permit a vast range of possible interpretations that might be assigned to them by different litigants, federal courts, or future Commissions. Thus, while the Commission may be envisioning Title II reclassification as a short-term fix to ground its authority for its currently-planned Open Internet rules, using Title II to do so would expose broadband providers to a new legal environment in which the rules are still unwritten and their future direction unknown. In contrast to the market forces the Commission has wisely allowed to govern much of the evolution of the modern Internet, such a restrictive regulatory scheme would represent a sea change likely to cause many investors to move their funds to areas offering more certain returns, depriving ISPs of capital needed to improve their networks. Moreover, as discussed *supra*, the reclassification decision would *itself* surely also be subject to an extended legal challenge that would further exacerbate investment-inhibiting regulatory uncertainty.

Limits of Forbearance: The *Notice* seeks comment on use of the agency's forbearance authority were it to classify internet access as a Title II service.[45] Any forbearance decisions the Commission might make would be subject to attack by third parties with vested commercial or ideological interests in the application of more stringent regulation than the Commission may intend. Accordingly, such decisions would likely be tied up in litigation for years to come, further destabilizing the legal, regulatory, and investment environment until those challenges can be resolved. Even if a reviewing court were to uphold the Commission's initial forbearance determinations, they would remain vulnerable to future "unforbearance" actions, whether initiated by the Commission or by a private-party complainant. Given the dynamism with which

[45] *Notice*, 29 FCC Rcd at 5615-16 ¶ 153.

the broadband market continues to change, such challenges could continue to pose risks to the governance of the Internet well into the future.

C. Alternate Title II Proposals Floated in the Notice Fare No Better.

The *Notice* also seeks comment on several approaches to utilize the Commission's Title II authority in other ways to ground Commission regulation of broadband providers. Each is problematic.

First, the Commission seeks comment on a proposal to proceed under Section 706, but to use Title II as a "backstop authority" in case a reviewing court decides that the Commission's Open Internet regulations exceed its statutory authority under Section 706.[46] On this theory, broadband access would be an information service—unless a Court strikes down the Commission's Open Internet rules, in which case it would convert to a telecommunications service, thus ostensibly attempting retroactively to increase the Commission's statutory authority and save the rules from judicial review.

Of course, since extending Title II to the Internet is inadvisable for the reasons discussed above, it should not be invoked in the broadband context at all—whether as the Commission's first choice or as its second choice if a reviewing court does not accept the Section 706 approach. But the larger flaw with this proposal is that it would represent results-oriented application of the statutory criteria defining "telecommunications service" and "information service" under the Act rather than a serious application of the statute. The Commission has long held that these two classifications are mutually exclusive and that their application turns on the factual characteristics of the service at issue.[47] Allowing a decision about how to classify broadband

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[46] *Id.* at 5614 ¶ 150.

[47] *See, e.g.*, *In re Federal-State Joint Board on Universal Service*, Report to Congress, 13 FCC Rcd 11,501, 11507-08 ¶ 13 (1998); *see also Verizon*, 740 F.3d at 630 (describing that for "more

Internet to turn instead on how a reviewing court decides the scope of the Commission's Section 706 authority, which has nothing to do with the relevant statutory criteria, would not represent faithful application of the statute and would be arbitrary and capricious.

Second, the *Notice* floats the legal theory of characterizing downstream traffic delivery as a service *to edge providers* distinct from the service ISPs provide to retail customers.[48] The Commission seeks comment on two similar proposals, one offered by Mozilla, and one by academics at Columbia University, to classify this supposed "service" separately under Title II.[49]

These types of theories are inconsistent with the statutory text as well as the Commission's well-reasoned decision in the C*able Modem Declaratory Ruling*. Broadband ISPs do not provide a service "for a fee directly to the public" when they carry downstream traffic from edge providers to their end users. And even if they do provide a separate "service" when they carry such traffic, established Commission precedent makes clear that such a service is an information service.

First, ISPs are not engaging in a separate "offering" of a service to edge providers distinct from their offering to end-users. The Commission has already held that the service offered to end users includes both "upstream and downstream data transmissions,"[50] as well as integrated

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than twenty years," prior to the enactment of the Telecommunications Act of 1996, the Commission distinguished between "basic" and "enhanced" services); *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Serv.*, 545 U.S. 967, 991 (2005) (explaining that "[t]he entire question" of how to classify a particular service "turns not on the language of the Act, but on the factual particulars of how Internet technology works and how it is provided").

[48] *Notice*, 29 FCC Rcd at 5614-15 ¶ 151.

[49] *Id.* at 5615 ¶ 152.

[50] *See Cable Modem Declaratory Ruling*, 17 FCC Rcd at 4806-07 ¶12 (offering includes "upstream and downstream data transmissions"); *id.* at 4807 ¶13 ("two-way capabilities"); *id.* at 4809 ¶ 17 ("Internet connectivity functions enable cable modems service subscribers to transmit data communications to *and from* the rest of the Internet" (emphasis added)).

functions such as DNS and caching.[51] Those are the very functions that the related Mozilla and Columbia proposals now try to categorize as a separate offering, even though they are already rolled up in the offering to end users. But more importantly, the caching and network management functions critical to the Commission's *Cable Modem Declaratory Ruling* are just as inextricably intertwined with the downstream delivery component of broadband Internet access as with its upstream component, if not more so.

Second, even if one might characterize broadband carriage of edge providers' downstream traffic as a "service," it is not a "service" being provided "for a fee" or "directly to" the edge providers who send the traffic downstream. ISPs typically lack any relationship at all with edge providers, much less a privity relationship in which services are provided "for a fee." ISPs usually receive traffic containing edge provider content and transmissions through intermediate transit providers or peering partners, not from the edge providers directly. In the telephony context, by way of analogy, the Commission does not consider traffic termination by a local exchange carrier ("LEC") a service to the originating LEC if the two LECs do not interconnect. And although there may be rare instances in which last-mile ISPs reach special direct interconnection agreements with particular edge providers, those are not agreements held out to the public, but individually negotiated commercial arrangements with substantial variation in their individual terms. Thus, the Mozilla and Columbia proposals do not work within, nor are they contemplated under, the text of the statute: there is no plausible reading of the Communications Act in which last-mile ISPs are offering a "telecommunications service" to edge providers.

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[51] *Id*. at 4809-11 ¶ 17.

The Commission took the right approach in the *Cable Modem Declaratory Ruling*, both as a matter of law and of policy, and it should not reconsider that approach as a basis for grounding new broadband regulations for which there has been no demonstrated need.

III. THE COMMISSION SHOULD CONTINUE ITS CURRENT TRANSPARENCY APPROACH RATHER THAN CREATING BURDENSOME REQUIREMENTS UNLIKELY TO BENEFIT CONSUMERS.

One of the reasons that the openness of the Internet has thrived even absent the types of mandatory common carrier duties that might flow from a Title II reclassification is that the Commission's existing transparency regime has helped create a system of market discipline that makes such regulation unnecessary. The disclosure rules created in the *Open Internet Order* have promoted an environment in which consumers demand unfettered access to the lawful content of their choosing and are empowered to hold ISPs accountable. Indeed, the nation's ISPs need look no further than the intense public engagement in the issues in this docket to understand that there is a tremendous demand for unfettered Internet access that is in ISPs' interests to continue to meet, and that consumers will punish any broadband provider unwilling or unable to do so. As a company committed to providing its subscribers with access to the lawful content of their choosing without interference, Charter supports the Commission's existing system of transparency requirements, which reinforces the promises that Charter makes to its subscribers, guarantees that consumers can have confidence in those promises, and ensures that Charter's competitors are required to play by the same rules.[52]

The Commission's approach to transparency has thus served both consumers and broadband providers well over the years by providing a spotlight that has protected the Internet

[52] Indeed, given the effectiveness of its disclosure rules applying to broadband providers, the Commission should consider the benefits to the Internet ecosystem of extending comparable requirements to other players in the marketplace, such as edge providers.

from threats to its openness. Some of the new transparency proposals put forward in the *Notice*, however, stray from the smart and balanced approach reflected in the Commission's existing rules. By requiring the costly monitoring and reporting of data that will not meaningfully help consumers understand or make good decisions about their broadband service options, some of the proposed new requirements could have the effect of suppressing investment and innovation without adding in any meaningful way to the benefits created by the requirements already in place. Ultimately, the cost of complying with unduly burdensome transparency requirements will fall upon consumers who are supposed to be the ultimate beneficiaries. To the extent that subscribers and members of the public are interested in much of the information described in the *Notice* that goes above and beyond the formal reporting requirements under the rules today, a wealth of online sources already exist from which they can gather such information themselves at much less expense and difficulty.

A. Consumers Benefit from the Commission's Existing Transparency Rules for ISPs as Well as from Public Sources of Additional Information.

Charter subscribers benefit from the extensive information they receive about Charter's Internet products through marketing materials, Charter's web site, and in posted details on Charter's speed and pricing options, network management practices, and other terms and conditions.[53] Among other things, Charter offers clear information about download and upload speeds, as well as unbundled and bundled prices, with and without WiFi. It explains when promotional rates will revert to standard rates. It provides latency by tier in milliseconds and describes how its congestion management tools operate.[54] Achieved speeds are detailed using the Commission's Measuring Broadband America reports. To make those figures

[53] *See* Charter Communications Network Management Practices, *supra*.

[54] *Id*.

comprehensible to lay users, Charter also translates the relevant metrics into consumer terms, such as how quickly 100 Mbps service will download a number of songs or upload a number of photos and how it supports streaming HD movies from the Internet. Charter also makes a speed test application available to our subscribers.[55] This application allows a customer, on demand, to test their download speed, upload speed, latency, and jitter to speed test servers located on Charter's network. Finally, Charter also posts a point of contact for edge technology and service providers to raise any questions, concerns, or escalation of issues needing resolution.[56]

Charter believes that this marketing and messaging provides consumers with important information and meets the voluntary Ofcom standards referred to in the *Notice*.[57] More importantly, these disclosures are comprehensible to the average consumer, fully inform customers of what to expect from their service, and help them make choices about their broadband subscription.

Consumers also have accurate and reliable information available to them about the expected performance of their broadband connections—both from Charter and from other ISPs. The 2014 SamKnows report has confirmed that cable broadband providers are consistently delivering the broadband performance they promise in their advertising.[58] Cable-based broadband services delivered 102 percent of advertised download speeds and 111 percent of

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[55] Charter's web-based speed testing application can be accessed at speedtest.charter.com.

[56] *See* Charter Communications Network Management Practices, *supra*.

[57] The Ofcom voluntary Code of Practice noted in the *Notice*, 29 FCC Rcd at 5588 ¶ 72 n. 169, calls for disclosure of average speed, the impact of any traffic management, and information on any specific services that are blocked.

[58] *2014 Report*, *supra*, at 14-15.

upload speeds and averaged only 32 milliseconds latency, and even during peak periods all ISPs (except for DSL) are meeting 90 percent of performance or better.[59]

Although the *Notice* relays anecdotal examples of customers dissatisfied with their broadband speeds,[60] the SamKnows report shows that such anecdotal reports are not indicative of the state of the industry more generally. To the contrary, it has been Charter's experience that such complaints rarely have anything to do with the broadband provider's network. They are often related to a customer's in-home equipment, such as malware or a misconfigured WiFi router. But none of Charter's subscribers, to its knowledge, have expressed the need for more information than Charter already provides about the terms or performance of its broadband service.

As discussed in more detail below, certain performance metrics, including packet loss and jitter, speed to a particular device, and individual data consumption, are costly and difficult for ISPs to measure at the network level. For instance, to accurately measure packet loss or jitter, an ISP needs a device at the consumer premises (such as the whiteboxes used in SamKnows testing) with the capability to run certain software in the subscriber's home, as modems today do not have that capability. In comparison, there are a wide range of free web-based and software tools subscribers currently can use to measure these metrics. For instance, as mentioned above, Charter makes a web-based speed test application available to its subscribers[61] (as well as made the servers supporting that application available through the third-party speedtest.net website) that can measure additional technical criteria such as jitter on an individualized basis, in addition to the network-level monitoring that Charter provides in its

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[59] *Id.* at 15.

[60] *Notice*, 29 FCC Rcd at 5586-87 ¶ 69.

[61] As noted, Charter's web-based speed testing application is available at speedtest.charter.com.

disclosures. Third-party applications have proliferated as well: Internet users can go to various online sites offering "Ping Test[s]"[62] or "Speed Test[s]" that will report their individualized network performance.[63] There has also been a proliferation of third-party software tools (such as NetState Live, tbbMeter, BitMeter OS, FreeMeter, and Bandwidth Vista) that allow an Internet user to measure data consumption and traffic flow.[64] Indeed, the Microsoft Windows 8 Operating System has this functionality already built-in so that users can keep track of their data usage without even needing to download third-party software.[65] It is much easier for a consumer to measure these metrics directly because the tools are able to use the computing power of the consumer's device. Indeed, not only are such tools more efficient than network-level testing by the ISP, they are also able to incorporate important features of the consumer experience into which the ISP will lack visibility, such as the functionality of a consumer's WiFi router.

Third parties also have ample information available to them. Charter, for example, has posted a point of contact for edge technology and service providers to answer open questions or concerns or to escalate issues with respect to Internet service offerings or network management.[66] And third parties such as academics that are interested in understanding congestion in detail are already able to do so by studying information that is publicly available.

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[62] *See, e.g.*, http://www.pingtest.net/.

[63] *See, e.g.*, MegaPath Speed Test Plus, *available at* http://www.megapath.com/speedtestplus/.

[64] *See, e.g.*, MakeTechEasier, How to Monitor Your Internet Usage [Windows 7], *available at* http://www.maketecheasier.com/monitor-internet-usage-wind/.

[65] *See, e.g.*, MakeTechEasier, How to Monitor Your Network Usage in Windows 8 (And Prevent Paying For The Extra Bandwidth), *available at* http://www.maketecheasier.com/monitor-network-usage-in-windows-8/.

[66] *See* Charter Communications Network Management Practices, *supra*.

A team from MIT, for instance, recently issued a detailed report on Internet congestion based on publicly available information, without the need for regulated data feeds.[67]

The wealth of information about broadband performance already available—both from ISP disclosures under the Commission's existing transparency rules, and from tools already accessible to Internet users and third parties who want them—counsels against creating new and more challenging data collection and reporting requirements. There is simply no basis for finding that such requirements would address real needs that cannot be met today.

B. Some of the Proposed New Disclosure Rules Would Impose Burdens While Failing to Provide Meaningful Benefits to Consumers.

While Charter supports providing consumers with accurate and meaningful information about their Internet performance, certain proposals put forth in the *Notice* would create substantial costs or logistical difficulties for providers and increase customer confusion, with little benefit to consumers or the Internet ecosystem.

1. Disclosures to Users.

The *Notice* tentatively proposes to expand substantially the required disclosures, and that ISPs be required to report the "the source, location, timing, speed, packet loss, and duration of network congestion;" "any instances" of blocking or throttling; and "packet loss," "packet corruption," and "jitter" in addition to speed and latency, which are reported today under current

[67] MIT Information Policy Project, *Measuring Internet congestion: A preliminary report*, *available at* https://ipp.mit.edu/sites/default/files/documents/Congestion-handout-final.pdf. That team was able to conclude that congestion at interconnection points is not widespread, that, where it occurs, it is transient and shifting, and that customer experiences with degraded performance are often due to many factors well beyond an ISP's control, such as the capacity of a home WiFi system or the capacity of the source CDN server. *Id.* at 2.

transparency rules and through the Measuring Broadband America program.[68] Charter discusses each of these proposals below:

Congestion Reporting: The Notice seeks comment on a proposal to require ISPs to provide "meaningful information regarding the source, location, timing, speed, packet loss, and duration of network congestion."[69] Because ISPs can monitor only a portion of the transmission path between a consumer and an edge provider, the information that could be collected would be of limited usefulness and inequitably burden the ISP relative to other potential sources of congestion.

ISPs should not have to bear the sole burden of monitoring and reporting congestion. Broadband providers, as the Commission has been advised, are frequently not its cause.[70] Congestion can arise on edge providers' servers, CDNs, transit provider networks, and on customers' home equipment such as their computer or WiFi router. Requiring ISPs, but not other participants in the Internet ecosystem, to engage in an extensive monitoring and reporting effort not only places the entire cost of monitoring congestion on one of many parties to the Internet ecosystem, but also would produce data of limited usefulness—it would leave consumers, and the Commission, knowing nothing about performance issues elsewhere on the network.

The proposed congestion reporting requirement also raises a host of practical difficulties. Most congestion events, in Charter's experience, are highly localized and transient phenomena—individual CMTSs or routers may experience short periods of congestion, but such congestion

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[68] *Notice*, 29 FCC Rcd at 5587-88 ¶¶ 72-73. Although the *Notice* also requests comment on whether to "include measurement" of "latency" as part of its transparency efforts, *id.* at 5588 ¶ 73, that metric is already measured through the Measuring Broadband America report today.

[69] *Id.* at 5591 ¶ 83.

[70] *Id.* at 5591 ¶ 82.

does not necessarily impact actual performance to end-users because traffic is usually instead routed through alternate, redundant paths. Reporting on a multitude of internal congestion events will provide little insight into the actual user experience, and is likely to mislead consumers into believing that there are performance problems when networks are already engineered to accommodate such events without impacting end-users.

Moreover, collecting such information would be incredibly burdensome. In order to manage traffic, Charter expends substantial resources to monitor and analyze the performance of the hundreds and thousands of upstream interfaces, downstream interfaces, and routers on its network for its own internal purposes, such as ensuring that it is predicting and adding capacity where needed. Requiring ISPs separately to collect and analyze vast data sets as part of a reporting regime as well would add to the cost and difficulty of what is already a challenging effort. Moreover, ISPs use a host of various different proprietary reporting tools and methods to monitor their network usage, so an "apples-to-apples" comparison across providers is currently infeasible. And it makes little sense to force ISPs to engage in substantial restructuring of their already-complicated network monitoring efforts solely for purposes of meeting a reporting obligation of questionable utility.

The cost and effort involved to overcome these difficulties, on the other hand, cannot be justified by any real need for additional consumer information. From a consumer perspective, network congestion matters only when it affects the performance and speed of connections—which Charter and other ISPs already report and monitor through the Measuring Broadband America program.

Throttling: The *Notice* also seeks comment on a proposal to require broadband providers to disclose "any instances" of blocking or throttling. Although Charter discloses its network

management practices today,[71] a requirement that broadband providers report "any instances" of "blocking" or "throttling" is poorly-defined and likely unworkable. Even assuming that the proposal does not mean to include disclosures of information that could reasonably be used to circumvent network security, Charter today openly discloses the circumstances and criteria under which it may temporarily manage traffic in a protocol-agnostic way in order to address localized network congestion.[72] Reporting on every *instance* when an ISP blocks or throttles traffic (even for a short period) pursuant to an automated network management policy is unlikely to add truly helpful or useful information. And Charter currently lacks the ability to track and report such events. Imposing a reporting obligation would thus require implementation of costly new technology to little benefit.

Jitter and packet loss: How a video plays over the Internet depends on many variables. "Jitter" is a technical metric of variability in latency, but it is generally irrelevant to the vast majority of Internet users—even for user-facing, time-sensitive applications such as VoIP or video streaming. In Charter's experience, it is typically of concern only to a narrow and highly-specialized segment of Charter's commercial customers, such as those purchasing backhaul transport of wireless voice calls.

Jitter measurement is an odd requirement to place on ISPs because it requires local processing on the user end of the connection in order to test it. It is quite easy for users who are curious about the jitter on their broadband connections to run diagnostics from their own computers, using free web-based or software tools such as the ones discussed above; indeed, Charter already provides jitter measurement as part of the free web-based speed testing application it makes available to its users. But for the *ISP* to measure jitter systematically,

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[71] *See* Charter Communications Network Management Practices, *supra*.

[72] *Id*.

without active subscriber involvement, requires both specialized CPE with the requisite processing abilities and capacity for the ISP to access and manage it remotely. Therefore, for commercial users with the need to monitor jitter today, Charter offers such testing as an additional service, using specialized edge routers (costing thousands of dollars each, far more than the average residential home router). The status quo makes sense: users who want information about jitter on their broadband connections can already measure it, and the few commercial users with the need for more systematic monitoring can procure it using market-based tools.

"Packet loss" is an ordinary feature of Internet protocols (which usually retransmit lost packets). SamKnows includes packet loss in some latency tests, but it has not found it meaningful to develop that metric into a report. Charter believes that there is not much to be gained from reporting this metric separately, and many consumers may be confused into thinking that "packet loss" represents "lost" data, when the only effect most Internet users will see is a modest speed decrease already captured within existing download speed metrics.[73]

Individual Internet Usage: Another example in the *Notice* of a proposed reporting requirement whose costs and difficulties would outweigh any benefits is the suggestion that the Commission require disclosures that "allow end users to identify application-specific usage or to distinguish which user or device contributed to which part of the total data usage." As with jitter testing, individual data usage (as well as the sources of such usage) can be measured locally, such as by software tools on a user's computer, but would be far more challenging for wired broadband providers to provide on a network level.

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[73] "[P]acket corruption," as far as Charter is aware, is not a technical term distinct from packet loss, and it is therefore unclear whether the *Notice* is proposing an additional reporting requirement in this regard. *See Notice*, 29 FCC Rcd at 5588 ¶ 73.

Charter does not track the sources of each user's Internet traffic, such as the services they consume or the websites they visit, and is not aware of *any* wired broadband provider that either tracks or has the ability to track individual usage in this manner today. Because Charter treats all edge provider content equally and does not discriminate based on the source of the traffic, it has no business-related reason to collect such information. The cost to track the destination and origination of traffic even on an *aggregated* basis at the CMTS level, which Charter deploys on a limited basis in some markets, can run in the tens of millions of dollars. Tracking it at the *user* level (as the proposal would require), by Charter's estimates, would be orders of magnitude more costly using current technology.[74] Again, as discussed *supra*, there is no reason to impose this sort of challenging monitoring and reporting requirement *on the ISP* at the network level when users curious about their data consumption can do it far more efficiently using local and easily-available software tools.

2. Disclosures to the Edge.

The *Notice* also proposes that broadband providers be required to create a separate set of disclosures for edge providers, as well as transit providers and CDNs.[75] The mere act of posting two rather than one set of disclosures, of course, may not itself require unduly burdensome effort. However, Charter is skeptical that it is feasible for broadband providers to monitor and put together technical information about their systems tailored to the varied, possibly idiosyncratic, and ever-changing needs of countless other parties in the Internet ecosystem, particularly when—as discussed above—Charter already offers a point of contact for edge

[74] To the extent the *Notice* also requests comment on whether to require providers to describe any "usage restrictions" such as "data caps" or the "penalties for exceeding a cap," Charter's existing disclosures already describe its policies in this regard. *Id.* at 5587-88 ¶ 72.

[75] *Id.* at 5589 ¶ 76.

providers to make inquiries about its network management practices and has not seen edge providers take advantage of this open offer for more information.

3. Disclosures to the Commission and "Internet Community."

Notification of Changes to Network Management Policies, Instances of Blocking, Throttling, and Pay-for-Priority: The *Notice* seeks comment on a proposal to require broadband providers to provide notification for changes to their network practices, as well as "any instances" of blocking, throttling, and pay-for-priority arrangements. Charter discloses its network management practices today[76] and does not presently believe requiring ISPs to disclose pay-for-priority arrangements, were they ever to enter any, would necessarily represent an undue burden. As already discussed above in the context of the consumer-facing disclosures, however, a blanket requirement that broadband providers also report "any instances" of "blocking" or "throttling" is unworkable.

Augmented Performance Testing Requirements: Charter today tests the performance of its system using hundreds of SamKnows boxes deployed throughout its network and reports those metrics through the Measuring Broadband America program. Among the proposals on which the Commission seeks comment are changes to the testing and reporting requirements, including a proposal by Cogent Communications Group ("Cogent") that providers be required to report various performance metrics at the "localized" or "system level."[77] Although the desire for more thorough information is certainly understandable, localizing such reports would require significant increased investment in time and resources that would far outstrip any benefit.

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[76] *See* Charter Communications Network Management Practices, *supra*.

[77] Cogent Communications Group, Comments at 12-13, 20, GN Docket Nos. 14-28, 10-127 (Mar. 21, 2014) ("Cogent Comments") (calling for "more localized data").

Testing network performance today requires Charter to recruit individual customers to accept SamKnows boxes, and then to actively manage those customer relationships (*e.g.*, to track customers with testing equipment as they move in and out of subscriber status, to perform needed service calls, recruit replacement test customers to ensure that there are an adequate number of testers at all times for the sample to be statistically representative, and so forth). For a highly geographically dispersed provider such as Charter, with hundreds of discrete cable modem termination systems throughout the country, a requirement that it implement and manage a sufficient number of testers to represent a statistically valid sample *in each localized system* (however defined) would create a dramatic logistical challenge in terms of the level of additional customer recruitment and management needed.

Even if whitebox functionality can be built into future modems or residential gateways (a suggestion about which the *Notice* inquires) in lieu of using volunteer testers, expanding testing to cover *each localized system* would still involve substantial costs for acquiring and installing probes or upgraded modems in every location, costs for specialized control platforms to select, schedule, and manage the probes, costs for integrating measurements into other management systems, and development of rules for analysis. For each impacted home, a consumer may need to take time off work and a technician would need to be dispatched to replace and/or install the equipment.

Moreover, Charter customers may attach compatible third-party CPE to its network and use their own routers rather than Charter-provided equipment—further complicating any use of upgraded modems and routers as a substitute to the existing whitebox process. Finally, because congestion can arise on countless other locations on other providers' networks, even with all those costs, the data would not capture many of the elements that define the actual user

experience. There is no evidence that this sort of data-mining operation provides any great statistical benefit to justify the vast increase in cost and effort it would require.

Reporting Performance Related to Specific Edge Providers: The Commission also seeks comment on Cogent's related proposals that ISPs report performance on an edge-provider-specific basis, as well as compare such performance to ISPs' own standalone services, such as online streaming video offerings.[78] Charter does not believe that such reporting is feasible. As with the proposal to require user-specific usage information, such reporting would require Charter to monitor its customers' use of its network in a far more intrusive manner than it does (or can) today. And although it is possible (albeit costly) for ISPs to identify downstream traffic from particular edge providers in the *aggregate* at the CMTS level, Charter lacks the capability to then also differentiate individual performance characteristics, such as speed, on an edge-provider-by-edge-provider basis. Particularly where an ISP such as Charter does not discriminate among edge providers in its treatment of downstream traffic, there is little value to requiring the ISP to measure performance from different edge providers separately: if there are any variations in performance under those circumstances, it would come from *other* parts of the network, and not from the ISP in any event.

4. The Proposed Enhanced Enforcement Mechanisms Are Unnecessary and Susceptible to Abuse.

The various concerns above are exacerbated by the *Notice*'s proposal to create an enforcement mechanism in which anonymous complaints may potentially carry substantial monetary penalties.[79] In Charter's experience, consumer complaints are often not rooted in the issue identified by the consumer—we routinely receive complaints reflecting some confusion

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[78] *Notice*, 29 FCC Rcd at 5591 ¶ 83; Cogent Comments, *supra*, at 20-21.

[79] *Notice*, 29 FCC Rcd at 5592-93 ¶ 87.

that can be addressed through routine customer care. It has been and should remain commonplace for regulators that receive such complaints to connect the complainant with the service provider. In contrast, relying on anonymous complaints to impose substantial monetary penalties without the ISP having an opportunity to go back to the source of the complaint to investigate and correct the issue is unfair. Moreover, such a process would be highly susceptible to abuse—either by persons with ideological agendas or in commercial disputes between ISPs and edge and transit providers. Creating such additional enforcement tools would invariably place the Commission in the difficult position of having the complaint process used strategically by edge and transit providers to gain leverage in future disagreements about interconnection or congestion—which is particularly problematic given that the transparency rules at issue exempt edge and transit providers from any comparable requirement to report their *own* performance or role in creating network congestion.

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As discussed above, the Commission's existing transparency rules are working well, and approaches such as the SamKnows whiteboxes and reports, online speed tests, research, academic studies, social networks, and business-to-business arrangements have done a good job of effectively identifying congestion issues. Multi-stakeholder entities such as the Internet Engineering Task Force (IETF) and the Broadband Internet Technical Advisory Group (BITAG) also serve as forums for establishing standards to optimize networks and user experiences. Rather than disturb a regulatory structure that is working well already, the Commission should maintain the transparency rules it has, alert any provider that it believes has not met the expected disclosures, allow existing feedback loops to address concerns over performance and practices,

and take full advantage of the multi-stakeholder forums that have helped to define the Internet and enable it to flourish.

CONCLUSION

The Commission should be commended for its thorough and thoughtful attempt to tackle the various questions raised by the *Verizon* ruling and ensure that the vibrant cycle of innovation and investment continues to enhance the nation's broadband networks. However, the Commission should not allow this docket to be used to create costly and unnecessary burdens on broadband providers that end up disrupting that cycle, whether though imposition of impractical reporting obligations or by upending the legal structure that has ensured predictability and sustained investment for the past decade.

Respectfully Submitted,

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