

BEFORE THE  
Federal Communications Commission  
WASHINGTON, D.C.

In the Matter of

Broadband Industry Practices

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WC Docket No. 07-52

**REPLY COMMENTS OF COMCAST CORPORATION**

James L. Casserly  
Ryan G. Wallach  
Daniel K. Alvarez  
WILLKIE FARR & GALLAGHER LLP  
1875 K Street, N.W.  
Washington, D.C. 20006-1238

Helgi C. Walker  
Eve Klindera Reed  
WILEY REIN LLP  
1776 K Street, N.W.  
Washington, D.C. 20006

*Attorneys for Comcast Corporation*

Joseph W. Waz, Jr.  
COMCAST CORPORATION  
One Comcast Center  
1701 John F. Kennedy Boulevard  
Philadelphia, PA 19103-2838

Kathryn A. Zachem  
Mary McManus  
COMCAST CORPORATION  
2001 Pennsylvania Ave., NW  
Suite 500  
Washington, D.C. 20006  
(202) 379-7134  
(202) 379-7141

Thomas R. Nathan  
Gerard J. Lewis, Jr.  
COMCAST CABLE COMMUNICATIONS, LLC  
One Comcast Center  
1701 John F. Kennedy Boulevard  
Philadelphia, PA 19103-2838

February 28, 2008

## TABLE OF CONTENTS

	<u>Page</u>
<b>I. INTRODUCTION &amp; SUMMARY.....</b>	<b>1</b>
<b>II. CONSUMERS BENEFIT FROM THE VIBRANT, COMPETITIVE NATURE OF THE INTERNET MARKETPLACE.....</b>	<b>3</b>
<b>A. Comcast’s Customers Can Enjoy Everything the Internet Has To Offer.....</b>	<b>5</b>
<b>B. Bandwidth Consumption Is Growing Rapidly as More Consumers Access More Content and Use More Bandwidth-Intensive Applications and Services. ....</b>	<b>7</b>
<b>C. Commenters Generally Agree That P2P Protocols Present Unique Challenges for Broadband Providers.....</b>	<b>8</b>
<b>III. REASONABLE NETWORK MANAGEMENT BY BROADBAND SERVICE PROVIDERS IS ESSENTIAL TO THE CONTINUED SUCCESS OF THE INTERNET. ....</b>	<b>14</b>
<b>IV. ALTERNATIVES TO REASONABLE NETWORK MANAGEMENT PROPOSED BY SOME PARTIES DO NOT WITHSTAND CLOSE SCRUTINY.....</b>	<b>17</b>
<b>A. Metered Pricing.....</b>	<b>17</b>
<b>B. Build More Bandwidth .....</b>	<b>19</b>
<b>V. COMCAST’S NETWORK MANAGEMENT PRACTICES ARE REASONABLE. THEY ARE NEITHER DISCRIMINATORY NOR ANTICOMPETITIVE. ....</b>	<b>22</b>
<b>A. Comcast’s Choice of Network Management Tools Is Entirely Consistent with Historical Industry Practice. ....</b>	<b>23</b>
<b>B. Claims That Network Management Is a Smokescreen for Preventing Video Competition Are Demonstrably False. The Need for Network Management Is Genuine. ....</b>	<b>28</b>
<b>VI. COMCAST SUPPORTS APPROPRIATE DISCLOSURE OF NETWORK MANAGEMENT PRACTICES TO CONSUMERS, BUT THE LEVEL OF DISCLOSURE MUST BE CAREFULLY SET.....</b>	<b>33</b>
<b>VII. COMPETITION, NOT GOVERNMENT REGULATION, CONTINUES TO BE THE BEST MEANS TO DISCIPLINE MARKETPLACE BEHAVIOR.....</b>	<b>38</b>

**A. There Is No Legitimate Basis for the Declaratory Ruling Free Press Has Requested. .... 40**

**B. The Record Shows That There Is No Need or Basis for the Commission To Initiate a Rulemaking..... 45**

**VIII. CONCLUSION ..... 51**

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**REPLY COMMENTS OF COMCAST CORPORATION**

Comcast Corporation (“Comcast”) hereby replies to the comments filed in response to the Public Notices issued by the Wireline Competition Bureau (the “Bureau”) on January 13, 2008.<sup>1</sup> The comments confirm that there is no basis in fact, law, or policy for granting the declaratory ruling requested by Free Press, no need to initiate the rulemaking requested by Vuze, and no reason to depart from the deregulatory course that Congress has prescribed and the Commission has consistently -- and successfully -- followed.

**I. INTRODUCTION & SUMMARY**

Tonight, millions of Comcast High-Speed Internet customers around the country will turn on their computers and use their favorite online applications or services or access their favorite content. They will download video from abc.com, cnn.com, iTunes, YouTube, Vuze, Joost, and countless other Internet video services. They will talk over the phone using Vonage, Skype, or any other over-the-top Voice-over-IP (“VoIP”) provider. They will transfer files -- videos, pictures, music, and text -- using BitTorrent, eDonkey, or any one of the numerous peer-to-peer

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<sup>1</sup> See *Comments Sought on Petition for Declaratory Ruling Regarding Internet Management Policies*, Public Notice, 23 FCC Rcd. 340 (2008) (“*Declaratory Ruling Public Notice*”); *Comments Sought on Petition for Rulemaking To Establish Rules Governing Network Management Practices by Broadband Network Operators*, Public Notice, 23 FCC Rcd. 343 (2008) (“*Rulemaking Public Notice*”).

("P2P") protocols available today. If Comcast's customers want it, Comcast's network will deliver it. And it will work better, even at periods of peak network usage, because Comcast manages its network in reasonable ways.

The comments filed in this proceeding suggest that most commenters share a common goal: a free Internet, where innovators are *free* to develop and deploy new services, speakers are *free* to distribute the content of their choosing, service providers are *free* to meet the expectations and demands of their customers, and the entire Internet community is *free* from the heavy hand of government regulation and second-guessing. Only a handful of commenters seek to restrict the freedom of the Internet by proposing significant regulation and inviting intrusive governmental oversight of this great engine of innovation. It is vital to protect *all* of these freedoms if the Internet itself is to remain the free, vibrant, and dynamic marketplace of ideas, goods, services, and content that it has become.

The record in this proceeding leaves no doubt that Comcast and the other broadband service providers -- who have collectively invested hundreds of billions of dollars to construct high-speed networks to offer consumers access to the Internet's diverse range of content, applications, and services -- are meeting and exceeding their customers' expectations and demands. Today's broadband facilities are more robust than anyone could have imagined a mere decade ago, when that small subset of Americans who accessed the Internet had no choice but to do so using painfully slow dial-up connections. No one could have envisioned back then that consumers would be able to do online -- at ever-increasing speeds -- the vast majority of things that we take for granted today. And, no one could have reasonably expected the massive investments in broadband facilities that have occurred, or the growing, facilities-based, intermodal competition among cable, phone, wireless, and satellite companies.

The record also conclusively demonstrates that network management has been an essential part of ensuring that the content, applications, and services consumers want are accessible and work in the manner they expect. The record makes clear that it remains vital that broadband providers have the flexibility to engage in reasonable network management. The minimally intrusive management strategies that Comcast employs are an eminently reasonable approach to the challenges that certain applications and services pose.

As a result, the record is clear that there is no need or basis for the Commission to adopt prophylactic rules specifically approving of or prohibiting particular network management activities; the marketplace is competitive, and providers are acting reasonably. From a practical standpoint, it would also be a mistake for the Commission to try to regulate in this area. Because of the dynamic nature of the broadband marketplace, it would be impossible for the Commission to anticipate the needs of either broadband service providers or Internet application and service providers, and any regulations that are adopted would be outdated before they could even make it onto the books. Similarly, there is simply no basis for “enforcement” action here regarding Comcast’s network management practices.

In particular, the declaratory ruling sought by Free Press would be inconsistent with Congress’s directive that the Internet remain “unfettered” by regulation. Comcast’s practices are fully consistent with the Commission’s *Internet Policy Statement*: Comcast’s customers can access any content or use any applications or services they desire. It bears repeating -- if Comcast’s customers want it, Comcast’s network will deliver it.

## **II. CONSUMERS BENEFIT FROM THE VIBRANT, COMPETITIVE NATURE OF THE INTERNET MARKETPLACE.**

The freedom consumers enjoy today on the Internet has turned the Internet into a critical information, social, and economic tool for all parts of American society. As the “central nervous

system of the U.S. economy . . . broadband applications and services have the power to transform the American economy by spurring investment and innovation in E-Commerce, education, healthcare, communications, entertainment, government, and countless other sectors.”<sup>2</sup> Individuals living in rural areas and senior Americans increasingly make use of the Internet’s capabilities.<sup>3</sup> In addition, a growing population uses the Internet for latency-sensitive, critical applications: first responders have begun to utilize the Internet to carry out their missions, and telemedicine is significantly growing.<sup>4</sup>

The Internet marketplace is incredibly diverse, dynamic, and competitive, and consumers are able to access any content and use any application or service they want. Consumers have access to a previously unimaginable array of content, applications, services, sources, and viewpoints. They can watch, read about, listen to, and participate in the most robust and uninhibited debate on every conceivable subject. They can buy and sell virtually anything imaginable. They can study any subject, express any opinion, inhabit virtual worlds, lead virtual lives, and more.<sup>5</sup> Most importantly from Comcast’s perspective, they can do all of this on

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<sup>2</sup> U.S. Chamber of Commerce Comments at 3. Unless otherwise specified, all references to “Comments” in this pleading refer to comments filed in WC Docket No. 07-52 in February 2008 in response to the *Declaratory Ruling Public Notice* and *Rulemaking Public Notice*.

<sup>3</sup> See Marcia Kerz, Oasis Institute (“Oasis Institute”) Comments at 1 (“For older adults it offers a path to connect socially, to share knowledge and experience, to continue learning, and to access critical information and services related to their health, benefits and finances.”); National Grange Comments at 1 (stating that with a video-capable Internet, rural consumers will be able to receive movies via email and stay in touch with the world).

<sup>4</sup> See Tom McDonald, BeSafe Techs. Comments at 1 (“BeSafe uses state-of-the-art broadband technology to deliver critical information instantly to first responders via their laptop computers as they approach and while on the scene of an emergency.”); Neal Neuberger: Health Tech Strategies (“Health Tech Strategies”) Comments at 1 (“In-home ‘digital’ doctor visits are occurring, and now many individuals are no longer concerned about proximity to care. With a broadband connection, people are able to quickly get a prescription, seek medical care and advice, and respond to others in need.”); Curtis L. Lowery, M.D., Univ. of Ark. for Med. Sci., Comments at 1.

<sup>5</sup> See Comcast Comments at 5-7.

Comcast's network; the more freedom consumers have on Comcast's network, the more attractive Comcast's service is to those consumers.

**A. Comcast's Customers Can Enjoy Everything the Internet Has To Offer.**

Comcast and other cable operators offer a premium high-speed Internet service.

Although competitors have traditionally offered a slower service at a cheaper price, millions of cable customers have decided that Comcast's better service is worth the extra cost. Cable's superior speed and reliability have long attracted the most avid broadband users. Since Comcast first introduced its high-speed Internet service eleven years ago, over thirteen million consumers have chosen Comcast's service because it allows them to access any content and use any applications and services they want. Even after the explosive start-up growth of its early years, Comcast continues to attract on average more than 100,000 net new customers each month; many of whom are upgrading from dial-up, but just as many of whom are upgrading from DSL.

Comcast has invested billions of dollars to build one of the best broadband networks in the world. Even with its current advantage over most competitors, Comcast invests hundreds of millions of dollars each year to make its service even better because its customers want more bandwidth and higher speeds and its competitors are upgrading their services. As Comcast noted in its comments, it is working toward deploying later this year a new "wideband" service using DOCSIS 3.0 technology that will enable customers "to download an HD movie -- which is the equivalent of 3,000 mp3 songs -- in less than 4 minutes."<sup>6</sup> With an even faster high-speed

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<sup>6</sup> Fact Sheet, Comcast Corp., *Comcast's Network: America's Leading Network* (Jan. 9, 2008) (announced by Comcast's Chairman and CEO, Brian Roberts, at the 2008 Consumer Electronics Show), available at <http://www.comcast.com/ces/content/images/Wideband/WidebandNetworkFS.pdf>.

Internet service, Comcast will stimulate more innovation and investment, ushering in a new era of applications and services that require higher speeds.

Comcast's service has enabled its customers to surf the Internet faster, download videos and music faster, and watch streaming video without constant stops to buffer the video. It is ironic that some parties complain that they might on occasion have to wait a few seconds or *minutes*, during periods of network congestion, for their computers to *upload* a copy of the King James Bible, assuming that the Bible resided only on one computer in the entire world, as the Associated Press ("AP") test did.<sup>7</sup> Were it not for all the investment on the part of cable companies and others over the past few years, consumers would still be using facilities over which it would have taken *hours* to *download* the King James Bible.

A high-resolution fax copy of the King James Bible is approximately 112 MB (or 939.52 Mb) in size.<sup>8</sup> In the early days of the Internet, downloading a file of this size would have been inconceivable to most users. For example, a user of a 9.6 kbps modem would have had to wait more than a day for the download to complete. Even at today's dialup speed of 56 kbps, downloading the King James Bible could take upwards of *five hours*. Today's broadband services are far better. For example, DSL subscribers can now download the 112 MB Bible in two to ten minutes, while a cable subscriber can obtain the file in about a minute.<sup>9</sup> Some might call it a miracle.

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<sup>7</sup> See, e.g., Free Press Comments at 8 (alleging that the AP "was blocked from uploading the King James Bible").

<sup>8</sup> The conversion from MB to Mb was performed using the following online calculator: <http://www.speedguide.net/conversion.php>.

<sup>9</sup> These calculations assume that: (a) the user is devoting all of his or her bandwidth to downloading a 112 MB file; (b) the DSL subscriber can obtain bit-rates of between 1.5 Mbps and 6.0 Mbps; and (c) the cable subscriber can achieve bit-rates of 12 Mbps.

Although broadband providers strive to cater to the Internet generation's "faster is better" mantra as an essential component of their successful business model, complaints about the services broadband providers offer must be viewed through a lens that recognizes that demands on bandwidth are ever-increasing and it is the providers' voluntary and substantial investments that have delivered and will continue to deliver the dramatic increases in speed that today's Internet users enjoy.

**B. Bandwidth Consumption Is Growing Rapidly as More Consumers Access More Content and Use More Bandwidth-Intensive Applications and Services.**

The robustly competitive broadband marketplace has powered innovation and driven growth. The widespread availability of Comcast High-Speed Internet and other broadband services has made it possible for all manner of Internet-based services and applications to emerge, develop, and thrive. Countless entrepreneurs and innovators have developed content, applications, and services that exploit the potential of broadband. In fact, *broadband in America is driving the biggest cyber-economy in the world*, and Comcast is proud of its role in making that happen.

Broadband service providers have long enjoyed a symbiotic relationship with those who have created broadband Internet content, applications, and services. Massive investments in the deployment of broadband facilities have made it possible for entrepreneurs to create viable businesses that exploit those facilities to develop innovative multimedia content, applications, and services. As Internet content, applications, and services have become more robust, however, consumers' insatiable appetite for bandwidth has grown. *YouTube alone* now uses more

bandwidth than the *entire Internet* did just eight years ago.<sup>10</sup> And, “[w]ith the development of YouTube, Internet-based videoconferencing, movie downloads, and online games and virtual worlds, there is no evidence to suggest that the rate of bandwidth consumption will level off.”<sup>11</sup> This increased demand also has been driven by the development of P2P software that is expressly designed “to use up all available bandwidth.”<sup>12</sup> Of particular note, many of these new applications or services tend to increase general bandwidth consumption and, more importantly from a network management perspective, tend to increase the demand for bandwidth during periods of peak usage.

**C. Commenters Generally Agree That P2P Protocols Present Unique Challenges for Broadband Providers.**

It is clear from the vast diversity of the content and applications that Comcast’s High-Speed Internet customers access every minute that Comcast’s customers are free to use the Internet in any way they desire. The billions of dollars Comcast has invested and continues to invest in its network combined with its limited network management activity have made that possible. Not only can consumers utilize P2P services, but also can they use latency-sensitive

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<sup>10</sup> See Verizon Comments at 28 (citing Bruce Mehlman & Larry Irving, *Bring on the Exaflood!*, The Washington Post, May 24, 2007, at A31). There has also been an increase in negative content on the Internet, including spam, malware, and viruses. “In 2007, spam volume increased 100 percent from the previous year, to more than 120 billion spam message daily, or ‘about 20 messages per day for every person on the planet.’” U.S. Chamber of Commerce Comments at 6 (quoting Press Release, IronPort Sys., *IronPort Report on Spam, Viruses and Malware Highlights Trends of 2007 and Predictions for 2008* (Dec. 3, 2007)).

<sup>11</sup> Steven Titch, Reason Foundation (“Reason Foundation”) Comments at 1.

<sup>12</sup> Richard Bennett Comments at 6; see Reason Foundation Comments at 1 (“Protocols like BitTorrent are . . . designed to consume as much available bandwidth as possible yet not relinquish any if demand increases elsewhere.”).

services like VoIP that were impossible not long ago. As Comcast and others explain in their comments, however, P2P protocols present unique challenges for network providers.<sup>13</sup>

The record resoundingly demonstrates that certain P2P protocols consume large amounts of bandwidth and operate in ways that interfere with other services.<sup>14</sup> For these reasons, even the Distributed Computing Industry Association (“DCIA”), whose members include Vuze and other companies developing and deploying services that use P2P and related technologies, recognizes that

*applications and services that require significant bandwidth and other network resources to deliver their large rich-media content payloads should bear some meaningful responsibility for consuming disproportionate amounts of network resources to the potential detriment of [a broadband provider’s] collective customer base, and [that] network management practices should be permitted to take into account and manage their networks to address any such impact.*<sup>15</sup>

Several commenters also point out that P2P protocols can pose other significant concerns, including security risks to those who use them,<sup>16</sup> inappropriate cost-shifting from commercial

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<sup>13</sup> See Comcast Comments at 14-16.

<sup>14</sup> See, e.g., Amplex Electric Comments at 1-2 (“Peer to Peer (P2P) applications significantly alter the traditional traffic flow of a network by massively increasing the quantity and duration of traffic from the end user. This traffic, multiplied across multiple end users, can and does exceed the capacity of the network if not managed in some fashion.”); AT&T Comments at 12-18 (describing the many challenges that P2P use presents to network operators, including congestion, unpredictability, and inefficient use of bandwidth); Time Warner Cable Comments at 9-14 (describing the enormous challenges that P2P applications present for broadband providers); NBC Universal Comments at 1 (“[A]t least 50% of broadband capacity is taken up by a small minority of users (about 5%) using peer-to-peer networks to traffic in pirate music, video and software.”); Fiber-to-the-Home Council (“FTTH Council”) Comments at 14-17 (explaining how P2P networks “raise substantial concerns about congestion”); Information Technology and Innovation Foundation (“ITIF”) Comments at 5-6 (explaining that P2P traffic increases network congestion and is frequently used for illegal file sharing); Richard Bennett Comments at 1 (“The advent of [P2P] file bartering applications . . . has created a traffic crisis on Internet access networks. Networks designed to provide responsive web-browsing have been hit with traffic loads that violate their basic deployment assumptions.”).

<sup>15</sup> Distributed Computing Industry Association (“DCIA”) Comments at 8-9 (emphasis added).

<sup>16</sup> See SafeMedia Comments at 2-4 (describing how P2P networks are often “a source of dangerous and sometimes criminal activity which can have a significant financial, legal and national security impact on internet users” and how “[b]y inducing (or ‘duping’) users into sharing files inadvertently, P2P networks create the capability for confidential and proprietary information to find its way onto the network [from whence it] can never  
(footnote continued...)

entities to network providers,<sup>17</sup> and the general degradation of other users' Internet experience.<sup>18</sup> And, although Free Press suggests that P2P protocols are actually a positive development because they turn the "closed networks" model on its head,<sup>19</sup> the record reflects that the "benefits" that Free Press touts are precisely what causes unexpected levels of upstream traffic and congestion that requires management.<sup>20</sup> Moreover, contrary to NATOA's claims,<sup>21</sup> there is substantial evidence on the extent of P2P usage and the need to manage P2P protocols in order to ensure networks function efficiently.<sup>22</sup>

In light of these challenges, Comcast and other broadband service providers -- and their vendors -- are working tirelessly to find solutions that will ensure consumers can access the content, applications, and services they demand at the performance level they expect and deserve. For example, "[b]roadband service providers are investing hundreds of billions of

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(...footnote continued)

be recovered or removed"); *see also* Letter from the House Committee on Oversight and Government Reform to Deborah Platt Majoras, Chairman, FTC (Oct. 17, 2007).

<sup>17</sup> *See, e.g.*, Amplex Electric Comments at 2-3 ("P2P allows [commercial distributors of content] to shift the distribution cost to the end user (and the end user's network provider)."); Laurence Brett Glass d/b/a Lariat ("Lariat") Comments at 4 ("[M]any for-profit entities . . . are openly using P2P protocols not to provide better service but to shift costs from themselves to ISPs without the ISPs' consent.").

<sup>18</sup> *See, e.g.*, Verizon Comments at 30-31 ("[F]or some network operators, the use of [P2P] applications 'by even a small portion of Internet users may effectively degrade service for the remaining majority of end users.'"); National Cable & Telecomm. Ass'n ("NCTA") Comments at 4 ("The use of [P2P] services by only a small fraction of Internet customers can consume a very large portion of the network's resources and capacity and can, at times, interfere with the use and enjoyment of the Internet by other customers.").

<sup>19</sup> *See* Free Press Comments at 5-6.

<sup>20</sup> *See, e.g.*, AT&T Comments at 12-13 (explaining that "P2P technologies invert a key engineering assumption about the direction of traffic flows on the Internet . . . thus placing a much greater strain on available upstream bandwidth than network engineers anticipated"); SafeMedia Comments at 2-4 (describing how P2P systems "implement their own routing on top of the Internet in the form of an overlay network" and may adapt to network responses, "thereby changing the assumptions underlying the traffic engineering decisions.").

<sup>21</sup> *See* National Telecommunications Officers Association ("NATOA") Comments on Free Press Petition ("NATOA Free Press Comments") at 6.

<sup>22</sup> *See, e.g.*, Comcast Comments at 25-26; George Ou Comments at 1 (noting that "it is possible for ~10% of the users [to] jam the entire upstream network"); Verizon Comments at 31 ("[A]ccording to some reports, [P2P] applications, such as BitTorrent, 'account for between 50 percent and 90 percent of overall Internet traffic.'").

dollars in their networks to handle the increased bandwidth needs of P2P applications and other multimedia content.”<sup>23</sup>

But, as DCIA notes, it is not just broadband service providers that must be reasonable, it is also Internet content, application, and service providers: “Likewise, application, content, and service provider practices should be based on their actual requirements for use of bandwidth and other network resources and they should not consume bandwidth and other network resources inequitably.”<sup>24</sup> That is why, through the “P4P Working Group,” Comcast -- which is currently an observer but expecting to soon become an active participant in the P4P Working Group -- and other broadband service providers are collaborating with DCIA and P2P software developers to devise network management solutions that will be mutually beneficial to network operators, P2P software firms, and consumers.<sup>25</sup>

Despite these efforts, there is a real-world need to address -- in real-time -- the bandwidth problems that result when major changes in usage patterns strain the existing capacity of network facilities, particularly during periods of peak usage. This is not just a last-mile problem. The growing use of P2P protocols presents substantial challenges for all parts of the Internet. As Richard Bennett, one of the engineering experts who spoke at the Commission’s February 25, 2008 en banc hearing explained:

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<sup>23</sup> U.S. Chamber of Commerce Comments at 8-9 (“Securities analysts at Bernstein Research and other investment banks estimate that deploying these networks will cost as much as \$400 billion.”).

<sup>24</sup> DCIA Comments at 8.

<sup>25</sup> The P4P Working Group was organized “to formulate an approach to P2P network traffic management as a joint optimization problem. The objective of certain participating ISPs, for example, was to minimize network resource utilization by P2P services. The objective of certain participating P2P software firms, conversely, was to maximize throughput. The joint objective of both ISPs and P2P software developers was to protect and improve their customers’ experience.” *Id.* at 4.

The advent of peer-to-peer file bartering applications such as BitTorrent coupled with an explosion of interest in HDTV and digital movies has created a traffic crisis on Internet access networks. Networks designed to provide responsive web-browsing have been hit with traffic loads that violate their basic deployment assumptions, and network operators have been forced to react.<sup>26</sup>

The Progress and Freedom Foundation (“PFF”) notes that some experts expect data density to increase by a factor of 10, and Internet traffic by more than 50 times, by 2015.<sup>27</sup> And, as Comcast notes in its comments, one recent study reports that user demand for the Internet could outpace network capacity by 2010.<sup>28</sup> In fact, many commenters state that the latest wave of Internet-based products and applications that consumers want requires higher bandwidth than the current network can allow, which could cause the Internet to become significantly congested -- or crash altogether -- in the future.<sup>29</sup>

These concerns are further amplified by the design and nature of networks, more specifically the fact that most bandwidth is a shared and finite resource.<sup>30</sup> Just as the fundamental nature of the content on the Internet involves interaction and give-and-take among users, the infrastructure of the Internet is intertwined. As the Information Technology & Innovation Foundation (“ITIF”) explains: “[O]ptimal design of any network must balance

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<sup>26</sup> Richard Bennett Comments at 1.

<sup>27</sup> See Progress & Freedom Foundation (“PFF”) Comments at 4 (citing Bret Swanson & George Gilder, *Estimating the Exaflood: The Impact of Video and Rich Media on the Internet*, Discovery Institute (Jan. 2008)).

<sup>28</sup> Comcast Comments at 13 n.31 (citing Press Release, Nemertes Research, *User Demand for the Internet Could Outpace Network Capacity by 2010* (Nov. 19, 2007)), available at [http://www.nemertes.com/press\\_releases/user\\_demand\\_internet\\_could\\_outpace\\_network\\_capacity\\_2010](http://www.nemertes.com/press_releases/user_demand_internet_could_outpace_network_capacity_2010).

<sup>29</sup> See, e.g., Richard Bennett Comments at 1 (“Networks designed to provide responsive web-browsing have been hit with traffic loads that violate their basic deployment assumptions[.]”); Qwest Comments at 6; Time Warner Cable Comments at 13 (referring to FTC report that suggests Internet growth and file sharing could lead to significant traffic problems or even a wholesale crash of the Internet).

<sup>30</sup> See Amplex Electric Comments at 3 (“Each group of customers in a specific area have a limited amount of P2P bandwidth that is shared between them. The amount to be shared is based on the capacity of the network.”); AT&T Comments at 6 (“[V]irtually all broadband networks contain shared facilities.”); Embarq Comments at 7; Verizon Comments at 32 (“[A]ll networks are subject to potential congestion concerns.”).

investment needs with peak traffic demands. Seldom do networks, whether telecommunications or others, build enough capacity to meet peak needs, because this means that much of the network will remain under-utilized during other times.”<sup>31</sup> The question, thus, is not whether all customers will be able to use shared bandwidth indiscriminately for any purpose they choose regardless of the effects that their use has on other customers but, rather, how to optimize every customer’s online experience and ability to access all Internet content and use all Internet applications and services. This is why networks must be managed.

Users are constantly sharing the network, and it is the duty of broadband service providers to ensure that the network functions in the most efficient manner possible while maintaining a superior level of service for the customer. Indeed, “[i]mplicit in the concept of ‘reasonable network management’ is the fact that a broadband network is a shared medium, in that all users of a broadband network share a limited amount of capacity simultaneously.”<sup>32</sup>

Commenters unanimously agree that demand for bandwidth is ever-increasing. Similarly, no commenter disputes that this increased demand on networks has resulted in congestion on broadband networks, especially during periods of peak usage. Thus, the controversy in this proceeding centers on how broadband service providers can and should address this congestion because, left unmanaged or unaddressed, congestion will eventually cripple the Internet. As the Institute for Policy Innovation (“IPI”), Comcast, and others explain

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<sup>31</sup> ITIF Comments at 8.

<sup>32</sup> Wireless Communications Association International (“WCAI”) Comments at 3.

in their comments, some form of management is necessary because bandwidth is, and always will be, limited.<sup>33</sup>

### **III. REASONABLE NETWORK MANAGEMENT BY BROADBAND SERVICE PROVIDERS IS ESSENTIAL TO THE CONTINUED SUCCESS OF THE INTERNET.**

“In almost all cases, network management today is unnoticed by consumers. The opposite, a total lack of management, would not be true. If network operators were precluded from managing their networks, consumers would be negatively affected.”<sup>34</sup> The Internet has long been considered a network of networks. *Without exception, every commenter that constructs and operates networks recognized the need for reasonable network management, and the need for each broadband provider -- from the largest to the smallest -- to have the flexibility to engage in the reasonable network management practices that best meet the particular needs of its network.*<sup>35</sup> More specifically, the record is crystal clear that some manner of reasonable

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<sup>33</sup> See ITIF Comments at 1; see also Comcast Comments at 11; Institute for Policy Innovation (“IPI”) Comments at 4.

<sup>34</sup> IPI Comments at 2.

<sup>35</sup> See, e.g., AT&T Comments at 19, 28 (“[E]ach network provider needs to ensure that sufficient network resources are available for all of its customers on an equitable basis and that no single customer (or group of customers) diminishes the value of the network for others.”); Embarq Comments at 3 (“Network providers need the ability to manage their networks, protect service quality, police network abuses, and operate their own businesses.”); Time Warner Cable Comments at 2, 20-21 (“Confronted with explosive growth in bandwidth consumption and rapidly changing traffic patterns, broadband providers must retain the flexibility to employ a wide range of traffic management practices to protect their networks as well as their subscribers.”); CTIA Comments at 2-3, 10-11 (“Carrier-specific network management practices, tailored to their individual networks and the technologies they support, are essential to interference mitigation and maximizing the user experience.”); WCAI Comments at 3-4, 6-7 (“Without the ability to employ network management practices that balance the need to share limited bandwidth with the expectations of their users, network operators invite a broadband system that denies consumers what they have bargained for.”); Global Crossing Comments at 5 (“With limited tools, network operators may find themselves unable to manage the traffic flow properly, impacting consumers’ ability to utilize the Internet effectively.”); Frontier Communications (“Frontier”) Comments at 2 (“[S]trictly regulated network management would make it difficult, if not impossible, for ISPs to develop and provide prioritized service for emergency communications or other similar valuable services.”); SafeMedia Comments at 4 (“Each broadband network is designed differently and requires broadband management tools that are tailored to its network.”); see also, e.g., Amplex Electric Comments at 3; Verizon Comments at 2; Qwest Comments at 6; US Telecomm. Ass’n (“USTA”) Comments at 10-12; Lariat Comments at 2, 4.

network management is needed to control the harmful effects of congestion to ensure a high quality experience for all consumers.<sup>36</sup> As Verizon summarizes, there is a “real world need for broadband providers to manage their networks in a wide range of contexts and using a variety of methods in order to deliver high quality and safe broadband services to their consumers.”<sup>37</sup> Nobody who has ever run a network of any kind seriously questions this.

Commenters provide a number of explanations for why they need to manage congestion, ranging from accommodating real-time applications such as VoIP to ensuring that telemedicine applications work, to guaranteeing that first-responders receive the critical information they need on a timely basis. These are all legitimate needs that must be considered. Reasonable network management makes these applications and services possible, sometimes in ways that can save lives. For example, “[r]easonable network management techniques . . . ensure that jitter- and latency-sensitive traffic, as well as traffic designed to enhance public health [and] safety, is afforded end-to-end prioritization.”<sup>38</sup> Comcast takes its role as facilitator seriously. As the

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<sup>36</sup> See, e.g., National Telecomm. Coop. Ass’n (“NTCA”) Comments at 4 (“Reasonable network management of congestion taking place in a broadband service provider’s network is therefore necessary in order to preserve reasonable and non-discriminatory access to all customers and IP application providers.”); AT&T Comments at 28 (“[C]onsumer welfare would suffer if the government barred network providers from preventing the extraordinary bandwidth consumption of a few end users from impairing the ability of ordinary consumers to enjoy affordable, high-quality Internet access.”); Time Warner Cable Comments at 2, 20-21 (“[T]here is broad recognition that network management aimed at easing congestion is not only unobjectionable but vital to maintaining a healthy Internet.”); Indep. Tel. & Telecomm. Alliance (“ITTA”) Comments at 7 (“As traffic increases, network operators must be able to direct traffic efficiently in order to ensure a viable, functioning network.”).

<sup>37</sup> Verizon Comments at 2.

<sup>38</sup> Telecomm. Indus. Ass’n (“TIA”) Comments at 13; see also Verizon Comments at 38 (“[B]roadband providers may also develop innovative new services that allow prioritization or a heightened quality of service in order to facilitate latency-sensitive services or other services that are incompatible with the current, best-efforts Internet.”); USTA Comments at 10 (“[E]ffective network management tools have played an increasingly important role in preserving and enhancing users’ online experiences [since] high-volume, latency-sensitive applications [have been] ‘[c]reating a [s]erious [t]raffic [j]am on the Internet,’ [and e]ngineers face a limited array of options in addressing this traffic jam.”); CTIA Comments at 7-8 (noting that advanced wireless networks that give priority to latency-sensitive voice service “can be as much as six-times as efficient” compared to an equal-latency system); WCAI Comments at 4 (noting that a network provider that promotes latency-sensitive services, such as VoIP, (footnote continued...))

content, applications, and services provided over the Internet continue to evolve, Comcast will face new challenges and will have to continue to find reasonable and consumer-friendly ways to address any problems.

Operators of some smaller networks in particular explain why they need to manage their networks and why the ability to do so is essential to their operations. Small networks must employ management techniques in order to fulfill customer expectations to enable sending and receiving vast amounts of dense data with little delay. As Lariat notes, “Should the FCC mandate that small, independent, and/or rural ISPs cease to employ [network management technologies such as P2P mitigation, traffic prioritization, and caching] to ensure the quality of their service, many or most small, local operators would have to raise prices dramatically or quit business.”<sup>39</sup> Regulation would thus *hamper* the Commission’s longstanding policy goal of ensuring the roll-out of broadband services to all of America and bridging the digital divide.<sup>40</sup> Rather than restricting or mandating particular practices, the Commission should simply encourage operators to use reasonable management techniques, like those that Comcast uses, that are the least intrusive and most experience-enhancing to the overwhelming majority of consumers.

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(...footnote continued)

“would likely manage its network in a manner that gives higher priority to latency-sensitive applications . . . and lower priority to applications that are not as dependent on ‘real time’ performance”); Hance Haney, Discovery Institute (“Discovery Institute”) Comments at 1 (“In the absence of unlimited bandwidth, network management is necessary to prevent, for example, degradation to latency-sensitive telephone and streaming video competition via the Internet.”).

<sup>39</sup> Lariat Comments at 6-7.

<sup>40</sup> See AT&T Comments at 20.

#### **IV. ALTERNATIVES TO REASONABLE NETWORK MANAGEMENT PROPOSED BY SOME PARTIES DO NOT WITHSTAND CLOSE SCRUTINY.**

Although certain commenters freely criticize Comcast for its management of P2P protocols, they offer no viable alternatives to resolve the network congestion issues that Comcast and other commenters identify. This is unfortunate because Comcast would certainly consider any constructive ideas for dealing with the issue, as demonstrated by its recent efforts to revise its customer disclosures to include more information about its network management practices. Instead, however, commenters primarily advocate two alternatives -- (1) metered pricing and (2) building more bandwidth -- that simply will not address the problem. Moreover, use of the former is a potential alternative the use of which should be entirely at the provider's option, and this option's viability remains to be determined in the marketplace. As for the latter, wishing for bigger pipes is no answer to today's congestion issues, and no matter how much network capacity is expanded, there will always be network management challenges.

##### **A. Metered Pricing**

Metered pricing, which adjusts consumer prices based on usage, can be an addition to reasonable network management, but not a substitute. Several operators are experimenting with some variation of this strategy to determine whether it is a workable solution from both technological and business perspectives.<sup>41</sup> As Time Warner explains, its "plan to introduce consumption-based billing on a trial basis represents the very sort of experimentation that should

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<sup>41</sup> See, e.g., Part-15 Org. Comments at 6 ("[T]he customers of PDQLink Wireless pay for the speed they receive and the amount of traffic transferred per month."); ITIF Comments at 9 (noting that "[m]etered pricing and data caps for broadband services are common in many nations" and that "some broadband networks are metered by speed"); see also Time Warner Cable Comments at 24.

continue unimpeded by regulatory intervention.”<sup>42</sup> It is possible, as Time Warner notes, that “[c]onsumption-based billing could provide a solution to some (but not all) network congestion concerns associated with P2P applications.”<sup>43</sup>

Although metered pricing may well be *part of* the solution, it does not directly resolve the problem of congestion caused by P2P protocols.<sup>44</sup> It may be more “fair” in the sense that it shifts the costs of the network onto those who use the network resources most,<sup>45</sup> but it does not directly address the underlying issue. Metered or not, there will be peak usage times when traffic exceeds capacity, and providers must be free to choose options that protect their customers from the indiscriminate degradation of the service. Moreover, Comcast must underscore Time Warner’s cautionary note that metered bandwidth pricing is experimental and may not prove to be what consumers want. This decision must be left to the discretion of network operators and the functioning of the marketplace;<sup>46</sup> any other result would unnecessarily skew the marketplace, and would be inconsistent with the Commission’s broadband policies to date, which have recognized that the marketplace functions best under a light regulatory touch.<sup>47</sup>

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<sup>42</sup> Time Warner Cable Comments at 24.

<sup>43</sup> *Id.*

<sup>44</sup> The only manner in which metered pricing might be said to alleviate network congestion is to suggest that it will dampen usage of these protocols by increasing the price of using them. This, of course, would be contrary to every broadband provider’s goal of increasing usage of the service.

<sup>45</sup> See Vonage Comments at 4-5 (suggesting tiered bandwidth pricing as “a simple way to ensure that users with a high demand for bandwidth bear the true cost of that demand”).

<sup>46</sup> See, e.g., AT&T Comments at 22 (“[T]he merits of metered pricing should be decided . . . by consumers themselves.”); Time Warner Cable Comments at 24 (“Particularly because there is no telling how the marketplace will respond to consumption-based billing, the Commission should leave broadband providers free to continue testing the appropriate mix of solutions to performance-related concerns, subject to the ultimate veto power held by consumers.”).

<sup>47</sup> See Comcast Comments at 8-11.

## B. Build More Bandwidth

The answer to the very real challenges that P2P protocols and other bandwidth consumptive protocols or applications pose is not, as some suggest, for operators to simply build greater capacity more quickly.<sup>48</sup> First, as many commenters point out, building additional capacity is enormously expensive and cannot be accomplished overnight.<sup>49</sup> For example, the Telecommunications Industry Association (“TIA”) notes that “increased network usage cannot economically be addressed through increased network deployment alone. The deployment necessary to meet current network needs in the absence of management tools would be exorbitantly expensive [(\$9.3 billion annually according to one recent estimate)], and the associated costs would fall on end users, making broadband usage uneconomic for many.”<sup>50</sup> The fact is that Comcast and other broadband providers *are* investing significant sums of capital to deploy “bigger, better, and faster” networks. Wishing that it could happen overnight to address today’s problems will not make it so.

Second, more rapid and uneconomic buildout than the marketplace supports would impose costs disproportionately on light and moderate users of bandwidth, effectively forcing

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<sup>48</sup> See, e.g., Free Press Comments at 38, 49 (arguing that “Congressional policy would require Comcast to upgrade and increase the upload capacity” and alleging that Comcast has “neglected significant upgrades to the minimal upstream capacity Comcast has provided their Internet customers.”); see also Free Press Petition for Declaratory Ruling, WC Docket No. 07-52, at 26, 29 (Nov. 1, 2007) (“Free Press Petition”).

<sup>49</sup> NTCA Comments at 5-6 (“Increasing the capacity of the rural broadband infrastructure . . . is very costly and cannot be done without extensive government assistance.”); USTA Comments at 11-12 (“[A] regime that required providers to address increased demand exclusively through massive expansion in broadband capacity [] would impose huge and unnecessary costs on all consumers[, which] would be economically infeasible.”); U.S. Chamber of Commerce Comments at 8-9 (noting that network investment “to handle the increased bandwidth needs of P2P applications and other multimedia content . . . will cost as much as \$400 billion”); ITIF Comments at 8 (“[N]etwork expansion and capacity improvements require significant capital investment that ultimately will have to be paid for by price-sensitive consumers.”); Hands Off the Internet Comments at 10 (“[C]apacity increases are an inefficient use of resources in resolving the problem [of strained capacity].”).

<sup>50</sup> TIA Comments at 12.

them to subsidize heavy users.<sup>51</sup> AT&T points out that building sufficient network capacity to carry all traffic at higher speeds at all times “would impose billions of dollars of unnecessary costs on broadband networks,” which consumers would bear “in the form of substantially higher broadband subscription prices,” effectively forcing “the great majority of broadband users, who make moderate use of shared network resources, to subsidize the extreme bandwidth consumption of a few.”<sup>52</sup> Metered pricing, as discussed above, might alleviate this particular problem, but it does not alleviate others.

Finally, and most importantly, innovators will continue to develop applications and services that will consume whatever capacity has been deployed, requiring owners to engage in a constant game of catch-up, and, in the meantime, causing congestion during periods of peak usage.<sup>53</sup> As IPI notes, because

Internet bandwidth is a finite commodity, it is subject to Say’s Law, which says that “supply creates its own demand.” Thus, an abundant supply of bandwidth will create abundant demand, and thus there will NEVER be “enough” bandwidth. . . . In other words, as expanded resources are made available so too will people find clever and useful ways to use those expanded resources. So, the assumption that we will, at some point, reach “enough” bandwidth so that everyone can have as much as they want is false.<sup>54</sup>

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<sup>51</sup> See, e.g., CTIA Comments at 14 (“[I]n the wireless context, the ability to add capacity remains limited by the scarcity of available spectrum resources. Regardless of technology platform, the cost of accommodating these bandwidth intensive applications will fall squarely on the vast majority of broadband users who do not have such high-bandwidth needs.”); Frontier Comments at 3 (“Adding capacity is costly, and the ultimate result of a capacity increase is that all of the ISP’s customers must pay for the added capacity [whereas the P2P users] only pay a portion of them.”).

<sup>52</sup> AT&T Comments at 20.

<sup>53</sup> See, e.g., U.S. Internet Indus. Ass’n (“USIIA”) Comments at 6 (noting that “[t]hrowing bandwidth at the problem” is not an effective solution” because doing so is “an inefficient approach” and because “the growth of Internet traffic, combined with the emergence of new applications requiring yet greater capacity,” could “obviate any such effort”).

<sup>54</sup> IPI Comments at 4; see also Richard Bennett Comments at 5, 6 (noting that “add[ing] bandwidth faster than anyone can use it . . . isn’t even possible” and that “it’s not economically feasible to build networks around the excessive bandwidth appetites of a few users”).

This is especially true in light of the proliferation of applications and protocols, such as many P2P protocols, that are designed to use as much bandwidth as is available. As Hands Off the Internet notes, a July 2007 study from researchers at Rensselaer Polytechnic Institute, the University of Nevada, and AT&T Labs determined that relying on increased capacity is not a feasible strategy.<sup>55</sup>

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Other commenters have proposed hand-tying approaches, such as one referred to as a “generally applicable bandwidth-related policy,” under which an application could be managed only after it began to consume more than a set proportion of overall bandwidth on shared facilities,<sup>56</sup> or that broadband providers should target heavy users, not bandwidth-intensive protocols.<sup>57</sup> These proposals recognize the need for network management, but they are not panaceas, and imposing them on broadband providers via regulation is not the appropriate answer. First, there has been no showing that the tools to adopt this approach are immediately at hand. Second, there has been no showing that this approach would better maximize consumer welfare than current approaches. Third, this would mire the Commission in an endless quagmire of engineering and marketplace disputes. Strong competition is far superior to regulation as a means to control behavior. As Frontier aptly explains: “In a competitive marketplace, the court

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<sup>55</sup> See Hands Off the Internet Comments at 12-13 (explaining that in the study, an undifferentiated network needed a 60% increase in capacity to maintain the same level of efficiency as the differentiated network during moderate volumes of traffic, and a 100% increase for heavy usage).

<sup>56</sup> Center for Democracy & Tech. (“CDT”) Comments at 9 (“A much better approach [than managing P2P protocols] would be to tie degradation to a generally applicable bandwidth-related policy. For example, a traffic management policy stating that no application may consume more than 20 percent of overall available bandwidth on shared network facilities at any time could result in delays for some packets of bandwidth-intensive applications, but it would not unfairly skew competition so long as the policy is evenly applied and suitably disclosed.”).

<sup>57</sup> See Free Press Comments at 8-10, 35, 36.

of public opinion provides a swifter and more terrifying judge than any FCC regulation.

Moreover, in most markets consumers can readily vote with their feet by moving to a competing broadband technology.”<sup>58</sup>

**V. COMCAST’S NETWORK MANAGEMENT PRACTICES ARE REASONABLE. THEY ARE NEITHER DISCRIMINATORY NOR ANTICOMPETITIVE.**

Comcast’s practices and policies are designed to cater to the demands and expectations of its subscriber base, and to maximize customer experiences. Reasonable network management is driven by the interests of *consumers*, not anticompetitive animus. Although the AP reporter whose experiment fueled this controversy characterized Comcast’s practices as “aggressive,” even he recognized -- as Free Press and Vuze refuse to do -- that Comcast’s objective is “to keep file-sharing traffic from swallowing too much bandwidth and affecting the Internet speeds of other subscribers.”<sup>59</sup>

Allegations about Comcast trying to prevent Internet video from competing with cable services are baseless and false. Millions of Comcast High-Speed Internet customers use their Internet service to access video services that are entirely independent of Comcast. Hundreds of thousands of Comcast customers use their Internet service to communicate using over-the-top VoIP services like Skype and Vonage. Similar numbers of Comcast High-Speed Internet customers use their service for various services and applications that make use of P2P protocols. Far from being a hindrance, Comcast’s reasonable network management practices *enable* and *facilitate* these uses

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<sup>58</sup> Frontier Comments at 7.

<sup>59</sup> See Peter Svensson, *Comcast Blocks Some Internet Traffic*, Assoc. Press, Oct. 19, 2007, available at <http://www.msnbc.msn.com/id/21376597/>.

**A. Comcast's Choice of Network Management Tools Is Entirely Consistent with Historical Industry Practice.**

Despite the challenges that P2P protocols clearly pose, Comcast neither prohibits the use of applications or services that use P2P protocols, nor blocks those applications and services.<sup>60</sup> Rather, as Comcast explains in detail in its comments, in limited circumstances, Comcast temporarily delays certain unidirectional P2P uploads -- to the minimum extent necessary, only during periods of peak network congestion, and only until the threat of congestion has abated -- in order to ensure that *all* users have a reliable, high-quality Internet experience.<sup>61</sup> Moreover, Comcast does not discriminate based on the content, application, or service utilizing the P2P protocol, or the identity of the entity or person offering or using the content, application, or service.<sup>62</sup>

Wisely seeing through the loud but empty rhetoric employed by the small but vocal minority who attack Comcast's behavior, many commenters recognize that the occasional delay of certain traffic where necessary simply does not constitute blocking or interfering with users' freedom to use and enjoy the Internet. For instance, the United States Telecom Association ("USTA") properly recognizes that the fact that "some users, at some times, appear to have experienced some limitations on their access" does not establish that content, applications, or services have been blocked.<sup>63</sup> USTA goes on to aptly explain:

Citizens who must wait in line for a reasonable period before voting have not been denied their right to the franchise. Litigants who must comply with page limits have not been denied their due process rights. Likewise, broadband users who experience short-term or

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<sup>60</sup> See Comcast Comments at 27-33.

<sup>61</sup> See *id.*

<sup>62</sup> See *id.* at 36-39.

<sup>63</sup> USTA Comments at 14.

incidental impediments to their use of a particular online offering on an occasional basis cannot be automatically understood to have been denied their ability to access content, run applications, or use services of their choice as the petitioners seem to assume.<sup>64</sup>

Echoing these sentiments, George Ou explains that “Comcast customers were never blocked, throttled, or delayed from receiving any services; they were delayed from offering hosting services (BitTorrent seeding).”<sup>65</sup> He goes on to correctly note that “BitTorrent users who are downloading are continuously uploading during the download without any delaying action so it isn’t as if Comcast refuses to participate in P2P uploads.”<sup>66</sup>

Similarly, Richard Bennett explains that Comcast simply “reduces the amount of traffic that BitTorrent and similar file-bartering applications (such as Gnutella) may offer to the Comcast residential broadband network in the upstream direction (from the consumer’s connection to the Internet) while not actively engaged in file downloading.”<sup>67</sup> Indeed, in an article attached to his comments, Bennett provides real-world evidence that Comcast does not block BitTorrent:

BitTorrent isn’t disabled on the Comcast network, not even the seeding mode where it acts as a file server. I’m a Comcast customer, and as I write this I’m seeding several video files from the current season of a certain murder mystery series set in the most dangerous county in England.<sup>68</sup>

And the U.S. Chamber of Commerce accurately states that “even those broadband services providers that are concerned by the intensive bandwidth needs of BitTorrent and similar

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<sup>64</sup> *Id.*

<sup>65</sup> George Ou Comments at 2.

<sup>66</sup> *Id.*

<sup>67</sup> Richard Bennett Comments at 2.

<sup>68</sup> *Id.*, Attachment (Richard Bennett, *Harold and Kumar Go to Comcastle* (Nov. 6, 2007), available at [http://www.theregister.co.uk/2007/11/06/richard\\_bennett\\_comcastle/](http://www.theregister.co.uk/2007/11/06/richard_bennett_comcastle/)).

applications do not block subscribers from using the program.”<sup>69</sup> Rather, “[a]t most, a subscriber in a community experiencing heavy broadband congestion at a particular time might experience some momentary delays in uploading content that is being sought by the P2P application.”<sup>70</sup> Other commenters also properly recognize that Comcast does not “block” applications or services that use P2P protocols.<sup>71</sup>

Many commenters also rightly explain that Comcast’s network management practices do not “discriminate” against content, applications, or services. For example, ITIF explains that “[o]ne also could envision an ISP using network management tools to limit subscribers’ access to competing content. This does not appear to be the case with Comcast’s practices. On the contrary, Comcast is using general network management tools to address the impact of certain high-bandwidth traffic on the network.”<sup>72</sup> Similarly, George Ou explains that:

Comcast does not discriminate based on content; Comcast discriminates against excessive upstream usage that chokes up their entire broadband network. The EFF complains that this was ‘protocol discrimination’ against BitTorrent and other P2P . . . applications, but it is a fact that BitTorrent and P2P are the biggest upstream bandwidth users.<sup>73</sup>

As Comcast explains in its comments, allegations that it “discriminates” fail to account for the fact that differential treatment of different things is not discriminatory, either in a legal sense or a practical one. The federal courts and the Commission have made clear that

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<sup>69</sup> U.S. Chamber of Commerce Comments at 8.

<sup>70</sup> *Id.*

<sup>71</sup> *See, e.g.*, Reason Foundation Comments at 2 (noting that even the AP article on Comcast that gave rise to this controversy makes “clear that Comcast was slowing down huge file uploads from a few users, not blocking access or content,” and that even the author of that article “allows that Comcast’s action may have benefits for the great majority of its customers”); USTA Comments at 13 (noting that even skeptics concede that the “goal was to manage p2p traffic, not destroy it”).

<sup>72</sup> ITIF Comments at 3.

<sup>73</sup> George Ou Comments at 2.

discrimination can occur only when “like services under like circumstances” are treated differently,<sup>74</sup> which is not the case when protocols that place unique burdens are treated differently than ones that do not. Nor is Comcast’s approach even arguably “unreasonable.”<sup>75</sup> As discussed above and in Comcast’s opening comments, Comcast only manages the particular protocols that strain its network the most, and only does so at times when such use creates levels of network traffic that, absent such management, would degrade the activities of Comcast High-Speed Internet users.<sup>76</sup> Further, Comcast seeks to manage these protocols in a manner that has the *minimum impact possible* on all users of its service, *including* users of the particular protocol being managed.<sup>77</sup> By no stretch of the imagination can such conduct be regarded as discriminatory, let alone unreasonably so.<sup>78</sup>

Certain commenters claim that Comcast’s management practices are unreasonable because Comcast uses TCP resets to implement its management of congestion. They invoke inapt analogies such as equating the transmission of a reset packet to an operator interrupting a

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<sup>74</sup> *American Trucking Ass’n, Inc. v. FCC*, 377 F.2d 121, 130 (D.C. Cir. 1966), *cert. denied*, 386 U.S. 943 (1967) (discussing prohibition on “unreasonable discrimination” under 47 U.S.C. § 202(a)); *see also Global NAPS, Inc. v. Verizon New England, Inc.*, 454 F.3d 91, 103 (2d Cir. 2006) (affirming district court’s determination that it was not unlawful under 47 U.S.C. § 251(c)(2), which requires Incumbent Local Exchange Carriers to provide for interconnection in a “nondiscriminatory” manner, to treat services with a “fundamental difference” differently).

<sup>75</sup> Even common carriers are generally prohibited only from engaging in discrimination that is “unjust or unreasonable.” 47 U.S.C. § 202(a). Even if Comcast’s High-Speed Internet service was a common carrier service, which it is not, reasonable network management would be entirely permissible. Moreover, the Supreme Court has made clear that the Commission may not impose common carrier obligations on non-common carrier services through an assertion of ancillary authority. *See FCC v. Midwest Video Corp.*, 440 U.S. 689, 709 (1979) (explaining that authority to impose common carrier obligations “must come specifically from Congress”).

<sup>76</sup> *See* Comcast Comments at 36-37.

<sup>77</sup> *See id.*

<sup>78</sup> *See id.* at 37.

call and impersonating each of the callers to the other.<sup>79</sup> Although a TCP reset interrupts a connection essentially to inform the computers on both ends that there is a problem with the transmission (in this case, that the network is momentarily congested), the key fact is that these are communications between IP addresses and the computers to which those IP addresses are assigned. To most end users, these communications will be virtually imperceptible, and, especially in the case of properly functioning P2P protocols, will have no perceptible effect on the end user's experience. On the uploader's end, where the management occurs, the user is typically not even at his or her computer when unidirectional upload sessions are initiated. Even when the user is present, his or her computer already has residing in it the file that someone else is seeking to download and has no reason even to be aware that anyone is trying to upload parts of the file. On the downloader's end, as Comcast explains in its comments, the swarming function of P2P protocols ensures that the downloader's computer seeks the file from as many computers as possible that are on the Internet, have the file, and use that particular protocol.<sup>80</sup> When the downloader's computer receives the reset message, it automatically resends a request for that file to all the computers that have it available. All of this is done automatically by the computers "talking" among themselves.

As AT&T explains in its comments, "[t]he 'reset' command has been [around] for more than a quarter century" and "is commonly used to enable one computer to abort a TCP connection with another computer for any of a number of reasons, such as when the

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<sup>79</sup> A "reset" is nothing more than a bit in the TCP packet header that is used to signal that there is an error condition within the network and that a new connection needs to be established. This is a communication between two IP addresses.

<sup>80</sup> See Comcast Comments at 33.

communications between the two computers become unsynchronized.”<sup>81</sup> Its use by Comcast -- only when unidirectional uploads of particular protocols reach certain thresholds in nodes that have traffic levels that threaten congestion, and solely for the purpose of maintaining the overall quality of service for other traffic that is likely to be more sensitive to latency and jitter -- and by other broadband providers is a reasonable choice.

**B. Claims That Network Management Is a Smokescreen for Preventing Video Competition Are Demonstrably False. The Need for Network Management Is Genuine.**

In a futile effort to buttress its weak arguments about the reasonableness of Comcast’s management practices, Free Press fabricates an anti-competitive motive behind Comcast’s practices. Free Press alleges that Comcast is managing P2P protocols in order to impede competition from Internet video providers.<sup>82</sup> In addition, Free Press claims that Comcast’s support of certain standards for set-top box technology somehow interferes with the ability of consumer electronics manufacturers to build devices that can show Internet video on a television.<sup>83</sup> These assertions are patently false. Considering the vibrancy of the Internet, the significant investment costs associated with constructing and operating high-speed networks, and the robust competitive landscape, it would be foolish for any provider of high-speed Internet service to attempt to control either the content of or access to content on the Internet.

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<sup>81</sup> AT&T Comments at 25.

<sup>82</sup> See Free Press Comments at 63-64.

<sup>83</sup> See *id.* at 57-58.

Far from discouraging its customers from using Comcast High-Speed Internet service to access video, Comcast *enables and facilitates* that access.<sup>84</sup> Millions of Comcast customers watch video on their Comcast High-Speed Internet service every single day, and hundreds of thousands of Comcast customers do so by downloading video using P2P protocols. In fact, one of the main reasons people buy Comcast's service is because it provides better speeds for watching streaming video, downloading video, and sharing videos. As NCTA points out, the continual upgrading of broadband networks (often at no cost to subscribers), which enables and enhances the use of new applications that use P2P protocols among other features, demonstrates that cable operators are not using network management to obstruct the use of applications directly competing with their own video services.<sup>85</sup> Comcast and other cable operators have already invested over \$110 billion building out cable broadband facilities,<sup>86</sup> and the U.S. Chamber of Commerce reports that network operators will invest another approximately \$400 billion in upgrading broadband networks to provide additional advanced services.<sup>87</sup>

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<sup>84</sup> See generally, Comcast Corp., *Learn: High-Speed Internet* (describing Comcast High-Speed Internet's ability to provide "Faster Video"), at <http://www.comcast.com/#> (last visited Feb. 28, 2008). FTTH Council notes that network providers cannot unduly advantage their content or application businesses through network management practices because of the exceptional vastness of the Internet and competition in the provision of high-speed Internet services. FTTH Council explains that the Internet marketplace is national (if not international) in scope so any actions taken by local broadband providers cannot lead to monopoly rents. In addition, the Internet is so dynamic that anticompetitive conduct could jeopardize a distributor's network access business. FTTH Council also explains that content and application providers and end-users are so empowered by today's technologies and competition that they can prevent network operators from exercising any market power they may think they have. See FTTH Council Comments at 28-29.

<sup>85</sup> See NCTA Comments at 8.

<sup>86</sup> Comcast Comments at 5 ("Comcast undertook this multi-billion-dollar risk before any competing providers were willing to because it had confidence from the earliest days of the Internet that broadband would revolutionize how people communicate, work, and entertain themselves.").

<sup>87</sup> See U.S. Chamber of Commerce Comments at 8-9. The Discovery Institute warns that this private investment for upgrading facilities will dry up if broadband service providers are subject to regulation. See Discovery Institute Comments at 2.

Comcast *does not* manage Internet video streaming or downloaded video. Comcast's management practices are, in fact, indifferent to whether the traffic is video, audio, text, or anything else. Comcast currently only manages certain P2P protocols in the ways and for the reasons presented in detail earlier, and although some Internet video providers have chosen to distribute their video with P2P protocols, there is absolutely *no evidence* that Comcast's management practices have impeded those providers from launching and building their businesses and delivering their services. For example, although Vuze only launched its service a little over a year ago, its CEO states that "there have been 20 million downloads of [its] application, and consumers from around the world use [its] product every day."<sup>88</sup> Many of these consumers are undoubtedly Comcast customers, or customers of other broadband providers whose Internet service is subject to reasonable network management. Vuze has provided no evidence that Comcast's network management practices in any way interfere with its service; rather, Vuze warns that Comcast's practices "threaten the free flow of information" and makes carefully worded statements about "potentially" degrading video services or customers not being able to "easily upload" content.<sup>89</sup> The Commission should not seek to regulate based on such conjecture, or rely upon mere speculation of anticompetitive motives or discriminatory intent.<sup>90</sup>

Critics' claims that Comcast manages P2P protocols because they compete with some of Comcast's services is further undermined by the fact that hundreds of networks in the "network

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<sup>88</sup> See Letter from Henry Goldberg, Attorney for Vuze, Inc., to Ms. Marlene H. Dortch, Secretary, FCC, WC Docket No. 07-52, Attachment (filed Feb. 27, 2008) (Statement of Gilles BianRosa, Chief Executive Officer, Vuze, Inc.).

<sup>89</sup> See Vuze, Inc., Petition for Rulemaking, WC Docket No. 07-52, at 10-11, 13 (Nov. 14, 2007).

<sup>90</sup> Also notably lacking in the pleadings of any of those accusing Comcast of nefarious intentions is any genuine effort to appreciate the benefits that reasonable network management brings to VoIP callers, Web surfers, online gamers, and so on. Among those who benefit are those who are buying video downloads from iTunes or watching a subscription video streaming service, both of which compete with Comcast's cable services.

of networks” known as the Internet, including those of numerous respected academic institutions -- with no conceivable commercial motive and a strong commitment to freedom and academic inquiry -- have P2P management and use policies as, or more, restrictive than those of Comcast.

A handful of examples illustrates the point. Harvard Law School advises its users not to use BitTorrent.<sup>91</sup> Harvard Medical School outright *prohibits* P2P use on its network and “takes active steps against Peer to Peer file sharing and may shut down [the] connection.”<sup>92</sup> Columbia University Information Technology imposes bandwidth quotas to maintain network performance so that a “host exceeding either [a download or upload] limit in a given hour will have its bandwidth in that direction restricted to a lower rate for the remainder of the hour and the hour following if excessive bandwidth use continues.”<sup>93</sup> And the University of North Carolina prohibits its users from “engag[ing] in actions that disrupt or interfere with the legitimate use by other Users of any computers and/or networks. . . . Such conduct includes, but is not limited to: placing of unlawful information on the system . . . or any other use that causes congestion of any networks or interferes with the work of others.”<sup>94</sup>

An “anticompetitive animus” cannot account for these policies and practices, or those of many other academic institutions and entities that manage P2P on their networks but do not

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<sup>91</sup> See Information Technology Services, Harvard Law School, *Peer-to-Peer File Sharing Programs Tip #3*, at <http://www.law.harvard.edu/administration/its/students/p2p.php> (last visited Feb. 23, 2008). The Policy also notes that “[t]he nature of BitTorrent clients makes it impossible to disable file sharing. If you use a BitTorrent client to download copyrighted material, you are simultaneously sharing out that copyrighted material, thus violating both the HLS Network Usage Agreement and Federal copyright law.” *Id.*

<sup>92</sup> See Harvard Medical School, Information Technology Dept., *Frequently Asked Questions About Computer Security*, at [http://hms.harvard.edu/hmsit/pg.asp?pn=security\\_faqs#p2p](http://hms.harvard.edu/hmsit/pg.asp?pn=security_faqs#p2p) (last visited Feb. 28, 2008).

<sup>93</sup> Columbia University, *Columbia University Network Bandwidth Quotas*, at <http://www.columbia.edu/cu/policy/bandwidth.html> (last visited Feb. 28, 2008).

<sup>94</sup> University of North Carolina-Chapel Hill, *UNC-Chapel Hill Interim Data Network Acceptable Use Policy* § II.3., at <https://help.unc.edu/1672> (last visited Feb. 28, 2008).

compete with Internet applications and services. Nor does it account for the decisions of Comcast and other commercial broadband providers to address issues of network congestion associated with certain P2P protocols. The need for network management is *real*, on campuses and everywhere else.

Finally, attempts by certain parties to conflate this discussion with issues related to set-top boxes are entirely off the mark. As an initial matter, cable set-top boxes have absolutely nothing to do with how Comcast manages its high-speed Internet service and have no bearing on this proceeding. All Comcast High-Speed Internet customers can choose among scores of different cable modems to access the Internet content of their choosing. And, contrary to Free Press's claims that consumer electronics manufacturers are impeded from developing alternative methods to use the Internet to deliver video to television screens,<sup>95</sup> there is absolutely nothing that prevents manufacturers from building and selling such devices. By way of example, the TiVo Series 3 HD DVR and the new SlingProjector do precisely that. Moreover, the tru2way technology that CableLabs has developed provides manufacturers with significant flexibility to design devices that further integrate online video into the television watching experience, and it is meeting with great success in the marketplace, being embraced by consumer electronic manufacturers, technology companies, and applications developers.<sup>96</sup> The Commission is appropriately reviewing set-top box issues in a separate proceeding, where Comcast and many

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<sup>95</sup> See Free Press Comments at 57-58.

<sup>96</sup> The real complaint here is that an extreme minority wants the freedom to "disaggregate" cable services. They want to take the content that cable operators have assembled and delivered and use it to provide their "own" services to consumers. Consumers would not receive their cable services in the manner that cable operators have contracted to deliver them. Even two TVs in the same household would not be assured of being able to access the same services from the same cable subscription. Cable's content providers have vigorously opposed this hijacking of cable programming.

others have already presented a strong case for letting tru2way continue to work in the marketplace.<sup>97</sup>

## **VI. COMCAST SUPPORTS APPROPRIATE DISCLOSURE OF NETWORK MANAGEMENT PRACTICES TO CONSUMERS, BUT THE LEVEL OF DISCLOSURE MUST BE CAREFULLY SET.**

Like other providers, Comcast informs its customers about the characteristics of its service and the need for reasonable network management.<sup>98</sup> It has done so for years, long before BitTorrent or Vuze ever existed.<sup>99</sup> But, like other providers, Comcast must always be concerned about disclosing “too much information” for two very good reasons -- first, Comcast does not want to risk confusing its customers with too much information, and, second, Comcast does not want to provide a roadmap that would empower malevolent users or others to undermine and thwart its reasonable network management practices.<sup>100</sup>

There is widespread agreement by the majority of commenters that, for these and other reasons, providers must balance the desire to keep consumers informed with the need to reasonably manage the network. As many commenters point out, a broadband service provider

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<sup>97</sup> See *In re Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices, Compatibility Between Cable Systems and Consumer Electronics Equipment*, Third Further Notice of Proposed Rulemaking, 22 FCC Rcd. 12024 (2007).

<sup>98</sup> See Comcast Comments at 39-42.

<sup>99</sup> See *id.* at 40 (“For years, Comcast’s Terms of Service (“TOS”) have specified that Comcast High-Speed Internet service is subject to “speed and upstream and downstream rate limitations,” and that the service may be used only for “personal, residential, non-commercial purposes.” For years, the AUP has prohibited the use of the service that “restrict[s], inhibit[s], or otherwise interfere[s] with the ability of any other person . . . to use or enjoy the [s]ervice, including . . . generating levels of traffic sufficient to impede others’ ability to send or retrieve information.” And, for years, the AUP has required customers to ensure that their “use of the Service does not restrict, inhibit, interfere with, or degrade any other user’s use of the Service nor represent . . . an overly large burden on the network.”) (internal citations omitted).

<sup>100</sup> See *id.* at 41-42; IPI Comments at 2, 5 (cautioning that disclosure could simply provide a “roadmap” for those seeking to harm consumers); Verizon Comments at 16 (explaining that “providing consumers ‘meaningful’ information requires some balancing and judgment as to what should be disclosed” to avoid customer confusion and to avoid undermining the effectiveness of network management practices).

cannot be expected to disclose its actual, *technical* management practices because such techniques are highly proprietary, and maintaining their confidentiality is essential for network security purposes.<sup>101</sup>

The IPI explains that “[r]equiring companies to specifically disclose how they manage their networks is counterproductive, as it simply could provide a roadmap [to] those who would try to get around such management techniques, such as spammers, phishers, creators of worms and viruses, and others whose purpose is to harm the consumer.”<sup>102</sup> Moreover, a number of parties explain that, because managing a network is a dynamic process that requires ongoing action, it is not practical to expect a broadband provider to constantly update disclosures about its specific practices.<sup>103</sup> As a result, commenters make clear that there is a need for balancing and judgment that does not lend itself to one-size-fits-all rules requiring certain disclosures.<sup>104</sup>

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<sup>101</sup> See, e.g., CDT Comments at 7 (“Disclosure need not go into technical detail sufficient to provide a roadmap for evading traffic management policies relating to spam and other network attacks.”); DCIA Comments at 8 (“ISPs should not be required to disclose network management practices that are competitively sensitive or proprietary, nor should they be required to disclose information that would undermine their ability to keep their networks and customers secure.”); Discovery Institute Comments at 3 (“Detailed disclosure of network management practices could lead to a host of unintended consequences. For one thing, it could facilitate modifications to the BitTorrent protocol which would defeat legitimate and necessary traffic management.”); NCTA Comments at 11 (“Disclosure of the details of specific existing network management technologies could, however, be counterproductive to the extent that it enables web content distributors (and Internet customers) to *circumvent* such technologies without reducing the potential congestion caused by such distributors.”) (emphasis in original); FTTH Council Comments at 32 (explaining that the Commission “must not compromise network security by either requiring network providers to disclose precise techniques employed to manage traffic or to disclose immediately the exercise of any management activities, which could enable someone to reverse-engineer and determine the management practice used”); AT&T Comments at 32 (suggesting that the Commission encourage voluntary disclosure of “*customer usage limitations*” but stating that the Commission “should not expect, let alone require, broadband networks to disclose actual *network-management practices*”) (emphasis in original).

<sup>102</sup> IPI Comments at 2.

<sup>103</sup> See WCAI Comments at 5 n.13 (“WCA is not suggesting that broadband network operators be required to give current and prospective customers notice of their specific network management techniques. . . . [T]hose techniques change over time, and each technique may not be useful for resolving every incident of network slowness that customers may experience.”); see also AT&T Comments at 33; Verizon Comments at 16.

<sup>104</sup> See AT&T Comments at 32-34; FTTH Council Comments at 32.

As many commenters recognize, the competitive broadband marketplace is much more likely than government regulation to achieve the appropriate balance.<sup>105</sup> Competition in the broadband marketplace has compelled broadband service providers to provide consumers with the information they need to make informed decisions about the services they may want to purchase.<sup>106</sup>

Importantly, the responsibility for such disclosures, however, does not rest with service providers alone. As many parties note, application and content creators must share responsibility for disclosure of, among other things, “features that will impact application performance and consumer usage.”<sup>107</sup> Further, some commenters rightly explain that issues related to customer disclosures are -- as a matter of jurisdiction and as a matter of expertise -- more appropriately addressed by the FTC than the FCC.<sup>108</sup>

Many of those parties who argue that reasonable network management requires detailed technical disclosures gloss over these issues, refusing to acknowledge the need to balance providing consumers with enough information to make an informed decision against the risks of

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<sup>105</sup> See, e.g., FTTH Council Comments at 32 (“[I]t is far more preferable for the Commission to encourage industry-led cooperative solutions where confidentiality agreements can govern and network security can be ensured and enhanced.”); Verizon Comments at 15-18; USIIA Comments at 6.

<sup>106</sup> See Oasis Institute Comments at 1-2 (stating that competition requires disclosure of certain information related to network management).

<sup>107</sup> NTCA Comments at 7-8 (explaining that Internet application and content providers should publicly disclose terms and conditions including “how much storage space the consumer must make available on their personal computer as well as other features that will impact application performance and consumer usage” as well as a “[w]arning notice that certain uses of this IP application may cause the consumer to violate her/his contract with the broadband service provider”).

<sup>108</sup> See, e.g., Part 15 Org. Comments at 5-6 (noting that to the extent a broadband provider does not live up to its policy as disclosed, such a matter might be brought before the FTC but is “not a concern” of the Commission); CDT Comments at 8 (“There may be a role for government to press for disclosure of traffic management policies involving degradation. CDT is not certain, however, whether the Commission is best positioned or even has jurisdiction to address this issue. The Federal Trade Commission would be another possible candidate, but ultimately it may be up to Congress to determine where to assign responsibility.”).

providing proprietary information that jeopardizes network integrity and security.<sup>109</sup> In addition, these commenters ignore entirely the probability that imposing requirements through government regulation will prevent marketplace experimentation and evolution and innovation.

A few commenters allege that Comcast in particular has not made its policies transparent enough. Their positions fail to account for the risks to network security and the potential for a degraded experience for all users that expansive disclosure would create, not to mention the practical difficulties of disclosing the continually changing techniques used to manage a dynamic network. For example, the call by Free Press for “*complete* disclosure” of network management measures is heedless of these concerns.<sup>110</sup> Moreover, neither Free Press nor any other commenter criticizing Comcast’s current level of disclosure provides any explanation as to the precise nature of the disclosure they would have Comcast or any other broadband provider make.

As Comcast has explained, it has chosen to provide additional detail about its management of P2P in a continuing effort to strike the right balance.<sup>111</sup> Several commenters commend Comcast’s new disclosure documents for effectively balancing clarity and communication with the need to protect the integrity of Comcast’s policies in order to allow for reasonable network management.<sup>112</sup>

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<sup>109</sup> See Computer & Communications Industry Association (“CCIA”) Comments at 6; ITIF Comments at 3-4; Northwestern Univ. Students for Net Neutrality Comments at 1; Vonage Comments at 5.

<sup>110</sup> See Free Press Comments at 59 (emphasis added). Free Press’ further contention that disclosure is not enough because the market is too concentrated for consumer choices to prevail and network providers have incentives to discriminate, *id.* at 59, 64-65, is wholly without merit. As discussed elsewhere in these comments, the market is not concentrated by any measure, *see supra* Section II, and network operators have no incentives whatsoever to discriminate. *See infra* Section V.B.

<sup>111</sup> See Comcast Comments at 4, 39-40 & Attachments A-C.

<sup>112</sup> See, e.g., Embarq Comments at 4-5.

We note the prescient filing by Discovery Institute, which predicted that “[d]etailed disclosure of network management practices could lead to a host of unintended consequences. For one thing, it could facilitate modifications to the BitTorrent protocol which would defeat legitimate and necessary traffic management.”<sup>113</sup> That is exactly what has happened -- less than three days after Comcast filed its comments, several BitTorrent developers openly stated that they have every intention of using the now-public information about Comcast’s network management efforts to circumvent those efforts, regardless of the harm such evasions would cause to other customers’ use of the network.<sup>114</sup>

NATOA criticizes Comcast’s revised Acceptable Use Policy (“AUP”) and Frequently Asked Questions (“FAQs”) because it claims that, although providing greater transparency, Comcast still does not provide sufficient information to allow customers to know when a specific application they are using will be adversely impacted.<sup>115</sup> Comcast believes that its new AUP and FAQs provide as much or more disclosure than any other U.S. broadband provider, and strike a reasonable balance that takes into account all the factors outlined above, particularly when one considers the nature of the tools being used. The disclosures clearly explain that, if a customer is using certain P2P protocols, that use *may* be subject to network management during peak usage periods. Moreover, providing any more detail risks revealing too much to users and others who seek to undermine network management. Finally, because Comcast’s management practices

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<sup>113</sup> Discovery Institute Comments at 3.

<sup>114</sup> See Cade Metz, *BitTorrent Busts Comcast BitTorrent Busting*, The Register, Feb. 19, 2008 (explaining that “a quartet of BitTorrent developers - including three staffers at BitTorrent Inc. - proposed a new extension to the popular P2P protocol that would circumvent” Comcast’s network management practices), *available at* [http://www.theregister.co.uk/2008/02/19/bittorrent\\_developers\\_hit\\_back\\_at\\_comcast/](http://www.theregister.co.uk/2008/02/19/bittorrent_developers_hit_back_at_comcast/); Vuze Comments at 1-2 (referring to “technical counter-measures” that it employs to work around network management by broadband service providers).

<sup>115</sup> NATOA Free Press Comments at 8.

necessarily change frequently, it conceivably would have to update its disclosures that often if NATOA had its way.

NATOA's comments reflect a fundamental misunderstanding of Comcast's current network management practices. The AUP and FAQs clearly state that Comcast does not manage particular applications or services; it only manages congestion and the protocols that are most likely to cause that congestion. Thus, if there is no threat of congestion, the management tool has no impact whatsoever on the use of any P2P protocols.

In sum, network owners must retain the freedom to respond to network congestion and other demands on their networks in the manner that best serves the interests of their customers. Appropriate disclosure should be the norm, but disclosure of the details of each and every network management change would not only be practically impossible but also would frustrate the effectiveness of the solutions they are trying to implement. The record makes clear that broadband providers are using the flexibility they currently have appropriately. Certainly, even if the Commission had authority to regulate in this area, the record before the Commission in no way suggests that there has been any failure on the part of broadband service providers that would warrant specific Commission-imposed disclosure requirements, particularly when mandated disclosure could have serious unintended and undesirable consequences.

**VII. COMPETITION, NOT GOVERNMENT REGULATION, CONTINUES TO BE THE BEST MEANS TO DISCIPLINE MARKETPLACE BEHAVIOR.**

Broadband service providers know that consumers will settle for nothing less than complete access to Internet content, applications, and services, and that their customers have no qualms about switching Internet providers. Competition and continued growth will ensure that

consumers have access to the content they desire.<sup>116</sup> Facilities-based competition has delivered Americans more choice among broadband providers than most other nations enjoy, and has delivered greater speeds and greater value at a rapid pace. In a few short years, the United States has gone from having *no* residential broadband to an environment in which cable, telephone, licensed and unlicensed wireless, and satellite are offering broadband to American households. Since the days of dial-up, speeds have increased by several orders of magnitude, and even faster speeds are coming. The competition among Comcast and other broadband service providers will maximize the experience of every subscriber in terms of reliability, security, and speed consistent with the economic imperatives of the marketplace.<sup>117</sup>

As Comcast and numerous others explain in their comments, the success of the Internet marketplace is due in large part to the deregulatory course Congress and the Commission have charted. The majority of commenters agree that the broadband marketplace is competitive and healthy,<sup>118</sup> and that the benefits that it delivers to consumers are attributable to Congress's and the Commission's deregulatory policy.<sup>119</sup> In such a competitive environment, there is no need for Commission action, which, as many commenters point out, could threaten innovation and consumer welfare. Further, as several commenters put it, the Commission's authority to adopt enforceable rules regarding network management practices is at best questionable, and there is no legitimate basis for taking enforcement action here.

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<sup>116</sup> See TIA Comments at 17.

<sup>117</sup> See U.S. Chamber of Commerce Comments at 5; *see also* Comcast Comments at 3; Verizon Comments at 6.

<sup>118</sup> See, e.g., Qwest Comments at 5; Time Warner Cable Comments at 3-5; USTA Comments at 4, 9; Verizon Comments at 4-5, 10.

<sup>119</sup> See, e.g., Global Crossing Comments at 2-3; Qwest Comments at 3, 5; SBE Council Comments at 2; Time Warner Comments at 6-7; TIA Comments at 17-18; USTA Comments at 12-13.

**A. There Is No Legitimate Basis for the Declaratory Ruling Free Press Has Requested.**

The record before the Commission clearly confirms that there is no conceivable basis for the declaratory ruling Free Press seeks. Although several parties claim the Commission can take enforcement measures on a case-by-case basis, not a single party has articulated a credible legal theory as to how the Commission can do so on the basis of a policy statement. In fact, the wild theories and ad hominem accusations presented by Free Press in its filings with the Commission and elsewhere serve merely to confirm the legal deficiencies of Free Press's proposals.

As Comcast and others have reiterated, and as the Commission's own record makes crystal-clear, the *Internet Policy Statement* did not create legally enforceable rules.<sup>120</sup> Comcast also established that the Commission cannot rely on its Title I ancillary authority to take enforcement action based on the *Internet Policy Statement*.<sup>121</sup> Finally, Comcast explained that any attempt to retroactively enforce the terms of the *Internet Policy Statement* by imposing forfeitures and penalties would constitute unlawful retroactive rulemaking.<sup>122</sup> Multiple commenters support these positions.<sup>123</sup> And, even among those who want the Commission to adopt *rules* governing network management, there is an acknowledgement that the *Internet*

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<sup>120</sup> See Comcast Comments at 43-48.

<sup>121</sup> See *id.* at 49-51.

<sup>122</sup> See *id.* at 51.

<sup>123</sup> See Free State Foundation Comments at 1 (recognizing that the *Internet Policy Statement* "adopted 'principles' – not rules"); USIIA Comments at 3 (stating that "on the basis of the [*Internet Policy Statement*] principles . . . alone the FCC does not have the grounds to issue a declaratory ruling with regard to effective management of intelligent networks"); see also Embarq Comments at 2-3 (indicating that the Free Press Petition should be dismissed in its entirety).

*Policy Statement* provides no basis for Commission enforcement actions, and that a rulemaking would be required before enforcement action would be appropriate.<sup>124</sup>

Although some commenters state either that the Commission can or should find that Comcast “violated” the *Internet Policy Statement*, or that the Commission can or should “enforce” its terms, not a single commenter cites any valid legal basis to support these requests for relief. In fact, the vast majority of them do not devote *even a single word* to establishing the existence of legal authority for enforcement of the *Internet Policy Statement*.<sup>125</sup> Others simply cite the *Internet Policy Statement* itself or make vague reference to Title I ancillary authority, but never explain any legal basis under which the *Internet Policy Statement* could be deemed an enforceable rule.<sup>126</sup> Another party attempts to draw an analogy to the Commission’s authority under Sections 201(b) and 202(a) of the Communications Act, but even that party concedes that those sections can be nothing more than analogies<sup>127</sup> because those provisions simply do not apply to high-speed Internet access.<sup>128</sup>

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<sup>124</sup> NATOA Free Press Comments at 4 (stating that the “Commission made it clear that the principles were not rules and that they were subject to ‘reasonable network management’”); *see also* Vonage Comments at 3-4 (stating that the *Internet Policy Statement* would have to be “codified and enforced,” and that the Commission’s previous exercise of enforcement authority in the *Madison River* case involved “Title II authority that is no longer applicable to many wireline broadband services”). As shown below, there is no basis for a rulemaking here. *See infra* Section VII.B.

<sup>125</sup> *See, e.g.*, NASUCA Comments at 3, 5, 6 (not citing any legal basis); NATOA Free Press Comments at 7 (same); Frontier Comments at 2, 8-9 (same). WCAI makes reference to potential “enforcement” action, but cites no source of legal authority and qualifies its statements by saying that such action would be appropriate only if “the Commission concludes that it has the necessary authority to take such action.” WCAI Comments at 3, 6, 7 n.16.

<sup>126</sup> *See, e.g.*, Organization for the Promotion and Advancement of Small Telecommunications Companies (“OPASTCO”) Comments at 2, 3 (referencing “enforcement action” but citing only the *Policy Statement* itself); CCIA Comments at 2, 3, 6 (same).

<sup>127</sup> *See* TIA Comments at 19.

<sup>128</sup> *See* Comcast Comments at 48; *see also In re Inquiry Concerning High-Speed Access to the Internet over Cable and Other Facilities; Internet over Cable Declaratory Ruling; Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities*, Declaratory Ruling and NPRM, 17 FCC Rcd. 4798 ¶¶ 42- (footnote continued...)

Free Press, for its part, attempts to weave together the *Internet Policy Statement*, various provisions of the Communications Act, and assorted snippets from a series of Commission orders in an amateurish and futile effort to concoct a plausible theory. First, Free Press repeatedly refers to alleged “violations” of the *Internet Policy Statement*.<sup>129</sup> Even if the allegations were factually accurate, which they are not, any such “violation” does not create a basis for Commission enforcement, as the plain terms of the *Internet Policy Statement*, contemporaneous statements of Commission officials, and elementary principles of administrative and constitutional law all affirm.<sup>130</sup>

Second, Free Press suggests that the Commission could rely on Sections 230(b)(2) and 230(b)(3) of the Communications Act.<sup>131</sup> Section 230 warns *against* regulatory intervention. Section 230(b)(2) makes clear that “the policy of the United States” is “to preserve the vibrant and competitive free market that presently exists for the Internet . . . *unfettered by Federal or State regulation.*”<sup>132</sup> This section could be read to bar the Commission from even adopting *rules* governing network management, and it certainly does not provide authority for Commission enforcement action in the absence of rules. Moreover, Section 230(b)(3)’s preference for “technologies that maximize user control”<sup>133</sup> must be read in harmony with the clearly

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(...footnote continued)

44, 52-55 (2002) (“*Cable Modem Declaratory Ruling and NPRM*”), *aff’d*, *National Cable & Telecomm. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967 (2005).

<sup>129</sup> See Free Press Comments at 15, 16, 67.

<sup>130</sup> See Comcast Comments at 42-51.

<sup>131</sup> See Free Press Comments at 18-22.

<sup>132</sup> 47 U.S.C. § 230(b)(2) (emphasis added); see Comcast Comments at 54 n.155.

<sup>133</sup> 47 U.S.C. § 230(b)(3).

deregulatory purpose of the section that precedes it.<sup>134</sup> And, in fact, the minimally intrusive management techniques that Comcast employs are themselves designed to “maximize user control” over the Internet experience of *all* Comcast customers.

Third, Free Press invokes “Section 706 of the Communications Act.”<sup>135</sup> We will assume that Free Press means Section 706 of the Telecommunications Act of 1996 (“1996 Act”), since Section 706 of the Communications Act is entitled “WAR EMERGENCY -- POWERS OF PRESIDENT.” Section 706 of the 1996 Act expresses a national policy in favor of “regulatory forbearance, measures that promote competition . . . , or other regulating methods that *remove* barriers to infrastructure investment” regarding “advanced telecommunications capability,” including broadband Internet access.<sup>136</sup> Like Section 230(b)(2), this section confirms Congress’s *deregulatory* intentions.<sup>137</sup> In any event, the Commission has already decided that Section 706 is not an independent source of authority but, rather, guidance to be used in exercising authority that Congress has otherwise conferred.<sup>138</sup>

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<sup>134</sup> See, e.g., *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 133 (2000) (explaining that a court must make every attempt to interpret a statute “‘as a symmetrical and coherent regulatory scheme’” and “‘fit, if possible, all parts into an harmonious whole.’”) (citations omitted).

<sup>135</sup> Free Press Comments at 19.

<sup>136</sup> Telecommunications Act of 1996, Pub. L. No. 104-104, § 706, 110 Stat 56, 153 (1996) (emphasis added).

<sup>137</sup> Free Press’s contention that the Commission could rely on Section 706’s emphasis on “two-way” high-speed networks to find Comcast’s network management activities unlawful relies on a tortured mischaracterization of both the nature of Comcast’s practices and their impact on users. As fully explained in Comcast’s comments and above, at present Comcast manages uploads *only* when the customer is *not* simultaneously downloading, and thus does not impact the ability of users to engage in two-way activities. Comcast Comments at 4, 27-28. Further, Comcast’s management activities are expressly designed to *protect* the ability of all Comcast customers to use “two-way” applications that are sensitive to latency and packet loss, such as VoIP, streaming video/audio, and online gaming. *Id.* at 25-26. In this sense, the techniques that Comcast uses are entirely consistent with Section 706.

<sup>138</sup> *In re Deployment of Wireline Services Offering Advanced Telecommunications Capability*, Mem. Op. & Order, 13 FCC Rcd. 24012 ¶ 77 (1998) (subsequent history omitted) (“For the foregoing reasons, we conclude that, in light of the statutory language, the framework of the 1996 Act, its legislative history, and Congress’ policy objectives, the most logical statutory interpretation is that section 706 does not constitute an independent grant of authority.”); *id.* ¶ 74 (“[W]e conclude that section 706(a) gives the Commission an affirmative obligation to

(footnote continued...)

Finally, Free Press contends that the Commission has already declared, in the *700 MHz Auction Order*, that degrading applications is not “reasonable network management,” and that order is applicable here.<sup>139</sup> In fact, the *700 MHz Auction Order* proves Comcast’s argument. The *700 MHz Auction Order*, by its own terms, establishes “rules governing wireless licenses in the 698-806 MHz Band.”<sup>140</sup> This is a rule, fashioned in advance, for a new service that uses some of the most precious portions of the public airwaves. The rule is known to all before any company invests a single dollar. The notion that this rule can be stretched to apply to other networks and other services is absurd. Further, the broad nondiscrimination mandates that Free Press asks the Commission to “enforce” against Comcast apply only to a limited spectrum block -- the C Block -- within the 700 MHz band.<sup>141</sup> The Commission expressly concluded that “it would not serve the public interest to mandate, at this time, requirements for open platforms for devices and applications for all unauctioned commercial 700 MHz spectrum.”<sup>142</sup> Given that conclusion, it is clearly not the case that the Commission adopted the rule to apply to non-wireless services like Comcast’s High-Speed Internet service. Free Press’s contention that the portions of the *700 MHz Auction Order* on which it relies represent a “determin[ation]” that

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(...footnote continued)

encourage the deployment of advanced services, *relying on our authority established elsewhere in the Act.*” (emphasis added)); *see also In re Deployment of Wireline Services Offering Advanced Telecommunications Capability, et al.*, Order on Reconsideration, 15 FCC Rcd. 17044 ¶ 5 (2000) (affirming that Section 706 does not constitute an independent grant of authority). Even in last year’s *Franchising Order*, the Commission recognized that it was empowered merely to “consider the goals of Section 706 when formulating regulations under the Act,” and did not find that Section 706 gave it independent authority to promulgate rules. *See In re Implementation of Section 621(a)(1) of the Cable Communications Policy Act of 1984 as amended by the Cable Television Consumer Protection and Competition Act of 1992*, Report and Order & FNPRM, 22 FCC Rcd. 5101 ¶ 62 (2007).

<sup>139</sup> See Free Press Comments at 22-23.

<sup>140</sup> See *In re Service Rules for the 698-746, 747-762, and 777-792 MHz Bands et al.*, Second Report & Order, 22 FCC Rcd. 15289 ¶ 1 (2007) (“*700 MHz Auction Order*”) (emphasis added).

<sup>141</sup> *Id.* ¶ 195.

<sup>142</sup> *Id.*

Comcast's practices are unreasonable, or are otherwise binding and enforceable in this proceeding,<sup>143</sup> utterly lacks merit.

**B. The Record Shows That There Is No Need or Basis for the Commission To Initiate a Rulemaking.**

The record also makes clear that there is no need to initiate a rulemaking regarding broadband network management practices. The vast majority of commenters in this proceeding agree, and have cited a large body of evidence showing that the marketplace is working well without regulation and that increased government interference would inhibit investment, impede innovation, decrease broadband deployment and adoption, and diminish consumer welfare.<sup>144</sup> Furthermore, as a variety of parties have noted, existing laws, including antitrust and unfair competition laws, already protect consumers, and the Department of Justice and the Federal Trade Commission stand ready to step in if necessary.<sup>145</sup> For their part, the Justice Department (in this very docket) and the FTC (in a major report) have forcefully opined that they see a healthy Internet marketplace in which regulation is unnecessary and counterproductive.<sup>146</sup>

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<sup>143</sup> Free Press Comments at 22.

<sup>144</sup> See, e.g., AT&T Comments at 18-23; Verizon Comments at 10-18; Qwest Comments at 5; USTA Comments at 3-12; Embarq Comments at 1, 5; NCTA Comments at 9-10; Time Warner Comments at 4-9; CTIA Comments at 3-5; Lariat Comments at 2; Global Crossing Comments at 2-3; Frontier Comments at 6-8; ITTA Comments at 3-7; TIA Comments at 7-9; USIIA Comments at 4-6; FTTH Council Comments at 34-35; U.S. Chamber of Commerce Comments at 8-9; IPI Comments at 3-5; American Homeowners Grassroots Alliance Comments at 3-4; SBE Council Comments at 2; Free State Foundation Comments at 2-3; National Black Chamber of Commerce Comments at 1; National Grange Comments at 2.

<sup>145</sup> See, e.g., AT&T Comments at 24 n.61 (stating “[t]here are sound arguments, however, that the types of concerns raised in these petitions are best addressed through traditional antitrust mechanisms and consumer-protection laws of general application”); Hands Off the Internet Comments at 4-6 (FTC and DOJ already have tools to protect consumers if needed from broadband providers and have shown a willingness to investigate and take enforcement action); ITTA Comments at 8; TIA Comments at 18; Free State Foundation Comments at 8.

<sup>146</sup> See Ex Parte Filing, Antitrust Division, U.S. Dept. of Justice, WC Docket No. 07-52 (Sept. 6, 2007); FTC, *Broadband Connectivity Competition Policy* 100-01 (June 2007) (“*FTC Broadband Report*”), available at <http://www.ftc.gov/opa/2007/06/broadband.shtm>.

Many commenters agree that preemptive, prophylactic regulation would harm the public interest. For example, TIA explains that “the adoption of intrusive regulation establishing bright-line prohibitions would in fact undermine rather than further” the effectiveness of the *Internet Policy Statement* because such requirements would diminish providers’ incentives to invest, self-regulate, solve underlying capacity limitations, and respond to users’ changing needs.<sup>147</sup> Similarly, Hands Off the Internet cautions that “wholesale regulations may have severe unintended consequences for the very consumers these sought-after regulations would conceivably protect.”<sup>148</sup> OPASTCO warns against imposing rules that “could unintentionally impede the deployment of broadband services in rural areas.”<sup>149</sup>

Not only would one-size-fits-all regulation of management practices generally stifle this dynamic market, but as Frontier points out, the relief that Vuze seeks is *itself* anticompetitive.<sup>150</sup> Torrent technology shifts costs from the content provider to broadband providers and their customers by using those customers and their service providers as supplementary capacity without any additional costs to the content provider. Frontier explains that, as a result, Vuze’s proposal would “stifle potential competition from ISPs and from future new applications by guaranteeing the priority of Vuze’s cost-shifting technology,” and would result in “either across-the-board service degradations, or forced network upgrades solely to accommodate torrent

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<sup>147</sup> TIA Comments at 5-9, 15-21.

<sup>148</sup> Hands Off the Internet Comments at 3.

<sup>149</sup> OPASTCO Comments at 3.

<sup>150</sup> Frontier Comments at 2-3.

technology with significant added costs to all ISPs and significant price increases to all consumers of broadband access services.”<sup>151</sup>

Moreover, the Commission’s authority to adopt enforceable rules regarding network management practices is at best questionable, as Comcast and others have pointed out.<sup>152</sup> The Commission’s authority must be “ancillary” to some statutory responsibility, and nothing in the record even purports to explain what that responsibility might be.<sup>153</sup> Even commenters who appear to believe the Commission *could* exercise such authority nevertheless question whether the Commission *should* exercise such authority.<sup>154</sup> Many commenters urging the adoption of network management rules<sup>155</sup> or clarification of terms in the *Internet Policy Statement*<sup>156</sup> appear

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<sup>151</sup> *Id.* at 2, 4.

<sup>152</sup> *See, e.g.*, Recording Industry Ass’n of Am. Comments at 4-6 (noting that the issue of whether the Commission has ancillary authority is an open question and that Congressional policy calls for deregulatory treatment of Internet networks); AT&T Comments at 24 n.61 (assuming without conceding Commission jurisdiction for purposes of its comments) (citing *FCC v. Midwest Video Corp.*, 440 U.S. 689, 700-09 (1979) (invalidating assertion of Title I jurisdiction); *Motion Picture Ass’n of Am. v. FCC*, 309 F.3d 796, 806 (D.C. Cir. 2002) (same); *American Library Ass’n v. FCC*, 406 F.3d 689, 701 (D.C. Cir. 2005) (same)); Time Warner Cable Comments at 26 (explaining that such regulations “run directly counter to the congressional policy established in Section 230(b) of the [Communications] Act” and that the Commission’s authority is “uncertain at best”); Comcast Comments at 52-54; *see also* Global Crossing Comments at 2-4 (recognizing that “while Internet backbone services could be construed to fall under the [FCC’s] subject matter jurisdiction . . . regulating such services is not, on its face, ‘reasonably ancillary’ to the [FCC’s] specific statutory responsibilities”).

<sup>153</sup> *See American Library Ass’n*, 406 F.3d at 692 (“There is no statutory foundation for the [Commission’s] rules, and consequently the rules are ancillary to nothing.”).

<sup>154</sup> *See, e.g.*, CDT Comments at 3 (stating that the Commission should avoid setting dangerous precedent that it has general regulatory authority over the broadband Internet).

<sup>155</sup> *See, e.g.*, Vuze Comments at 3-4 (requesting adoption of rules without providing any source of legal authority); Sony Comments at 5-6 (suggesting that the Commission should clarify the terms “reasonable” and “network management” without suggesting any basis for Commission jurisdiction); NASUCA Comments at 3, 5-7 (calling for the Commission to create rules but without identifying any basis for doing so); NATOA Comments on Vuze Petition at 3-5 (requesting adoption of rules without addressing Commission authority); Vonage Comments at 7-8 (stating that the Commission should “codify the principles in its Internet Policy Statement and place clear and enforceable limits on ‘reasonable network management’” without stating any basis for the Commission’s authority to do so); NYPSC Comments at 2 (urging the Commission to consider common carrier regulation without showing any basis for authority to adopt such rules).

<sup>156</sup> *See, e.g.*, DCIA Comments at 9 (stating that “the Commission should seek to provide consumers, ISPs, and applications, services, and content providers with clarity regarding what to expect with respect to broadband  
(footnote continued...)

to simply *assume* -- erroneously -- that the Commission has such authority without even trying to explain why. And although a handful of parties assert that the Commission has ancillary authority to establish rules regulating how broadband service providers manage their networks,<sup>157</sup> none provide any analysis explaining why regulatory action based on the *Internet Policy Statement* would be “reasonably ancillary” to the performance of any “statutorily mandated responsibilities” of the Commission.<sup>158</sup> The record thus provides no reasoned basis for the Commission to initiate a rulemaking regarding network management practices as an exercise of its ancillary authority, let alone to depart from its numerous, consistent, and successful precedents regarding the reasons why “broadband services should exist in a minimal regulatory environment.”<sup>159</sup>

The only way to ensure continued growth and innovation in the Internet marketplace is to allow that marketplace to work. Government regulation of the Internet will inevitably retard the expansion, and increase the cost, of broadband deployment -- in direct contravention of nearly universally shared policy objectives.<sup>160</sup> It would make no sense for the government to interject

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(...footnote continued)

network management practices”); *see also* NTCA Comments at 1-2 (suggesting that the FCC define “degrade” without addressing Commission authority to do so).

<sup>157</sup> *See, e.g.*, TIA Comments at 7 (stating only that the Commission has “expressed its view” that it has such authority and urging that the Commission not adopt rules); Hand Off the Internet Comments at 3-4 (asserting that the prerequisites for the FCC’s ancillary jurisdiction under Title I are satisfied without providing any explanation); CCIA Comments at 6.

<sup>158</sup> *American Library Ass’n*, 406 F.3d at 700 (citing *United States v. Southwestern Cable Co.*, 392 U.S. 157, 178 (1968)).

<sup>159</sup> *See Cable Modem Declaratory Ruling and NPRM* ¶ 5 (internal citation and quotation marks omitted); *see also In re Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, Report & Order and NPRM, 20 FCC Rcd. 14853 ¶ 1 (2005) (“This framework establishes a minimal regulatory environment for wireline broadband Internet access services[.]”).

<sup>160</sup> *See AT&T Comments* at 20 (“Worse yet, the pricing pressures imposed by Free Press’s elitist agenda would depress broadband subscribership most in those low-income communities where consumers are most  
(footnote continued...)”)

the heavy hand of regulation in a vibrant, dynamic, and innovative marketplace in response to ethereal, hypothetical, and rhetorical arguments.

As recently as last year, Chairman Martin and Commissioner Tate recognized in a joint statement that even adoption of a new net neutrality *principle* was “not necessary and may impede infrastructure deployment.”<sup>161</sup> Such concerns apply even more forcefully when parties propose the promulgation of *rules*. The pace of innovation in the Internet marketplace and the constantly changing techniques used to manage networks would make any government regulation of network management wholly unworkable. The government does not have the expertise or resources to second-guess each of the *thousands* of network management decisions engineers make every day, much less to make those decisions at a pace that is consistent with the dynamic and vibrant nature of the Internet marketplace and technologies.

Any government attempt to micromanage how engineers manage the network would inevitably lead to new and higher costs for broadband and likely will make it harder -- and more expensive -- to raise the capital necessary for continued deployment and improvement of broadband networks.<sup>162</sup> And once the government starts regulating the Internet, there is nothing

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sensitive to variations in price. In this respect as well, the net neutrality agenda is at war with the Commission’s objective of bridging the ‘digital divide.’”).

<sup>161</sup> *In re AT&T Inc. and BellSouth Corp. Application for Transfer of Control*, Memorandum Opinion & Order, 22 FCC Rcd. 5662, 5827 (2007) (Joint Statement of Chairman Kevin J. Martin and Commissioner Deborah Taylor Tate).

<sup>162</sup> *See, e.g.*, Discovery Institute Comments at 2 (“Investment will dry up if Wall Street perceives there’s a possibility broadband networks are on a trajectory toward further regulation.”); U.S. Chamber of Commerce Comments at 9 (“[N]ow is not the time to introduce policies that would inflict regulatory uncertainty, stifle investment, slow the development of new technologies, and inhibit U.S. economic development and competitiveness.”); Thomas Nolle, *Access Wars*, Network World, Feb. 20, 2008 (“There are all kinds of public pressures to somehow promise that the Internet will do more without costing more, but what do you think would happen if the government told Ford or GM to sell new cars for twenty bucks? There’d be no cars sold, because none would be produced. The same holds for bits. If access providers can’t produce them at a reasonable profit, we won’t see much bit sales either.”), available at <http://www.networkworld.com/columnists/2008/022008-nolle.html>.

to limit its regulatory reach only to broadband service providers. Those who invite Commission intervention in this sphere may well ask the Commission to second-guess whether Google's search results are presented "neutrally," or whether to require "disclosure" of the now-secret algorithms that dictate how search results are presented to consumers. They may well ask the Commission to oversee how Microsoft designs its operating systems or its web browser. Beginning the descent down this slippery slope will start an unstoppable regulatory avalanche that will sweep through all layers of the Internet.

## VIII. CONCLUSION

The first-round comments provide abundant evidence that the broadband marketplace is functioning well to advance the interests of consumers. Comcast's network management practices and its consumer disclosures are lawful, reasonable, and pro-consumer. The Commission should continue its successful policy of vigilant restraint.

Respectfully submitted,

/s/ Kathryn A. Zachem

James L. Casserly  
Ryan G. Wallach  
Daniel K. Alvarez  
WILLKIE FARR & GALLAGHER LLP  
1875 K Street, N.W.  
Washington, D.C. 20006-1238

Kathryn A. Zachem  
Mary McManus  
COMCAST CORPORATION  
2001 Pennsylvania Ave., NW  
Suite 500  
Washington, D.C. 20006  
(202) 379-7134  
(202) 379-7141

Helgi C. Walker  
Eve Klindera Reed  
WILEY REIN LLP  
1776 K Street, N.W.  
Washington, D.C. 20006

Joseph W. Waz, Jr.  
COMCAST CORPORATION  
One Comcast Center  
1701 John F. Kennedy Boulevard  
Philadelphia, PA 19103-2838

*Attorneys for Comcast Corporation*

Thomas R. Nathan  
Gerard J. Lewis, Jr.  
COMCAST CABLE COMMUNICATIONS, LLC  
One Comcast Center  
1701 John F. Kennedy Boulevard  
Philadelphia, PA 19103-2838

February 28, 2008