

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554**

In the Matter of	)	
	)	
Inquiry Concerning the Deployment of	)	GN Docket No. 09-137
Advanced Telecommunications Capability to	)	
All Americans in a Reasonable and Timely	)	
Fashion, and Possible Steps to Accelerate	)	
Such Deployment Pursuant to Section 706 of the	)	
Telecommunications Act of 1996, as Amended	)	
by the Broadband Data Improvement Act	)	
	)	
A National Broadband Plan for Our Future	)	GN Docket No. 09-51

**COMMENTS OF FREE PRESS**

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## I. INTRODUCTION AND SUMMARY

This Notice of Inquiry seeks input into the Commission’s sixth inquiry concerning the availability of advanced telecommunications capability to all Americans, as mandated by the Telecommunications Act of 1996 (“The 1996 Act”).<sup>1</sup> The task before the Commission is clearly articulated in The 1996 Act: to “determine whether advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion.”<sup>2</sup> The law provides a very specific and quantifiable definition of “advanced telecommunications capability”. The 1996 Act states, “[t]he term ‘advanced telecommunications capability’ is defined, without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to *originate and receive* high-quality voice, data, graphics, and video telecommunications using any technology.”<sup>3</sup>

We respectfully disagree with the conclusion of the Commission in the previous five Section 706 Reports, which all stated that the deployment of *advanced telecommunications capability* was being deployed to *all* Americans in a reasonable and timely fashion.<sup>4</sup> As we

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<sup>1</sup> 47 U.S.C. § 157. See § 706(b) of the Telecommunications Act of 1996, 104 P.L. 104; 110 Stat. 56; 1996 Enacted S. 652; February 8, 1996. Section 706(b) originally mandated the Commission to conduct a “regular” inquiry. The Broadband Data Improvement Act (BDIA) changed this periodic inquiry to an annual inquiry. See 47 U.S.C. § 1301 *et seq.* (*Broadband Data Improvement Act*).

<sup>2</sup> 47 U.S.C. § 1302(b).

<sup>3</sup> 47 U.S.C. § 1302(d)(1) (*emphasis added*).

<sup>4</sup> *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Report, 14 FCC Rcd 2398 (1999); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Second Report, 15 FCC Rcd 20913 (2000); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No.

stated in the comments for the *Fifth Inquiry*<sup>5</sup> and in our Petition for Reconsideration of the *Fifth Report*<sup>6</sup>, to make these affirmative Section 706 declarations, the Commission ignored the statutory language of the Act (and ultimately the intent of Congress) by focusing on the deployment of *non-dial-up* Internet services, and not *advanced telecommunications* services as intended by The Act.<sup>7</sup> The two are not the same. It is a plainly irrefutable fact that very few Americans are able to purchase services that enable them to originate high-quality video content; and the current and planned future deployment of such services is very limited in scope. This stands in stark contrast to the services commonly available in other nations. We believe that

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98-146, Report, 17 FCC Rcd 2844 (2002); *Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Fourth Report to Congress, 19 FCC Rcd 20540 (2004); *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, GN Docket No. 07-45, Fifth Report, 23 FCC Rcd 9615, 9616, para. 2 (2008) (*Section 706 Fifth Report*), *pet. for recon. pending*.

<sup>5</sup> Comments of Consumers Union, Consumer Federation of America, and Free Press, *In the Matter of Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable And Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN Docket No. 07-45, May 16 (2007).

<sup>6</sup> Petition for Reconsideration, Consumers Union, Consumer Federation of America, and Free Press, GN Docket No. 07-45 (filed July 11, 2008). See also Reply Comments of Consumers Union, Consumer Federation of America, and Free Press, *In the Matter of Pleading Cycle Established for Comments on Petition for Reconsideration of the Commission's Fifth 706 Report*, GN Docket No. 07-45, September 24 (2008).

<sup>7</sup> We use the term “non-dial-up Internet access” to mean any “always-on” means of connecting to the Internet that does not involve the use of a “dial-up” modem (a form of connection that involves the use of a telephone line and a modem, in which the user creates a link with an ISP via a “handshake”, and which has a maximum symmetrical connection speed of 56 kbps); or does not involve the use of BRI ISDN technology (Basic Rate Interface Integrated Services Digital Network), which is also conducted over traditional copper telephone networks, with 2 64 kbps channels, capable of carrying voice or data packets over the public switched telephone network (PSTN). In general, for the purposes of these comments, “non-dial-up technologies” include traditional wireline (DS-1 or DS-3 TDM circuits), optical carrier (OC-n), digital subscriber line (xDSL; asymmetric, or symmetric), cable modem, fiber-to-the-home (ftth), fiber-to-the-node (fttn), fiber-to-the-curb (fttc), third generation mobile wireless (3G), Long-Term Evolution mobile wireless (LTE or “4G”), Wifi, WiMax (fixed or mobile), Satellite, and broadband over powerline (BPL). Some of these technologies also fall under the definition of “advanced telecommunications capability”, depending on exactly how they are provisioned.

under a proper analysis of deployment based upon the actual language of Section 706, the only appropriate conclusion is that the deployment of actual “advanced telecommunications capability” to *all* Americans is neither reasonable nor timely.

Furthermore, even ignoring the specific bar set by Section 706 with regards to the functionality of “advanced telecommunications”, we believe that the deployment of *non-dial-up* Internet capability is not proceeding in a reasonable and timely manner to *all* Americans. In these comments we demonstrate how large segments of the U.S. market remain unserved, and will likely continue to remain unserved without proper intervention by the Commission. We also demonstrate how in areas that are served by non-dial-up Internet Service Providers, that the lack of adequate competition on price, speed and value has led to slower than expected uptake of these services, and has also led to depressed net investment and slower or non-existent deployment of “true next-generation” broadband services.

Finally, as we detail below, the Commission's wildly irresponsible classification of advanced telecommunications services as information services has a direct bearing on this proceeding. This reclassification effectively means that outside of enterprise services, advanced telecommunications capability is not being deployed at all -- to anyone. While this may at first blush appear to be a silly rhetorical parlor trick (no more outrageous than the original rhetorical end-run around the law that was at the center of the 2005 *Wireline Broadband Order*),<sup>8</sup> the legal

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<sup>8</sup> *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review –Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. §160(c) with Regard to Broadband Services Provided via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided via Fiber to the Premises; Consumer Protection in the*

consequences of the 2005 and subsequent reclassifications of consumer broadband services as pure information services cannot be ignored.

We believe that if the Commission evaluates the wealth of information that it currently possesses, and measures it honestly according to the standard of Section 706, that it can only come to one conclusion: advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion. We feel that there are a number of regulatory tools at the Commissions disposal to begin to turn this situation around, including polices that promote meaningful competition and promote investment in the open Internet.

## **II. THE LAW GIVES A CLEAR AND PRECISE MEANING TO THE TERMS ‘ADVANCED TELECOMMUNICATIONS CAPABILITY’ AND ‘BROADBAND’**

### **A. The Purpose of this Inquiry is to Determine Whether Deployment of Services that Facilitate, at a Minimum, the Downloading and Uploading of High-Quality Video, Voice and Data Content, is Reasonable and Timely**

The promise of the Internet to affect social and economic change is based upon its fundamental nature as a *two-way* communications medium. During the time when Congress was developing the revisions to the 1934 Communications Act, there was already a move in the market towards increased availability of one-way content delivery networks (digital cable, digital broadcast satellite) and rapid deployment of narrowband two-way networks (dial-up, ISDN). Congress clearly was concerned that the deployment of robust two-way networks might not proceed in a timely fashion. This concern was the genesis of Section 706.

For example, the accompanying Committee language to S.1822 (a predecessor bill to the 1996 Act) clearly states the importance of developing *two-way* broadband service, and the belief

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*Broadband Era*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 (2005) (*Wireline Broadband Order*).

that carriers would likely, without appropriate FCC action, continue to deploy high-speed services that did not live up to the standard of “true” broadband<sup>9</sup>:

Section 901 grants the necessary authority to the FCC to achieve in a timely fashion the national policy goal of making available, so far as possible to all the people of the United States, high-capacity *two-way communications* networks capable of enabling users to *originate and receive* **affordable** and accessible *high-quality, voice, data, graphics, video*, and other types of telecommunications services. *This capacity is defined as switched broadband telecommunications network capability.*

The Committee anticipates that this goal will be achieved through competition that is enhanced under the terms of this bill. But if this goal is not being achieved in a timely fashion, the FCC is authorized to act under this section to expedite deployment through the use of incentive regulations.

This goal will not be achieved if carriers only deploy more of the same service that subscribers already receive today. Currently, most subscribers in America can originate and receive voice and data service, but not video and graphics. The Committee anticipates that, under this bill, all Americans will eventually be able to transmit and receive information in all its forms.

The Committee is concerned that such capability will not be deployed in a timely fashion. According to Dr. Robert Cohen, a Senior Fellow at the Economic Strategy Institute, less than 1 percent of the subscribers who will receive the broadband service under the proposals pending before the FCC will be served by systems that are capable of both sending and receiving information in all its forms. *Most of the systems are only capable of delivering more two-way phone and data service and more one-way cable service.* One goal of S. 1822 is to provide new, advanced services to Americans.

The Congressional emphasis on *two-way true next generation “broadband”* is clear and undeniable. The accompanying report on the Senate bill that became the 1996 Act (S.652) also contains a similar emphasis on two-way next generation technology<sup>10</sup>:

The goal is to accelerate deployment of an advanced capability that will enable subscribers in all parts of the United States to *send and receive* information in all its forms: voice, data, graphics, and *video* over a high-speed switched, interactive,

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<sup>9</sup> Communications Act of 1994, S. 1822, Senate Report 103-367, 103d Congress, 2nd Session (1994) (*emphasis added*).

<sup>10</sup> Telecommunications Competition and Deregulation Act of 1995, S. 652, Senate Report 104-23, 104th Congress, 1st Session (1995) (*emphasis added*).

broadband, transmission capability... Section 304 of the bill is intended to ensure that one of the primary objectives of the bill to accelerate deployment of advanced telecommunications capability is achieved. Section 4 of the bill states clearly that this bill is intended to establish a national policy framework designed to accelerate rapidly the private sector deployment of advanced telecommunications. More specifically, *the bill's goal is "to promote and encourage advanced telecommunications networks, capable of enabling users to originate and receive affordable, high-quality voice, data, image, graphics, and video telecommunications services."*

The final Conference Report accompanying the 1996 Act itself is unambiguous about the desire to see robust two-way networks -- not only a desire for ubiquitous availability, but also a desire for these networks to be affordable<sup>11</sup>:

Section 304 of the Senate bill ensures that advanced telecommunications capability is promptly deployed by requiring the Commission to initiate and complete regular inquiries to determine whether advanced telecommunications capability, particularly to schools and classrooms, is being deployed in a "reasonable and timely fashion." Such determinations shall include an assessment by the Commission of the availability, *at reasonable cost*, of equipment needed to deliver advanced broadband capability. If the Commission makes a negative determination, it is required to take immediate action to accelerate deployment. Measures to be used include: price cap regulation, regulatory forbearance, and other methods that remove barriers and provide the proper incentives for infrastructure investment. The Commission may preempt State commissions if they fail to act to ensure reasonable and timely access.

The Congressional emphasis on video and on two-way telecommunications is a key aspect of Section 706 of The Act. Clearly Congress intended for the FCC to focus *both* on download speeds (for users to receive high-quality video and data) and upload speeds (for users to originate high-quality video and data). Indeed, Congress likely intended to foster deployment of technologies that were much higher bandwidth versions of the technologies that were commonly used at the time of the crafting of the legislation -- dial-up and Integrated Services Digital Networks (ISDN) -- both which are *symmetrical* bandwidth technologies.

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<sup>11</sup> Telecommunications Act of 1996, Conference Report to Accompany S.652, Report 104-458, January 31 (1996) (*emphasis added*).

But in the years since the Act's passage, the Commission has largely abandoned its duty to focus on the upload aspect of advanced telecommunications deployment. Up until March 2009, the FCC only collected data that simply asked whether a connection had upload speeds of at least 200 kbps, barely above what is possible with dial-up and ISDN connections. And this lack of Commission focus, in combination with an industry stuck in a centralized command and control mindset has resulted in origination capabilities being neglected, and users who desire such capabilities being treated as a fringe minority.

So the first question that this Commission must answer is, what exact capability is needed for users to be able to originate "high-quality" video? Though the term "high-quality" itself is not defined in the 1996 Act, other language in the law makes it clear that the term means something above standard-definition NTSC analog video quality. The 1996 Act uses the term "quality" many times separate from the phrases "high-quality" and "higher-quality." This distinction indicates that Congress viewed quality and high-quality as two distinguishable and definable categories.

The 1996 Act opens with the preamble discussing the Act's purpose of "secur[ing] lower prices and *higher quality* services for American telecommunications consumers and encourag[ing] the rapid deployment of new telecommunications technologies" (*emphasis added*). The language in the Communications Act speaks of the then-typical analog signal as "good quality."<sup>12</sup> In discussing cable ownership regulations, the Act directs the Commission to "not impose limitations which would *impair the development of* diverse and *high quality video*

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<sup>12</sup> 47 U.S.C. 535(g)(4) states that "a cable operator shall not be required to carry the signal of any qualified local noncommercial educational television station which does not deliver to the cable system's principal headend a signal of *good quality* or a baseband video signal, as may be defined by the Commission (*emphasis added*).

*programming.*”<sup>13</sup> This language of “development” associated with “high quality video programming” clearly points to Congresses’ view of a then not-yet available “high-definition” class of video programming. The 1996 Act defined the term “high definition” as “systems that offer approximately *twice the vertical and horizontal resolution* of receivers generally available on the date of enactment of the Telecommunications Act of 1996” (*emphasis added*).<sup>14</sup> This defining of “high definition” as equivalent to the doubling of then NTSC resolution (which is 480 interlaced vertical lines of resolution, or 480i) was made in the context of the Act’s granting broadcasters spectrum flexibility and offering of “advanced television services” -- a term designed to capture the evolution of standard-definition quality NTSC TV to high-definition quality, delivered by the ATSC standard. The 1996 Act defined “advanced television” according to a 1992 Commission Order<sup>15</sup>, which defined it as “any television technology that provides *improved audio and video quality or enhances the current television broadcast system*” (*emphasis added*).<sup>16</sup> Thus, though it is a somewhat tangled path, we see that when Congress used the term “high-quality video” it meant video with a quality equivalent to “high definition” video, defined as a technology that delivered images with vertical resolution of “approximately” 960 lines, with CD-quality audio.

With this background in mind, how can we define “high-quality video” based on a bandwidth, or Mbps measurement? The answer is not precise, and is evolving, because it is very dependent on how the video signal is compressed. At the time of the 1996 Act’s passage, the MPEG-2 codec was gaining favor as the compression standard for over-the-air digital

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<sup>13</sup> 47 U.S.C. 533(f)(2)(G).

<sup>14</sup> 47 U.S.C. 336(g)(3).

<sup>15</sup> 47 U.S.C. 336(g)(1).

<sup>16</sup> *In the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast*, MM Docket No. 87–268, 1992, Memorandum Opinion And Order, Third Further Notice of Proposed Rulemaking, 7 FCC Rcd. 6924, September 17 (1992), at note 1.

broadcasting and DVD encoding. Under the MPEG-2 codec, standard-definition video (with accompanying audio) can take on a bitrate that typically falls between 2 and 5 Mbps.<sup>17</sup> Broadcast quality 720p or 1080i HDTV under the MPEG-2 standard requires nearly 20Mbps of bandwidth, and this is exactly how it is currently delivered by both over-the-air and most cable systems.<sup>18</sup> Compression of HDTV signals below the standard MPEG-2 19.4Mbps bitrate is accompanied by picture artifacts that have a noticeable impact on quality.<sup>19</sup>

But compression codecs evolve, and newer technologies now enable similar qualities using less bandwidth. The MPEG-4 standard, though not yet adopted by over-the-air broadcasters or cable providers, is quickly becoming the defacto codec for high-quality video delivered over the Internet. Using this standard, and depending upon the flavor of “high-quality” (i.e. either 720p or 1080p), a user would need approximately 4.5 to 10 Mbps of upload speed to originate a somewhat highly compressed high-definition quality television signal.<sup>20</sup> Something above 30 Mbps of upload speed would be required to originate a far less compressed Blu-Ray quality 1080p high-definition quality signal over the Internet.<sup>21</sup>

But the nature of the “quality” of these compressions technologies is very dependent on the type of content being transmitted and the size of the viewing display. High motion content, like sports or action movies, has very noticeable compression artifacts, under both the MPEG-2 and MPEG-4 codecs, using the currently commonly used bitrates. Recent research by Corning shows that current bandwidths used by MVPDs for HD programming “degrade” the quality of

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<sup>17</sup> Jim Taylor, “DVD Demystified”, Third Edition, McGraw-Hill (2006)

<sup>18</sup> Michael Adams, “Digital Broadcast Technologies”, Cisco Press, August 20, 2001.

<sup>19</sup> Todd Spangler, “What Comcast's Crunched HD Looks Like”, *Multichannel News*, March 29, 2008.

<sup>20</sup> See Free Press Comments in NPB Public Notice #1.

<sup>21</sup> See <http://www.blu-ray.com/faq/>.

certain motion-intensive content. Corning described HD programming transmitted with a variable bitrate of 12Mbps as “unacceptable” for large screen 1080p televisions.<sup>22</sup> Corning’s research noted that using the MPEG-2 codec, visual quality becomes acceptable at higher bitrates, but that this was not the case for MPEG-4 delivered content. In other words, it may not be appropriate to characterize the picture quality delivered by the most commonly used compression standard for IP HD video as “high-quality.”

Thus, if the Commission is looking to find a bitrate that enables users to receive and originate “high-quality” content, it has some latitude in setting that bar. Videophiles would likely scoff at the rate being set at anything below 30Mbps, or below what is delivered by Blu-Ray. At a bare minimum, it seems the bitrate cannot be below 5Mbps, or the rate required to deliver 720p video using the MPEG-4 codec, with a quality that is commercially acceptable enough to be displayed on a typical consumer television.

The Commission’s abandonment of the focus on upload speeds has fostered an industry that deploys extremely asymmetrical connections. FCC data reveals that the proportion of slow connections is on the rise. In December 2005, 15 percent of broadband lines had upload speeds slower than 200kbps. By December 2007 this had increased to almost 34 percent of lines.

This trend likely will continue, leaving home users without the ability to originate high-quality high-bandwidth content, regardless of future advances in compression technology. Indeed, the popularity of web sites like YouTube is a direct industry development that stems from the lack of acceptable upload speeds in home broadband connections. YouTube allows a user to upload (albeit slowly) self-produced video content that can then be viewed by others. YouTube then converts the video to a low-quality flash format, and streams the content over the

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<sup>22</sup> See “New Technologies”, *Communications Daily*, September 3, 2009.

Internet using servers hosted by Limelight Networks - which costs YouTube well over \$1 million per month.<sup>23</sup> End users can then view the grainy videos on YouTube in tiny windows that make recognition of fine details virtually impossible. But in a world like Congress actually envisioned, there would be no need for gatekeepers like YouTube and Limelight Networks. Users with high-capacity symmetrical home connections could originate their own video products without the need for third-party commercial firms.

The Commission should rethink its approach to fulfilling its obligations under Section 706 and for the first time define what it currently requires to be able to originate and receive “advanced telecommunications capability.” We suggest that a more realistic definition that reflects both the intent of Congress and the technical realities of the marketplace is a per-user minimum of 5Mbps in both the upstream and downstream directions. We use the term “per-user” because Section 706 itself speaks of “users” and not “subscribers.” The typical household today is a multi-user wireless local area (WLAN) environment, with several individuals participating in IP communications over a single connection at any given time.

But a more broad interpretation of the law may mean that 5Mbps is itself too low a bar, even on a per-user basis. Why? Because Section 706 defines “advanced telecommunications” as “capability that enables users to originate and receive high-quality voice, data, graphics, **and** video telecommunications” (*emphasis added*). This use of the conjunction “and” as opposed to the conjunction “or” is critical. We believe the Commission should interpret this as Congress’ vision for not only a multi-user environment, but also a *multi-task* environment. The Commission should be measuring the deployment of advanced telecommunications services by a standard that captures how users are increasingly actually using their connections, and uses that

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<sup>23</sup> Frommer, Dan. "Your Tube, Whose Dime?", *Forbes*. April 27, 2006.

are just over the horizon. Some homes now, and even more in the near future will have a multiple individuals each engaging in multiple simultaneous uses of a single connection. In the future, such “users” will include even the premise itself as a part of a smart grid or home-security system.

**B. “Advanced Telecommunications Capability” Must Be Defined According to Actual, not Theoretical Capabilities. Advertised Speeds are Unacceptable for Making A Section 706 Determination**

As recognized in the *NBP Public Notice #1*, advertised download and upload speeds do not properly measure the quality or utility of broadband services.<sup>24</sup> What limited empirical evidence exists suggests that advertised speeds can differ substantially from actual delivered speeds (particularly during primetime peak use periods)<sup>25</sup> and fail to capture the impact of latency, congestion, contention ratios, and other features that impact the quality of the end-user experience on a variety of multi-media applications.<sup>26</sup>

Any assessment of the deployment of “advanced telecommunications capability” must be rooted in actual delivered speeds, because delivered speeds -- not advertised speeds -- influence the practical utility of the broadband connection. As the Commission suggests in the *NBP Public*

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<sup>24</sup> “Comment Sought on Defining ‘Broadband’: NBP Public Notice #1,” DA 09-1842, FCC Public Notice, August 20, 2009 (*NBP Public Notice #1*).

<sup>25</sup> See Ofcom, “UK broadband speeds 2009: Research Report,” July 28, 2009, p. 8; Organization of Economic Co-operation and Development, “OECD Communications Outlook 2009,” August 2009, pp. 108-113. The latter offers data from experiments conducted in OECD countries that indicated that DSL, Cable modem, mobile data, FTTH, and satellite respectively offered actual speeds at 65%, 77%, 57%, 48%, and 53% of advertised speeds.

<sup>26</sup> Advertised speeds that do not account for the degree of last-mile bandwidth sharing (expressed most commonly by a contention ratio) portray a misleading picture of local network capacity actually available to end-users, as shared network connections suffering from excessive oversubscription can result in substantial resource constraints that directly impact usability. This is not to say that residential consumers should receive so-called Service Level Agreements (SLAs), but consumers should be informed about the level of local oversubscription, how that relates to other technologies and other network providers, and consumers should be offered an estimate of what they can reasonably expect to receive during typical peak use periods.

*Notice #1*, one component of the evaluation should be whether a given connection could actually, in a real-world setting, support a set of applications.<sup>27</sup> We believe that the assessment of the reasonable and timely deployment of advanced telecommunications capability should be rooted in the potential uses of connections, and indeed, this approach is exactly how Congress has previously defined the term “advanced telecommunications capability” (as discussed above) and the term “broadband.” The 2008 Farm Bill defined “broadband service” as any technology “having the capacity to transmit data to enable a subscriber to the service to originate and receive high-quality voice, data, graphics, and video” -- a definition adopted a dozen years after Section 706, yet almost exactly identical.<sup>28</sup> Advertised speeds of broadband connections simply do not allow users or the Commission to determine whether a particular service is capable of originating or receiving high-quality video telecommunications.

But of course the Commission cannot itself practically determine the actual speeds of all U.S. high-speed Internet connections. But it can establish a standard for classifying delivered speeds. We suggest that such a measure would be the bandwidth that service providers can be reasonably expected to deliver to end users on their own networks during peak-use times. For example, if the Commission chooses to define broadband as a low-latency non-discriminatory telecommunications service that operates at minimum symmetrical bandwidth of 5Mbps, then that 5Mbps should not be an advertised theoretical speed, but the speed that ISPs can deliver to end users 95 percent of the time during primetime hours under typical usage conditions.<sup>29</sup> In

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<sup>27</sup> NBP Public Notice #1, page 3.

<sup>28</sup> 7 U.S.C. 950bb.

<sup>29</sup> *Supra* note 7. As a part of the National Broadband Plan, the Commission should explore regulatory and other methods for changing how U.S. ISPs currently advertise their high-speed Internet services. The lack of regulatory oversight and market clarity in the advertisements for high-speed Internet service is yet another example of how America lags behind our overseas counterparts. For example, the U.K. regulator OfCom has established a “Code of Practice” on

making the Section 706 determination for the *Sixth Report*, the Commission should rely of the data that it will collect as a part of its obligations under the Broadband Data Improvement Act.<sup>30</sup>

### **III. ADVANCED TELECOMMUNICATIONS CAPABILITY IS NOT AVAILABLE TO ALL AMERICANS, NOR IS DEPLOYMENT REASONABLE AND TIMELY**

#### **A. Even if The Language of Section 706 is Loosely Interpreted, The Record Shows that Non-Dial-Up Internet Connections Are Not “Available to All Americans” And Deployment is Not “Reasonable and Timely”**

If we abandon the clear intent stated in Section 706, and assume that the Commission’s past definition of 200 kbps symmetrical as “advanced services” is adequate -- or even set the bar at the 768kbps downstream/200kbps upstream level that currently is classified as “basic broadband tier 1” -- the available evidence still suggests that these non-dial-up Internet connections are not being deployed to *all* Americans in a reasonable and timely manner. Indeed, there are millions of American households, mostly rural, that have no ability to purchase such connections, and will not likely be able to without some sort of market intervention. For millions more, the connections available are slow, expensive, of low value, and too restrictive to encourage near-universal consumer adoption like that which occurred in the multi-channel video distribution platforms (cable and satellite television).

Because the Commission has neglected to collect reliable data on the scope of Internet access service deployment in the U.S., there is no single authoritative source on the scope of the

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advertised broadband speeds. Some overseas ISPs have shifted from publishing “up to” speeds to disclosing “speed bands.” The Finnish Consumer Agency now requires ISPs to give a realistic portrait of speeds in marketing materials, and to disclose geographic constraints. In the Czech Republic consumers are given a choice of contention ratios within a single speed tier. All these examples point to methods that would offer consumers more accurate information concerning the products they purchase in the marketplace. Given that nearly all U.S. high-speed Internet ISPs offer higher levels of service (based on advertised speeds) for higher prices, it is reasonable for consumers in the higher more expensive tiers to expect to receive a higher level of service relative to the lower priced offerings.

<sup>30</sup> The BDIA requires the Commission to conduct a consumer survey, that among other things, determines the “actual data transmission speeds.” See 47 U.S.C. 1303(c)(1)(C).

availability problem. But what data exists makes it quite clear that a non-insignificant proportion of U.S. households are unable to purchase advanced services (how ever that is defined) at *any* price. There are a few data points that allow us to formulate a reasonable estimate of the true number of “unserved” households. First, the National Cable and Telecommunications Association (NCTA) estimates that 99 percent of U.S. households are passed by cable television service.<sup>31</sup> FCC Form 477 data indicates that 96 percent of homes where cable service is available have access to cable modem service.<sup>32</sup> From this, we conclude that as many as 95 percent of all U.S. homes can purchase cable modem broadband service, though this figure is likely somewhat lower, perhaps 92 percent (based on other estimates from NCTA). Thus, approximately 9 million of the nearly 118 million U.S. households cannot subscribe to cable modem broadband.<sup>33</sup>

It’s possible some of these homes that lack cable modem access can purchase DSL service. Form 477 data indicates that 82 percent of ILEC lines are DSL-capable. But Form 477 provides no estimate of how the cable modem and DSL availability figures overlap. So while there may be DSL service available in areas without cable modem service (and vice versa), we believe a reasonable estimate is that there are between 7 million and 9 million unserved homes.<sup>34</sup>

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<sup>31</sup> *In the Matter of Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 05-255, Twelfth Annual Report, 21 FCC Rcd 2503 (2006), para. 30. Though it should be noted, this industry-supplied figure has never been verified by the Commission, and we have doubts about its accuracy.

<sup>32</sup> *High-Speed Services for Internet Access: Status as of December 31, 2006*, Industry Analysis and Technology Division, Wireline Competition Bureau, Table 14.

<sup>33</sup> The figure for the total number of U.S. households varies depending on the particular U.S. Census Bureau source used. The October 2007 Current Population Survey puts the total number of U.S. households at 117,840,000. The 2006 American Community Survey found an estimated 111,617,402 U.S. households, while the 2005 ACS found an estimated 111,090,617 U.S. households. Thus, it is unclear if the 2007 CPS number is accurate, as it seems high based on the 2005 and 2006 data.

<sup>34</sup> We are explicitly excluding satellite broadband from this estimate, as the high latency and slow speed (particularly on the upload side) of this service render it arguably substandard for the purposes of facilitating VoIP service. We also exclude fixed wireless service, which constitutes a

Existing FCC Form 477 Data provides some insight here. Since the Commission began collecting a measure of statewide availability data in 2005, the data indicates that both DSL and cable modem deployment has leveled off (see Figure 1).

**Figure 1: Cable Modem and DSL Availability**

Carrier Type	Technology	Percent of Lines that are NOT High-Speed Internet Capable					
		June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007
Wireline Telephone	DSL	24%	22%	21%	21%	18%	18%
Cable Television	Cable Modem	9%	7%	7%	4%	4%	4%

*Source: FCC Form 477*

The data in Figure 1 is at a national level, but this level of aggregation disguises the lack of deployment in some of the more insular and rural states (see Figure 2). There is nothing to indicate that these areas will receive deployment anytime in the near future, if ever, absent some form of subsidy. The BTOP and BIP programs created under the ARRA will make a dent in this problem, though it is likely to be nothing more than a “down-payment” on the goal of universal availability.

Furthermore, the disturbing trend of incumbents disinvesting in their networks by dumping their rural and other less-profitable service areas indicates that the rural broadband problem may actual get worse before it gets better. This is because the companies who take over these service areas are often saddled with debt as a result of the transaction, and find that maintaining the current levels of advanced service deployment to be exceedingly difficult.

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very small percentage of all U.S. broadband lines (0.75 percent of all residential advanced service lines). And we specifically exclude mobile wireless broadband service, as the carrier’s deployment of 3G capable services has been almost exclusively limited to urban and suburban areas. Furthermore, 3G speeds are still slow enough (especially on the upload side) to arguably not meet a reasonable definition of true broadband.

**Figure 2: Cable Modem and DSL Availability - Top States Lacking Deployment**

Top Five States Without DSL Deployment (as of 12/07)	Percent of Telephone Lines that are NOT DSL Capable					
	June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007
New Hampshire	35.0%	37.4%	40.6%	38.9%	38.8%	37.9%
Virginia	34.0%	33.1%	34.4%	34.2%	34.3%	34.6%
Maine	30.1%	32.8%	33.0%	32.5%	31.8%	31.0%
Vermont	35.6%	38.7%	40.1%	35.7%	34.0%	30.9%
Michigan	35.2%	34.9%	33.6%	36.0%	27.9%	29.2%

  

Top Five States Without Cable Modem Deployment (as of 12/07)	Percent of Cable Lines that are NOT Modem Capable					
	June 2005	Dec 2005	June 2006	Dec 2006	June 2007	Dec 2007
Arkansas	35.4%	32.9%	22.7%	27.6%	26.9%	26.6%
New Mexico	28.4%	25.2%	20.5%	21.9%	22.7%	22.8%
South Dakota	37.9%	n/a	41.5%	26.7%	27.1%	19.7%
North Dakota	20.8%	10.9%	20.6%	17.3%	17.5%	17.5%
West Virginia	17.8%	17.6%	11.8%	12.5%	15.3%	16.3%

Source: FCC Form 477

The prime example of this “Fairpointization” of rural America is seen by Verizon’s recent actions. Verizon’s investment in their FiOS FTTH service would at first glance make it seem as if they are bucking the trend of incumbent disinvestment. However, if we closely examine Verizon’s wireline operation (whose investment in FiOS is widely touted as being in response to the Commission’s deregulatory policies), we find troubling evidence of disinvestment -- disinvestment not only by high levels of asset depreciation, but disinvestment through a repeat practice of dumping less profitable geographic service areas.<sup>35</sup> Since the company began rolling out FiOS they have shed service areas they found to be less lucrative. In

<sup>35</sup> See e.g. Jeffrey Bartash and Steve Gelsi, “Verizon to spin out rural business to Frontier,” *MarketWatch*, May 13, 2009. (“The spin-off reflects part of a long-term strategy by Verizon to mimic its rivals in the cable industry by “clustering” its main operations in more lucrative metropolitan markets. Two years ago the company sold off its rural phone business in New England.”) See also Comments of EDUCAUSE, Internet2 and ACUTA at 7; Comments of the New Jersey Division of Rate Counsel at 35-38.

some cases these abandoned markets were those areas where Verizon had failed to meet minimum service quality standards.<sup>36</sup> As one commenter noted “Verizon has simply chosen not to expend the resources necessary to prevent deterioration in this and other metrics of service quality.”<sup>37</sup> That is, rather than invest in areas outside the most densely populated areas, as one might expect given the supposedly extremely attractive deregulatory climate, they instead sold them to ill-equipped companies resulting in consumers being stranded on the wrong side of the digital divide. As one article notes, “Verizon wants to divest rural operations to pay down its multibillion-dollar debt and invest more heavily in densely developed markets.”<sup>38</sup>

Verizon began the purging of less lucrative areas with the sale of Verizon Hawaii to the Carlyle Group in 2005,<sup>39</sup> a company that had no previous experience in operating telecommunications services. By Dec. 2008, the company, now called Hawaii Telecom, had lost 21 percent of customers and filed for bankruptcy.<sup>40</sup>

Verizon next moved to dump their somewhat rural service territories in Maine, New Hampshire and Vermont, by selling them to FairPoint Communications.<sup>41</sup> According to Verizon, outside of “a bit of fiber in southern New Hampshire”, these customers had not been

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<sup>36</sup> Ex Parte of the Communications Workers of America and International Brotherhood of Electrical Workers, *In the Matter of Application Filed for the Transfer of Certain Spectrum Licenses and Section 214 Authorizations in the States of Maine, New Hampshire and Vermont from Verizon Communications Inc and its Subsidiaries to FairPoint Communications, Inc.* Oct. 26, 2007, Attachment - Brief to Vermont Public Service Board, pp. 26-29.

<sup>37</sup> *Ibid.* at 29.

<sup>38</sup> Jeffrey Bartash, “Verizon to spin off local-phone assets,” *MarketWatch*, Jan. 16, 2007.

<sup>39</sup> Federal Communications Commission, “Streamlined Domestic Section 214 Application Granted,” Public Notice, Aug. 17, 2004, WC Docket 04-234, DA 04-2541.

<sup>40</sup> “Hawaii Telecom Files for Bankruptcy,” *New York Times*, Dealbook, Dec. 2, 2008.

<sup>41</sup> *Application Filed for the Transfer of Certain Spectrum Licenses and Section 214 Authorizations in the States of Maine, New Hampshire and Vermont from Verizon Communications Inc and its Subsidiaries to FairPoint Communications, Inc.* WC Docket 07-22, Memorandum Opinion and Order, 23 FCC Rcd 514 (2008).

offered any fiber based service.<sup>42</sup> (Apparently, the consumers in these states did not deserve the same “pro-investment benefits of deregulation” as those in Westchester County New York, or McLean Virginia).

FairPoint, which maintained 300,000 access lines at the time, increased that to 1.8 million as a result of the deal.<sup>43</sup> To consummate this massive acquisition, FairPoint had to take on a tremendous debt load, on the order of \$2.2 billion.<sup>44</sup> Not surprisingly, the company has run into serious operational and financial difficulty since the deal was completed, which has resulted in a substantial negative impact on FairPoint’s customers. Last winter, when an ice storm hit the region, Fairpoint needed days to restore service, in some cases more than a week. The head of the local electrical workers union noted, “Verizon had the capabilities to do whatever needed to get done. Fairpoint doesn’t.”<sup>45</sup> Only two years after the transaction, Fairpoint has failed to meet state benchmarks and has asked bondholders to accept delayed payments.<sup>46</sup> If bondholders do not agree to this request, the company may be forced into bankruptcy.<sup>47</sup>

Most recently, Verizon announced that it intends to sell-off mostly rural areas in 14 additional states.<sup>48</sup> Frontier, the purchasing company, will be saddled with an additional \$3

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<sup>42</sup> Paula Bernier, “FairPoint-Verizon Deal Gets the Green Light,” *xchange Magazine*, Feb. 29, 2008.

<sup>43</sup> Kevin Kelley, “Fairpoint on its own as competition builds,” *Vermont Business Magazine*, Feb. 1, 2009.

<sup>44</sup> Tux Turkel, “FairPoint’s debt to rise N.H. officials call meeting for Sunday,” *Kennebec Journal*, March 29, 2008.

<sup>45</sup> See *supra* note 52.

<sup>46</sup> Steve Zind, “Vermont still not happy with Fairpoint service,” *Vermont Public Radio*, June 22, 2009.

<sup>47</sup> David Brooks, “FairPoint Struggles to Reduce Debt,” *Nashua Telegraph*, June 26, 2009.

<sup>48</sup> Amol Sharma, “Verizon Sells Phone Lines in 14 States to Frontier,” *Wall Street Journal*, May 14, 2009.

billion in debt.<sup>49</sup> The company will increase their access lines from 2.2 million to 7 million.<sup>50</sup> Thus, seemingly indifferent to the lessons of recent history, Verizon is eager to offload its rural customers onto another small company. Furthermore through a tax loophole, known as a Reverse Morris trust, Verizon did not pay taxes on the FairPoint transaction, and has similar plans for the Frontier deal.<sup>51</sup> But the loophole requires Verizon to sell its assets to a smaller company - so Verizon not only sought to get rid of these customers, but sold (or will sell) to small and perhaps ill-equipped companies in order to further enrich their bottom line. Thus, the one major provider that is spending resources to invest in next generation networks is ultimately breaking deployment promises made to the Commission by selling to ill-equipped companies, all in the context of pleadings for further deregulation.

For publicly traded incumbents, the short-term outlook dominates all other considerations. Even for Verizon, whose FiOS investments seem outwardly progressive, the stock market is still a zero-sum-game. The company's long-term FiOS investments were only allowed to proceed if Verizon also mollified Wall Street by dumping rural customers. In yet another case of depressing irony, Chairman Martin touted the deregulation of the *Triennial Review Order* for allowing Verizon to extend "the benefits of broadband technology to rural and suburban communities."<sup>52</sup> But the residents in rural areas of eighteen states who never saw these supposed benefits might see things a bit differently.

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<sup>49</sup> Amy Thomson, "Verizon to Sell Lines to Frontier for \$5.25 Billion," *Bloomberg*, May 13, 2009.

<sup>50</sup> "Frontier Communications to Acquire Verizon Assets Creating Nation's Largest Pure Rural Communications Services Provider," Frontier Communications Press Release, May 13, 2009.

<sup>51</sup> Roger Cheng, "Frontier Communications Can Learn A Lot From Fairpoint-Verizon Deal," *Dow Jones Newswires*, May 13, 2009.

<sup>52</sup> Statement of FCC Commissioner Kevin Martin Regarding Verizon's Broadband Announcement, March 19, 2003.

Thus, even under an extremely weak interpretation of Section 706, it is clear that advanced telecommunications capability is not currently available to “all Americans.” Given the universal consensus that these tens of millions of rural Americans will not see deployment absent market intervention, the Commission must conclude that deployment is neither reasonable nor timely.

**B. Under An Honest Standard of “Advanced Telecommunications Capability”, It is Clear that These Services are Not “Available to All Americans” Due to Inadequate Downstream and Upstream Capability, Nor is the Deployment of Such Capability “Reasonable and Timely”**

**i. Limited Upstream Capacity Means the Section 706 Test is Not Being Met**

An examination of the offerings of the leading providers of non-dial-up Internet service reveals that very few, if any U.S. consumers are able to purchase an advanced service product that allows them to originate high-quality video at the low bar of 5Mbps. Nearly all the products offered by the leading teleco and cable companies (who have a combined share of 97 percent of the residential fixed market<sup>53</sup>) have upload speeds below 2 Mbps (see Figure 3). The so-called “third-pipe” satellite and 3G mobile wireless products offer upload speed that are in some cases incapable of originating even low-quality VOIP data. At these levels of upload speed, users have no hope of originating high-quality video. Though there is currently some deployment of FTTH technology by Verizon, VDSL technology by Qwest, and DOCSIS 3.0 technology by some cable MSOs, these deployments are very limited in scope, with no plans by the companies to blanket their entire footprints with these next-generation technologies. Certainly such limited deployment cannot be described as “reasonable and timely” to “all Americans” (see further discussion of DOCSIS 3.0 deployment below).

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<sup>53</sup> See Figure ##.

**Figure 3: Offerings of Major U.S. ISPs**

Company/Product	Technology	Advertised Download Speed	Advertised Upload Speed	Monthly Price	Limited Availability Area?	Limitations
AT&T	ADSL	3 Mbps	0.512 Mbps	\$30	No	
AT&T	ADSL	6 Mbps	0.768 Mbps	\$35	No	
AT&T U-Verse	FTTN/ADSL	18 Mbps	1.5 Mbps	\$65	Yes	\$150 Installation Fee
Verizon	ADSL	3 Mbps	0.768 Mbps	\$30	No	1-yr agreement
Verizon	ADSL	7.1 Mbps	0.768 Mbps	\$43	No	1-yr agreement
Verizon FiOS	FTTH	25 Mbps	15 Mbps	\$78	Yes	\$80 Installation Fee
Verizon FiOS	FTTH	50 Mbps	20 Mbps	\$165	Yes	\$80 Installation Fee
Qwest	ADSL	7 Mbps	0.896 Mbps	\$60	No	
Qwest	FTTN/VDSL	20 Mbps	0.896 Mbps	\$80	Yes	
Qwest	FTTN/VDSL2	40 Mbps	20 Mbps	\$120	Yes	
Comcast	DOCSIS 2.0	16 Mbps	2 Mbps	\$53	No	250GB cap; user-throttling
Comcast	DOCSIS 3.0	50 Mbps	10 Mbps	\$117	Yes	250GB cap; user-throttling
Time Warner	DOCSIS 2.0	8 Mbps	0.768 Mbps	\$47	No	user-throttling?
Time Warner	DOCSIS 2.0	15 Mbps	2 Mbps	\$57	No	user-throttling?
Cox	DOCSIS 2.0	20 Mbps	1.5 Mbps	\$60	No	user-throttling
Cox	DOCSIS 3.0	50 Mbps	5 Mbps	\$140	Yes	user-throttling
Charter	DOCSIS 2.0	16 Mbps	1 Mbps	\$55	No	user-throttling?
Charter	DOCSIS 3.0	60 Mbps	5 Mbps	\$140	Yes	user-throttling?
Cablevision	DOCSIS 2.0	15 Mbps	2 Mbps	\$45	No	
Cablevision	DOCSIS 3.0	101 Mbps	15 Mbps	\$100	No	\$300 Activation Fee
Clearwire 4G+	WiMax	4 Mbps	1 Mbps	\$45	Yes	\$35 Activation Fee
Xohm (Sprint)	WiMax	3 Mbps	1 Mbps	\$30	Yes	\$60 Device Fee
Verizon Wireless	3G (EvDO)	0.6 - 1.4 Mbps	0.5 - 0.8 Mbps	\$60	Yes	5GB mo. cap, 2-yr agreement
AT&T Mobility	3G (HSDPA)	1.2 - 3.6 Mbps	0.85 - 1.4 Mbps	\$60	Yes	5GB mo. cap, 2-yr agreement
Wildblue	Satellite	1.0 Mbps	.200 Mbps	\$70	No	12GB/3 GB mo. cap, 2-yr agreement, \$200 Fee
Wildblue	Satellite	1.5 Mbps	.256 Mbps	\$80	No	17GB/5GB mo. cap, 2-yr agreement, \$200 Fee
HughesNet	Satellite	1.6 Mbps	0.250 Mbps	\$80	No	425MB daily cap, 2-yr agreement, \$300 Fee
HughesNet	Satellite	5.0 Mbps	0.3 Mbps	\$350	No	500MB daily cap, 2-yr agreement, \$300 Fee

Source: Published Company offerings as of August 2009

The only major U.S. provider that is deploying advanced services with upload speeds that even come close to approaching the intent of Section 706 is Verizon with its FIOS fiber optic service. However, the 50Mbps download/20Mbps upload service is the very top tier FIOS offering, and is only available in a few limited areas for \$165 per month -- a price that is clearly outside of the realm of “affordable” -- a term used many times in the legislative activities that produced the 1996 Act.<sup>54</sup>

<sup>54</sup> See e.g. *supra* notes 9 and 10 (describing the use of the term “affordable” in S. 1822 and S. 622) and *supra* note 11 (describing the term “reasonable cost” in the Conference Report accompanying the 1996 Act).

Furthermore, almost every major high-speed Internet provider restricts end-users from hosting their own websites by using their home connection as a server. This is articulated in the acceptable use policies that must be agreed to when subscribing to the service, and is achieved in practice by the use of Dynamic Internet Protocol Addresses.<sup>55</sup> Thus, even if carriers offered the speeds needed for users to originate high-quality video content, doing so would likely be forbidden under standard terms of acceptable use.

**ii. Limited Downstream Capacity Means the Section 706 Test is Not Being Met**

Congress articulated a clear vision of a two-way symmetrical broadband marketplace. But even setting aside for the moment the upload capabilities of U.S. broadband connections, it is clear from the Commission's own data that many U.S. consumers are unable to purchase a broadband connection that allows them to *receive* high-quality video data. Typical DSL offerings have download speeds that range from 768 kbps to 7.1 Mbps, with a few carriers now rolling out very select deployments of the faster ADSL2 and VDSL technology that enables higher download speeds. In total, only 38 percent of ADSL lines were capable of delivering downstream speeds in excess of 2.5Mbps at the beginning of 2008, and only 0.1 percent exceeded 10Mbps (see Figure 4). Cable, the leading platform in the U.S., continues to

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<sup>55</sup> In order to host a website server using their home Internet connection, a user would need a static Internet Protocol Address, something that if offered by carriers is far more expensive than their Dynamic IP services -- or resort to other more creative tactics such as using DynDNS services. Use of the static IP as a server would possibly still violate the acceptable use policy (AUP). For example, Comcast's AUP states, "[t]he Service is for personal and non-commercial use only and you agree not to use the Service for operation as an Internet service provider or for any business enterprise or purpose... you may only access and use the Service with a dynamic Internet Protocol ("IP") address that adheres to the dynamic host configuration protocol ("DHCP"). You may not configure the Service or any related equipment to access or use a static IP address or use any protocol other than DHCP unless you are subject to a Service plan that expressly permits otherwise."

outperform DSL in speed, but less than 11 percent of cable modem connections exceeded 10Mbps at the start of 2008.

**Figure 4: U.S. Broadband Speeds  
(High-Speed Lines by Technology, December 2007)<sup>56</sup>**

Technology	Percent of lines exceeding 200kbps in only one direction	Percent of lines exceeding 200kbps in both directions, and the speed in the faster direction is:				
		Between 200kbps and 2.5Mbps	Between 2.5Mbps and 10Mbps	Between 10Mbps and 25Mbps	Between 25Mbps and 100Mbps	Greater than 100Mbps
ADSL	14.3%	47.6%	38.0%	0.1%	0%	
SDSL	0%	99.5%	0.4%	0.1%		0%
Traditional Wireline	0%	90.6%	5.4%	1.3%	1.4%	1.3%
Cable Modem	0.9%	10.6%	77.6%	10.9%		0%
Fiber	0.2%	7.5%	43.9%	46.8%	0.8%	0.7%
Satellite	90.7%	9.3%		0%	0%	0%
Fixed Wireless	4.4%	90.3%	5.2%	0.1%	0%	
Mobile Wireless	69.9%	30.1%	0%	0%	0%	0%
Power Line and Other	0%	100%		0%	0%	0%
All Technologies	33.8%	28.8%	33.3%	3.9%	0.1%	0%
All, excluding mobile wireless	7.6%	27.9%	57.6%	6.8%	0.2%	0.0%

Source: December 2007 FCC Form 477 Data.

According to the most recent FCC data, one-third of all U.S. high-speed lines (residential and business) are slower than 2.5 Mbps. At this speed, using the currently most efficient video compression format (MPEG-4), none of these users could receive a high-quality video service, which requires about 5 Mbps of bandwidth. Only 7 percent of all U.S. high-speed connections are greater than 10Mbps, and thus capable of receiving a very compressed 1080p HDTV quality

<sup>56</sup> Some of the speed bins in this table have been lumped together, due to the fact that the FCC has redacted the figures for the purposes of “protecting” sensitive business information. Though given that these data would not be reported publicly in a manner associated with any particular provider, it is perplexing as to how such disclosure could cause any competitive harm.

signal (see Figure 5). In total less than 0.01 percent of U.S. lines can receive Blu-Ray quality 1080p HDTV data, which requires speeds of at least 36Mbps.<sup>57</sup>

**Figure 5:  
U.S. Residential Broadband Speeds (Estimates for December 2007)**

Connection Speed	Number of Fixed U.S. Residential Broadband Connections	Percent of Fixed U.S. Residential Broadband Connections	Percent of All U.S. Households
Less than 2.5Mbps downstream and/or Less than 200kbps upstream	22,001,844	34%	19%
Greater than 2.5Mbps downstream and greater than 200kbps upstream	42,866,780	66%	36%
<b>Total</b>	<b>64,868,624</b>	<b>100%</b>	<b>55%</b>
Less than 10 Mbps downstream and/or Less than 200kbps upstream	60,207,143	93%	51%
Greater than 10Mbps downstream and greater than 200kbps upstream	4,661,481	7%	4%
<b>Total</b>	<b>64,868,624</b>	<b>100%</b>	<b>55%</b>

Source: Free Press analysis of December 2007 FCC Form 477 data; excludes mobile wireless connections

Thus it is clear, if the Commission adopts an analytical framework based on the *actual* language of Section 706, it has no choice but to conclude that advanced telecommunications services are not being deployed to all Americans in a reasonable and timely fashion. Congress envisioned The Act as a way of facilitating the deployment of a *communications* technology, where every American could become a broadcaster by simply subscribing to a competitive and affordable advanced service offering. But the Commission’s past implementation of Section 706 and its prior definition of “advanced services” as at least 200 kbps symmetrical falls far short of meeting its statutory obligation to monitor deployment of broadband technology.

<sup>57</sup> See <http://www.blu-ray.com/faq/>.

### **iii. The Woeful State of the U.S. Broadband Market Compared to Overseas Markets Indicates that Deployment is Neither Reasonable Nor Timely**

In order to determine if the Section 706 Test is being met, the Commission must evaluate the meaning of the phrase “reasonable and timely.” We suggest that this evaluation can be made by comparing the development of the U.S. advanced services market in comparison to that occurring in markets in other wealthy industrialized countries.

America was an early international leader in information and communications technology precisely because of the basic competitive framework established in U.S. communications law during the last quarter of the 20th century. The undoing of this framework is why America has fallen further and further behind the rest of the world in every index of information and communications technology. And it’s why we’re poised to permanently lose our position as the global leader in economic growth and technological innovation.

The American decline is the opposite of the outcome predicted by those who pushed to abolish the pro-competitive framework. In fact, the large incumbent phone and cable companies predicted that jettisoning these regulatory safeguards would “free” American companies from the same “burdens” that saddle our overseas competitors, leading to a period of unprecedented investment and growth. But as we went down the path of “deregulation,” our foreign counterparts maintained their commitment to the very pro-competitive policies pioneered in America. And they saw their broadband Internet markets blossom while ours withered.

The most obvious example of this decline is seen in the measurement of broadband penetration, or the number of per capita broadband connections. At the turn of the century, the United States was ranked fifth among the world’s nations in broadband penetration, according to data from the International Telecommunications Union (ITU). By 2007, we had dropped

precipitously to 22nd place<sup>58</sup>, just barely ahead of isolated island nations such as Barbados and the Faroe Islands (see Figure 6).<sup>59</sup>

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<sup>58</sup> This data was extracted from an ITU database available at <http://www.itu.int/ITU-D/ICTEYE/Indicators/Indicators.aspx>. Some other broadband penetration index summary charts available from ITU show the United States with a slightly lower ranking of 24th (see, for example, [http://www.itu.int/ITU-D/ict/statistics/at\\_glance/top20\\_broad\\_2007.html](http://www.itu.int/ITU-D/ict/statistics/at_glance/top20_broad_2007.html)). However, these rankings appear to have been created from incomplete and only partially current data sets, and thus do not reflect the best available data. The data in figure 1 above closely tracks that collected by the Organization for Economic Cooperation and Development in 2007. Among the 30 OECD countries, the United States ranked third in broadband penetration in 2000 but had fallen to 15th by June 2008.

<sup>59</sup> It is important to note that there are two major international indices for comparing broadband penetration. The one most often quoted is the semi-annual figure reported by the Organization for Economic Cooperation and Development (OECD). For example, in his December 6, 2008, address to the nation, President-Elect Obama stated, “It is unacceptable that the United States ranks 15th in the world in broadband adoption.” The figure he was citing was from the OECD’s June 2008 data. However, the OECD is a 30-nation member body, and thus it is technically incorrect to say that the United States is ranked “15th in the world” -- we’re 15th in the OECD. The broadband penetration data cited above and in Figure 1 is from the International Telecommunications Union (ITU), which does actually include every country in the world. Thus, in this index, the United States is ranked 22nd, because we are behind the following non-OECD nations: Bermuda, Hong Kong, Macao and Israel. Also, the ITU data has Australia, New Zealand and Japan slightly ahead of the United States, while these three countries are slightly behind the United States in the OECD ranking. Adding to the confusion, in a March 10, 2009, speech, Acting FCC Chairman Michael Copps stated, “Just last week, we got another of those many reports telling us how far the United States has fallen in the ranking of nations when it comes to broadband—this one from the International Telecommunications Union concluding that your country and mine has now slipped to a dismal 17th.” However, Chairman Copps seemed to be referring to an ITU study commissioned by the United Nations, titled *Measuring the Information Society - the ICT Development Index*, released on March 2, 2009. This index, however, is a composite measurement based on many more factors other than just broadband penetration. Such factors include literacy and education levels, computer ownership and mobile phone ownership. In this index, the United States did fall from 11th place in the world in 2002, to 17th place in 2007.

**Figure 6: The Decline in U.S. Broadband Penetration  
(Broadband Lines per 100 inhabitants, ITU, 2000 and 2007)**

Country	Broadband Penetration (ITU, 2000)	Broadband Penetration Ranking (ITU, 2000)	Country	Broadband Penetration (ITU, 2007)	Broadband Penetration Ranking (ITU, 2007)
South Korea	8.42	1	Bermuda	36.71	1
Hong Kong	6.67	2	Denmark	36.33	2
Canada	4.58	3	Iceland	34.76	3
Sweden	2.8	4	Netherlands	33.54	4
United States	2.51	5	Finland	33.33	5
Austria	2.38	6	Switzerland	32.07	6
Singapore	1.89	7	South Korea	30.62	7
Netherlands	1.63	8	Norway	30.57	8
Belgium	1.4	9	Hong Kong	26.09	9
Denmark	1.26	10	Belgium	25.97	10
Taiwan	1.03	11	Sweden	25.87	11
Macao	0.86	12	United Kingdom	25.55	12
Iceland	0.84	13	France	25.22	13
Switzerland	0.78	14	Luxembourg	24.16	14
Finland	0.68	15	Germany	23.97	15
Japan	0.67	16	Australia	23.28	16
Norway	0.52	17	Macao	22.97	17
Malta	0.42	18	Canada	22.91	18
France	0.33	19	New Zealand	22.50	19
Germany	0.32	20	Japan	22.47	20
Portugal	0.25	21	Israel	22.06	21
Italy	0.2	22	United States	21.46	22
Spain	0.19	23	Faroe Islands	21.35	23
New Zealand	0.12	24	Taiwan	20.93	24
Dominica	0.11	25	Estonia	20.80	25

*Source: International Telecommunications Union*

The U.S. descent is a remarkable story. But perhaps even more remarkable is the rapid expansion and innovation occurring in the broadband markets of the countries moving ahead of us on the list. Countries like South Korea and Japan have achieved substantial deployment and uptake of fiber-optic-to-the-premise (fttp) services, in some instances offering residential users symmetrical speeds reaching 1 Gigabit per second (Gbps) for the less than the monthly price as a

U.S. consumer would pay for a service 100 times slower.<sup>60</sup> Countries like England that had virtually no broadband deployment at the turn of the century now have robust and fiercely competitive marketplaces offering DSL broadband services with speeds 10 times faster than the average U.S. DSL connection.<sup>61</sup> And countries like Denmark, Iceland, Finland and The Netherlands saw their broadband markets achieve twice the levels of absolute growth compared to the United States. (see Figure 7).

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<sup>60</sup> By mid-2007, the South Korean Information Ministry estimated that nationwide adoption of broadband had exceeded 90 percent of households, with some areas attaining 100 percent adoption. See “90% of Koreans Hooked to Broadband,” *The Korea Herald*, July 9, 2007. Japanese ISP KDDI began offering the “Hikari One Home Gigabit service” in 2008, which provides subscribers with symmetrical 1Gbps fiber optic service for about \$51 U.S. per month. See “Japan's KDDI to Offer 1GBps Internet Connections to Homes,” Martyn Williams, *PC World Magazine*, Sept. 25, 2008. Hong Kong began offering 1 Gbps service to residential customers in 2005. See “HKBN Launches Hong Kong’s First 100Mbps and World’s First 1Gbps Residential Broadband Services,” Press Release, Nov. 16, 2004. According to the OECD, by June 2008, 45 percent of Japanese and 39 percent of South Korean broadband connections were fiber-to-the-premise, compared to less than 3 percent of U.S. fixed connections. See “OECD Broadband Data to June 2008”, table 1, (*June 2008 OECD Data*).

<sup>61</sup> Unlike the United States, the incumbent cable and telephone companies in the United Kingdom have only a 50 percent share of the broadband market. Competitive carriers that resell, wholesale and unbundle network elements from BT (the U.K. incumbent telecom carrier) control half the U.K. market. See Comments of Time Warner Telecom, GN Docket No. 07-45, May 16, 2007, Appendix A (Sheba Chacko, “UK: Investment, Innovation and Competition Enabled by Regulation,” BT Presentation, April 2007, Washington D.C). This arrangement has led to early and accelerated deployment of advanced VDSL technologies by these competitive carriers, offering users speeds in excess of 24Mbps. In turn, this competitive deployment appears to have encouraged BT to finally offer its own VDSL2+ services. See *June 2008 OECD Data* (showing 24Mbps DSL services, but only 8Mbps DSL services available from BT); See also “BT Rolls Out Faster Broadband”, *BBC News*, April 30, 2008, available at <http://news.bbc.co.uk/2/hi/technology/7376173.stm>. According to the latest FCC data, nearly two-thirds of all residential and business DSL lines in the United States had downstream speeds of less than 2.5Mbps. See “High-Speed Services for Internet Access as of December 31, 2007,” Industry Analysis and Technology Division, Wireline Competition Bureau, Federal Communications Commission, Table 5 (*December 2007 FCC Form 477 Data*).

**Figure 7: Leaders in Absolute Growth in Broadband Penetration  
(Net Change in Broadband Lines per 100 Inhabitants, ITU, between 2000 & 2007)<sup>62</sup>**

Country	Broadband Penetration		Absolute Change	Ranked Above U.S. in 2000?	Ranked Above U.S. in 2007?
	2000	2007			
Denmark	1.26	36.33	35.07	No	Yes
Iceland	0.84	34.76	33.92	No	Yes
Finland	0.68	33.33	32.65	No	Yes
Netherlands	1.63	33.54	31.91	No	Yes
Switzerland	0.78	32.07	31.29	No	Yes
Norway	0.52	30.57	30.05	No	Yes
United Kingdom	0.09	25.55	25.46	No	Yes
France	0.33	25.22	24.89	No	Yes
Belgium	1.4	25.97	24.57	No	Yes
Germany	0.32	23.97	23.65	No	Yes
Sweden	2.8	25.87	23.07	Yes	Yes
New Zealand	0.12	22.5	22.38	No	Yes
South Korea	8.42	30.62	22.2	Yes	Yes
Macao	0.86	22.97	22.11	No	Yes
Japan	0.67	22.47	21.8	No	Yes
Taiwan	1.03	20.93	19.9	No	No
Hong Kong	6.67	26.09	19.42	Yes	Yes
United States	2.51	21.46	18.95	--	--
Canada	4.58	22.91	18.33	Yes	Yes
Italy	0.2	18.45	18.25	No	No

Source: International Telecommunications Union

Critics are quick to point out that broadband penetration can be a misleading metric. These apologists for the U.S. decline contend that the ITU and OECD penetration indexes unfairly present the United States in a bad light, due to differences in household size,<sup>63</sup> how

<sup>62</sup> This figure illustrates the changes in these broadband markets in terms of absolute, or net, growth in broadband penetration between 2000 and 2007. This metric is preferable to presenting the change in terms of *percent* growth, as countries that had very low broadband penetration in 2000 would exhibit higher percent growth rates than those countries that had appreciable levels of broadband penetration in 2000. For example, Denmark, which ranked highest in net growth over this period, had a 2,800 percent increase in broadband penetration. Contrast that with Nicaragua (not shown), which had a 3,300 percent growth rate in broadband penetration but only improved from 0.01 lines per capita in 2000 to 0.34 lines per capita in 2007.

<sup>63</sup> For example, in a 2007 speech, FCC Commissioner Robert McDowell stated: “Countries are punished or rewarded by the OECD analysis based on the number of persons living in a household or the number of people working in a business.” While differences in average household size can impact the total broadband penetration ranking, and the level of actual

business lines are counted,<sup>64</sup> or the fact that the United States has a lower population density than countries like South Korea.<sup>65</sup> Most of these excuses are mere diversions, and they don't really address the basic fact that both residential and business adoption of broadband in America are well below what they should be for a country with our level of income and technological readiness.<sup>66</sup>

But even if we accept these weak critiques at face value and agree to ignore the international broadband penetration rankings, there are still many important metrics where U.S.

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household penetration is more informative, the United States is lagging in this metric, too. According to the U.K. research firm Point-Topic, in 2007, the United States ranked 15th in household broadband penetration in the OECD and 24th in household penetration worldwide. See "Shooting the Messenger: Myth vs. Reality: U.S. Broadband Policy and International Broadband Rankings," S. Derek Turner, Free Press, July 2007 (*Shooting the Messenger*).

<sup>64</sup> Some critics have argued that the OECD's methodology does not account for special access lines (a type of broadband data platform typically used by large business customers) and therefore understates the true level of U.S. broadband penetration. But this is a misleading critique. The OECD does not count such leased access lines that do not have Internet connectivity, but it does account for those that do. For example, if a rural cellphone company purchases a T-1 dedicated line to connect a cellular tower with a central office facility for the purpose of transporting voice calls, the OECD does not count this line. However, if a small business purchases a T-1 to run a Web server, the line is counted.

<sup>65</sup> The population density excuse is perhaps the defense most consistently trotted out to explain away the U.S. decline, and it is also the most incorrect. Among the OECD nations, there is no correlation between population density and broadband penetration ( $R^2 = 0.05$ ,  $p = 0.25$ ). For example, Iceland has one of the lowest population densities in the world, but it has the fifth-highest broadband penetration in the OECD. Furthermore, four of the 14 countries ahead of the United States in the OECD broadband rankings have lower population densities than the United States, and 13 of the 15 countries with lower broadband penetration than the United States have higher population densities. Geography does play a small role in broadband diffusion, but it is the proportion of the rural population ( $R^2 = 0.15$ ,  $p = 0.03$ ), not the density of the population, that matters.

<sup>66</sup> A 2007 report by the industry-funded Phoenix Center attempted to downplay the OECD rankings by constructing a "Broadband Performance Index," which accounts for intervening factors such as population density, GDP per capita, income inequality, household and business size, service price, and the use of conventional telephony. But even when accounting for these factors, this index still showed the U.S. ranking 14th among the 30 OECD nations. Thus, it is likely that the most obvious factors not controlled for in this ranking -- market competition and government broadband policy, two things other countries have that the United States lacks -- account for the low U.S. ranking.

broadband is lagging. The monthly cost of broadband in America is higher than all but seven of the 30 OECD nations, only slightly less expensive than the offerings in countries like Hungary and Poland (see Figure 6). The speeds of the connections offered to U.S. consumers are quite slow compared to other countries like Japan and France. Overall, the United States ranks 14th in average advertised download speed, at just under 9Mbps, some 10 times slower than Japan, the international leader (see Figure 6). When price and speed are considered together (i.e., a measure of “value,” or price per megabit per second) the United States fares slightly better, coming in at 12th place (see Figure 8). But at \$12.60 per Mbps, the value of U.S. connections is some four-times less than that of countries like France, and is only slightly better than the value of connections in Hungary, a country whose per capita GDP is nearly two-and-a-half times lower than the United States.<sup>67</sup>

The impact that price has on adoption in the broadband market cannot be understated. Unlike in mature communications markets such as telephony, consumers are much more sensitive to price changes in a developing market like broadband access. Consumers who have yet to try the service are much less willing to pay for it at higher prices, and those who are “marginal” adopters that don’t place a very high value on the service are much more likely to cancel it if prices increase, even modestly.

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<sup>67</sup> In 2008, the per capita GDP in Hungary was \$19,800, while it was \$47,000 in the United States (in U.S. purchasing power parity dollars). *See* CIA World Factbook 2008.

**Figure 8: Price, Speed and Value of Broadband Connections  
(OECD, October 2007)**

Price (OECD 2007)			Speed (OECD 2007)			Value (OECD 2007)		
Country	Average Advertised Monthly Price (US\$/mo.)	Advertised \$/Mbps Ranking	Country	Average Advertised Download Speed (Mbps)	Advertised Speed Ranking	Country	Average Advertised Price Per Mbps (US\$/mo./Mbps)	Advertised \$/Mbps Ranking
Finland	\$31.18	1	Japan	93.7	1	Japan	\$3.09	1
Germany	\$32.22	2	France	44.2	2	France	\$3.70	2
Switzerland	\$32.69	3	South Korea	43.3	3	Italy	\$4.61	3
United Kingdom	\$33.34	4	Sweden	21.4	4	United Kingdom	\$5.29	4
Sweden	\$34.00	5	New Zealand	13.6	5	South Korea	\$5.96	5
Japan	\$34.21	6	Italy	13.1	6	Luxembourg	\$7.31	6
Denmark	\$34.34	7	Finland	13.0	7	Switzerland	\$8.17	7
France	\$36.70	8	Portugal	13.0	8	Germany	\$8.44	8
Netherlands	\$39.06	9	Australia	12.1	9	Norway	\$9.81	9
Ireland	\$40.41	10	Norway	11.8	10	Portugal	\$11.52	10
South Korea	\$40.65	11	Luxembourg	10.7	11	United States	\$12.60	11
Italy	\$41.09	12	United Kingdom	10.6	12	Finland	\$13.45	12
Greece	\$41.77	13	Germany	9.2	13	Hungary	\$14.31	13
Belgium	\$46.08	14	United States	8.9	14	Ireland	\$14.92	14
New Zealand	\$48.66	15	Canada	7.8	15	Netherlands	\$15.26	15
Turkey	\$50.04	16	Spain	6.9	16	New Zealand	\$16.75	16
Austria	\$50.08	17	Greece	6.6	17	Czech Republic	\$17.54	17
Luxembourg	\$50.84	18	Hungary	6.4	18	Austria	\$17.66	18
Canada	\$51.07	19	Belgium	6.3	19	Denmark	\$17.70	19
Australia	\$52.26	20	Czech Republic	6.0	20	Sweden	\$18.40	20
Portugal	\$52.61	21	Denmark	6.0	21	Belgium	\$18.55	21
United States	\$53.06	22	Switzerland	5.5	22	Slovak Republic	\$19.59	22
Norway	\$55.74	23	Netherlands	5.3	23	Australia	\$21.34	23
Poland	\$56.57	24	Slovak Republic	5.2	24	Iceland	\$22.22	24
Hungary	\$57.22	25	Austria	4.9	25	Spain	\$22.85	25
Iceland	\$57.92	26	Iceland	4.9	26	Poland	\$25.03	26
Mexico	\$72.20	27	Poland	4.2	27	Canada	\$28.14	27
Slovak Republic	\$79.61	28	Ireland	3.0	28	Greece	\$29.13	28
Czech Republic	\$88.91	29	Mexico	1.7	29	Mexico	\$63.89	29
Spain	n/a	n/a	Turkey	1.4	30	Turkey	\$97.43	30

Source: OECD

Taken together, these results (along with the discussion presented below of overseas leadership in DOCSIS 3.0 deployment) are a strong indicator of a simple and basic fact: America can and should be doing better. Viewed through this lens, it is clear that deployment of advanced telecommunications capability, however that is defined, is neither reasonable nor timely in the United States.

**iv. The Commission Should View DOCSIS 3.0 Deployments as Unreasonable and Untimely. Deployments are Slow Despite the Fact that DOCSIS 3.0 is Not an Expensive Upgrade to Cable Systems**

U.S. cable operators have begun to upgrade certain areas of their footprint to DOCSIS 3.0. The chief benefit of this upgrade is the ability to “bond” channels. In other words, rather than have a total of 38.8 Mbps to share amongst an entire neighborhood of customers, the operator can “virtually” bond multiple channels to increase the overall capacity available to one customer. The DOCSIS 3.0 standard states equipment must be able to bond at least four channels creating a total downstream capacity of around 160 Mbps and upstream capacity of around 120 Mbps.<sup>68</sup> Obviously, such a capability has clear benefits. Perhaps the most amazing aspect of this upgrade is its minimal cost. The upgrade has three primary components: upgrading the customer’s equipment, upgrading the equipment in the headend and dedicating more capacity to broadband.

Certainly, the highest cost comes from the need to provide customers with new DOCSIS 3.0 compatible cable modems. However, given the backwards compatibility of the DOCSIS standard only those customers that want to subscribe to the higher advertised speeds need new cable modems.<sup>69</sup> Furthermore, all the major MSO’s lease cable modems to subscribers at a separate fee typically ranging from \$3 to \$5.<sup>70</sup> This has created a considerable windfall for operators since a standalone DOCSIS 2.0 modem costs only \$30.<sup>71</sup> DOCSIS 3.0 modems

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<sup>68</sup> See e.g. Jeff Baumgartner, “Inside DOCSIS 3.0,” *CedMagazine.com*, Oct. 1, 2006.

<sup>69</sup> See e.g. Todd Spangler, “Comcast Eyes Gradual Move to DOCSIS 3.0,” *Multichannel News*, July 2, 2007. (“While DOCSIS 3.0 cable modems will be more expensive than 2.0 models, the additional cost will only be incurred “in the places you’re selling a new service,” Werner said. Plus, the bill of materials costs are declining as DOCSIS 3.0 silicon vendors like Broadcom and Texas Instruments ramp up production.”)

<sup>70</sup> See e.g. Tom Sowa, “Comcast rates to increase for cable, modems,” *The Spokesman-Review*, Sept. 2, 2009.

<sup>71</sup> See e.g. Jeff Baumgartner, “DOCSIS 2.0b,” *CedMagazine.com*, June 1, 2006.

currently retail to consumers at a price of \$85.53.<sup>72</sup> The cost to operators is actually already below the initial price target of \$75<sup>73</sup> and is poised to drop further as scale increases.<sup>74</sup> Thus, cable operators should recoup those costs directly from the cable modem rental fee within 2 years. In fact, cable operators will likely see a significant return on this equipment before it needs to be retired.<sup>75</sup>

The second component of the DOCSIS 3.0 upgrade is to the Cable Modem Termination System (CMTS), which reside in the headend and provide Internet to thousands of customers.<sup>76</sup> Equipment manufacturers have long promised that equipment being bought from them would require only software upgrades to enable DOCSIS 3.0 functionality.<sup>77</sup> Thus, only those systems with extremely dated equipment would require physical equipment replacement. Similarly, Comcast's CTO Tony Werner stated that upgrading their CMTS gear to DOCSIS 3.0 would mostly be a software upgrade with a few systems requiring additional hardware.<sup>78</sup> The systems

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<sup>72</sup> See Amazon.com, "Motorola SB6120 SURFboard DOCSIS 3.0 eXtreme Broadband Cable Modem," available at [http://www.amazon.com/Motorola-SB6120-SURFboard-eXtreme-Broadband/dp/B001UI2FPE/ref=sr\\_1\\_1?ie=UTF8&s=electronics&qid=1244044851&sr=8-1](http://www.amazon.com/Motorola-SB6120-SURFboard-eXtreme-Broadband/dp/B001UI2FPE/ref=sr_1_1?ie=UTF8&s=electronics&qid=1244044851&sr=8-1) (accessed on Sept. 2, 2009).

<sup>73</sup> See Jeff Baumgartner, "Docsis 3.0 Modems: ~\$70 each," *Cable Digital News*, May 19, 2009; Jeff Baumgartner, "Inside DOCSIS 3.0," *CedMagazine.com*, Oct. 1, 2006.

<sup>74</sup> Jeff Baumgartner, "Broadcom: Sub-\$50 Docsis 3.0 Modem in Sight," *Cable Digital News*, Jan. 15, 2009.

<sup>75</sup> This is consistent with other customer premise equipment. See e.g. "Comcast Corporation Q4 2008 Earnings Call Transcript," *Seeking Alpha*, Feb. 18, 2009. ("As we analyze the incremental returns we generate from the deployment of these boxes we believe our returns are even better than the 35% to 40% we projected in 2007")

<sup>76</sup> See e.g. Cisco, "What is the Maximum Number of Users per CMTS," Jan 2, 2006.

<sup>77</sup> See e.g. Jeff Baumgartner, "Inside DOCSIS 3.0," *CedMagazine.com*, Oct. 1, 2006. ("At the CMTS level, ARRIS can start channel bonding with a software upgrade to its flagship Cadant C4 chassis")

<sup>78</sup> Todd Spangler, "Comcast Eyes Gradual Move to DOCSIS 3.0," *Multichannel News*, July 2, 2007. See also Mike Robuck, "DOCSIS 3.0 arrives," *CedMagazine.com*, May 1, 2008. ("The actual incremental cost, from a CMTS standpoint, is relatively small, particularly if they have added capacity anyway.")

requiring a new CMTS certainly benefit from the fact that a DOCSIS 3.0 CMTS is “quite a bit less than half” the cost on a per port basis than existing equipment.<sup>79</sup> Analysts have noted that CMTS downstream port equipment is “dropping like a rock”.<sup>80</sup> Comcast offered early estimates that with DOCSIS 3.0 the CMTS cost per subscriber would be 70 percent lower.<sup>81</sup> The estimate stated a customer subscribed to a 100 Mbps tier would cost the same as a DOCSIS 2.0 customer subscribed to 6.0 Mbps tier in 2007.<sup>82</sup>

The third aspect of the DOCSIS 3.0 upgrade is devoting more capacity to broadband. If a cable operator sought to create a total downstream capacity of 160 Mbps it would require the bonding of four channels.<sup>83</sup> These are the same channels that analog cable customers are familiar with. Each analog channel is 6 MHz, and the average cable system has a total of 750 MHz of capacity.<sup>84</sup> In the pre-DOCSIS 3.0 world, U.S. cable operators devoted an incredibly small portion of their capacity to broadband, on the order of 3 percent.<sup>85</sup> The disparity between the capacities devoted to broadband versus the revenue generated from broadband has exploded over the years. The broadband revenues of the largest cable operators now hover around 25 percent of

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<sup>79</sup> *Ibid.*

<sup>80</sup> Jeff Baumgartner, “CMTS Downstream Prices Plummet,” *Cable Digital News*, Dec. 28, 2007.

<sup>81</sup> See Presentation by John Schanz and Tony Werner, “Networks and Technology,” Comcast Analyst and Investor Meeting, May 1, 2007, p. 27.

<sup>82</sup> *Ibid.*

<sup>83</sup> Our analysis will focus on downstream capacity. This is due solely to the fact that only a single cable operator, J:COM of Japan, has begun bonding upstream channels and this was done with equipment not yet fully certified by CableLabs. See Mike Robuck, “Japan Cablenet taps into 160 Mbps speeds with Arris,” *CedMagazine.com*, March 24, 2009. Upstream channel bonding is at least a year away for U.S. cable operators. See e.g. Mike Robuck, “D3 Upstream: What’s the Hurry?,” *CedMagazine.com*, Sept. 1, 2009.

<sup>84</sup> See e.g. Bob Tynan and Bob Loveless, “Cable Plant Tactics,” *Communications Technology*, Oct. 1, 2006.

<sup>85</sup> See e.g. Comcast Corporation, “Comcast Investor Day P.M. Session,” May 1, 2007. (“And probably even more importantly, less than 2% is allocated to IP traffic today.”)

total cable service revenue.<sup>86</sup> Nonetheless, cable operators are most interested in preserving the large revenue of those customers paying for high-end cable television packages and the HD programming that goes with it. Thus, operators have said the hardest portion of the upgrade is finding the additional capacity.<sup>87</sup> Despite this fact, the actual cost of converting these channels is “basically free”.<sup>88</sup>

A variety of industry players have chimed in to support the notion that these costs are minimal (and savings significant), despite the upgrade allowing customers to attain much higher speeds (and the associated societal benefits). Texas Instruments states “Because there are little, if any, capital investments in the infrastructure to deploy DOCSIS 3.0, operators will enjoy minimal deployment costs and a healthy return on investment on the infrastructure already in place.”<sup>89</sup> Indeed, one research firm estimates the entire industry’s spending on DOCSIS 3.0 equipment will total less than \$1.2 billion over the next five years.<sup>90</sup> As a comparison, the top 4 publicly traded cable MSOs saw broadband revenues of nearly 14 billion in 2008.<sup>91</sup> The CEO of Japanese cable operator J:Com stated “this just isn’t an expensive capital investment”.<sup>92</sup> J:Com estimated that their costs per household to upgrade (sans cable modem) were \$20 per household

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<sup>86</sup> See e.g. Comcast Corporation, Second Quarter 2009 Trending Schedule.

<sup>87</sup> See e.g. Todd Spangler, “Comcast Eyes Gradual Move to DOCSIS 3.0,” *Multichannel News*, July 2, 2007.

<sup>88</sup> Leslie Ellis, “How Sexy is HFC? (Answer: Plenty.),” *CedMagazine.com*, May 1, 2007.

<sup>89</sup> Etai Zaltzman and Ran Senderovitz, “Upwardly Mobile: Cable operators moving up to DOCSIS 3.0,” Texas Instruments, October 2007. See also Peter Percosan, “DOCSIS 3.0 – Sooner rather than later,” Texas Instruments, November/December 2007. (“The incremental increase in an MSO’s capital expenditures to deploy DOCSIS 3.0 cable modems today is minimized. The big payoff comes later when operating costs are significantly reduced.”)

<sup>90</sup> Todd Spangler, “Report: DOCSIS 3.0 To Blanket U.S. By 2013,” *Multichannel News*, May 1, 2009.

<sup>91</sup> Free Press Analysis of Full Year 2008 Financial Results of Comcast, Time Warner Cable, Charter Communications and Cablevision.

<sup>92</sup> Saul Hansell, “World’s Fastest Broadband at \$20 Per Home,” *New York Times*, April 3, 2009.

with several vendors largely seconding that analysis.<sup>93</sup> Thus, cable operators for the past several years have had both the ability and the incentive to offer high-speed broadband at a similar price to previous service tiers. Unfortunately, as we explain below, this is not occurring.

**v. The Major Cable Operators Operating Costs for Providing Broadband Service are Minimal**

Beyond the costs of upgrading to DOCSIS 3.0, it is also worth examining the costs to provide broadband on cable networks. Of course, such figures are not made publicly available and extremely difficult to estimate. Despite this, using some of the information disclosed by publicly traded companies, we have made an effort to estimate these costs here in these comments. Due to Comcast's wider deployment of DOCSIS 3.0, they are the focus of the analysis. Through this analysis, we can both reveal an estimation of costs, as well as ascertain the effect DOCSIS 3.0 upgrades has on profit margins. Of course, this estimation includes a number of assumptions, though we attempted to be very generous in allotting costs.

According to these estimates, we found that for the 2nd quarter of 2007, Comcast's high-speed Internet costs were approximately 35 percent of the company's high-speed Internet revenue. For the 2nd quarter of 2009, these costs made up approximately 30 percent of the company's high-speed Internet revenue (see Figure 9). While these data are an educated approximation, it is clear that selling broadband at an average retail rate of \$42 is an *extremely* profitable business.<sup>94</sup>

These data clearly puts in perspective the lack of downward pressure that this duopoly market is having on the price of broadband. Simply stated, in a competitive market margins this

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<sup>93</sup> *Ibid.*

<sup>94</sup> *See e.g.* Comcast Corporation, 2008 SEC Form 10-K, p. 26. ("Average monthly revenue per high-speed Internet customer has remained relatively stable, between \$42 and \$43 from 2006 to 2008.")

high would be unsustainable, as competition would force prices down. Furthermore, in a competitive market the incentive to deploy DOCSIS 3.0 services would have led to investment in this low-cost upgrade many years ago. And despite Comcast *finally* -- *years after the technology was commercially available* -- deploying DOCSIS 3.0 upgrades, the data indicates that this “investment” is have little if any discernable affect on their margins earned on high-speed Internet service.

**Figure 9: Comcast’s Costs For High-Speed Internet Service**

Costs of Comcast's High-Speed Internet Service (in millions of USD)	Q2 2007	Q2 2009
Revenue (Video, HSI, VoIP)	\$6,712	\$7,614
HSI Revenue	\$1,632	1,909
HSI as % of Cable Services	24.3%	25.1%
HSI Operating Expense (costs specific to HSI)	\$148	\$120
Technical Labor	\$475	\$574
25% of Technical Labor	\$115	\$144
Cust. Service	\$426	\$462
25% of Cust. Service	\$104	\$116
Marketing	\$365	\$402
12.5% of Marketing	\$44	\$50
Administrative and Other	\$732	\$761
12.5% of Administrative and Other	\$89	\$95
Maintenance Scalable Infrastructure	\$151	\$137
Maintanence Upgrades	\$90	\$83
Line Extensions	\$100	\$30
25% Maintanence Total (SI/Upgrades/Ext)	\$83	\$63
Total Other	\$435	\$468
Total	\$583	\$588
HSI Costs as a percentage of revenue	35.7%	30.8%
Remaining HSI Revenue	\$1,049	\$1,321

Source: See Note<sup>95</sup>

<sup>95</sup> Methodology: Using ARPU and subscriber additions, we found that high-speed Internet (HSI) revenue did not include leasing fees for cable modems. This conclusion was further bolstered by Comcast’s explanation for cable video revenue: “Cable Video Revenue consists of our limited analog, expanded analog service, digital, premium, pay-per-view, **equipment services** and residential video installation revenue.” Thus we ignored customer premise equipment expenses. Otherwise, we calculated the percentage of total cable service revenue (video, HSI and voice) that comes from HSI (referred to as 25%, though for each quarter the

While this analysis doesn't explicitly include the HSI's shared portion of the joint and common costs of the HFC network's fixed costs, much of these costs have long since been recouped.<sup>96</sup> Furthermore, the expansion of capacity that occurred nearly a decade ago was in response to the competitive threat posed by satellite operators, not for the provision of broadband (i.e. HSI's share of the joint and common fixed costs would have been extremely low).<sup>97</sup> This conclusion is further bolstered by the strong free cash flows from cable MSOs like Comcast.<sup>98</sup>

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specific percentage was used for calculation). We then used this figure to estimate the percentage of operating costs (technical labor, customer service, marketing and administrative and other). Comcast explains technical labor as "Technical Labor Costs include the internal and external labor to complete service call and installation activities in the home, network operations, fulfillment and provisioning costs". A full 25% of technical labor and customer service were devoted to HSI. For marketing and administrative and other, half of the 25% was provided. This is due to the fact that we are attempting to calculate the cost of providing service to existing users, not the costs of marketing to potential HSI subscribers. Comcast explains administrative and other as "Cable Administrative and Other Expense consists of administrative personnel expense, bad debt expense, building and office expense, billing costs, insurance expense, property taxes, and severance costs". To account for ongoing repairs, we focused on maintenance capital expenditures (CapEx) rather than growth CapEx. Comcast explains growth CapEx as "Growth is directly tied to revenue generation and represents the costs required to secure new customers, revenue units or additional bandwidth." Despite the inclusion of the term "additional bandwidth", further explanation during a quarterly financial call noted, "Maintenance includes investments that allows us to keep our competitive position and provide a foundation for growth. We think that this type of CapEx is the current and future cost of doing business. An example of this would be our need to buy additional CMTSs to expand our capacity, as customers' usage of our existing high-speed data increased." Within maintenance CapEx, we included scaleable infrastructure and upgrades (for explanation of each category see citation below). For these two areas of CapEx, 25% was allotted. Finally, 100% of HSI operating expense was included. The final figure was added up and divided by HSI revenue. *See Comcast Corporation, Trending Schedule, Second Quarter 2009* (any emphasis added). *See also* "Comcast Corporation Q4 2007 Earnings Call Transcript," *Seeking Alpha*, Feb. 14, 2008.

<sup>96</sup> *See* Shane Greenstein and Ryan McDevitt, "Broadband Bonus: Accounting for Broadband Internet's Impact on U.S. GDP," NBER Working Paper No. 14758, Feb. 2009, pp. 33-34.

<sup>97</sup> *See* Reply Comments of Free Press, In the Matter of *A National Broadband Plan for Our Future*, GN Docket No. 09-51, p. 32 n. 70.

<sup>98</sup> *See* Reply Comments of Free Press, In the Matter of *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 07-269, p. 3.

Beyond the overall costs, it is also worth exploring the more direct expenses for broadband. The costs most directly related to actually operating a broadband network are the incremental upgrades necessary to ensure a quality network, and the costs related to transporting data off-network. According to the Comcast, the incremental costs of providing broadband service with rising customer traffic and subscriber additions is about \$7 for each home served.<sup>99</sup> The cost of transporting data varies tremendously depending on the size and geographic location of the network. With their own backbone networks, the largest MSO's have far lower costs on a per subscriber basis than smaller operators.<sup>100</sup> Nonetheless, the actual costs of Internet bandwidth are declining on the order of "5 to 10 percent a year."<sup>101</sup> For Comcast, the direct operating expenses for broadband in the Q2 of 2009 were about \$117 million (about 6 percent of broadband revenues).<sup>102</sup> For Time Warner, the figure is \$33 million (about 5.9 percent of broadband revenues).<sup>103</sup> Comcast and Time Warner Cable saw these expenses fall \$31 million and \$11 million respectively from the same quarter in 2007.<sup>104</sup> Unfortunately, these costs include more than just transit so it is difficult to conclude what factors are behind the declines.<sup>105</sup> While

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<sup>99</sup> Saul Hansell, "The Cost of Downloading All Those Videos," *New York Times Bits Blog*, April 20, 2009. *See also* Saul Hansell, "As Costs Fall, Companies Push to Raise Internet Price," *New York Times*, April 19, 2009.

<sup>100</sup> Unfortunately, considerable evidence exists that suggest ILECs are gouging special access customers. *See e.g.* Comments of Free Press, In the Matter of *A National Broadband Plan for Our Future*, GN Docket No. 09-51, p. 124.

<sup>101</sup> Saul Hansell, "The Cost of Downloading All Those Videos," *New York Times Bits Blog*, April 20, 2009.

<sup>102</sup> Comcast Corporation, Trending Schedule, Second Quarter 2009.

<sup>103</sup> Time Warner Cable, 2009 Trending Schedule. Time Warner Cable states the components of this include "network connectivity costs" Time Warner Cable, 2008 SEC Form 10-K, p. 60.

<sup>104</sup> *Ibid.*

<sup>105</sup> Time Warner Cable did state in a recent SEC filing that "High-speed data costs decreased primarily due to a decline in certain customer care support service costs." Time Warner Cable, First Quarter 2009 SEC Form 10-Q, p. 8; Comcast similarly stated "The decrease in high-speed Internet expenses in 2008 was primarily driven by lower support service costs that were the

it is possible the *overall* costs of transit increased marginally, it is worth noting the small percentage they make up in overall revenues. Thankfully, Time Warner Cable has broken out these costs in their most recent 10-K filing. The company lists their contractual obligations for “high-speed data connectivity”. They state these are “based on the contractual terms for bandwidth circuits that were in use as of Dec. 31, 2008.”<sup>106</sup> Time Warner Cable’s lists their transit costs for all of 2009 as being \$40 million.<sup>107</sup> This low cost to offer high-speed internet service from major cable operators aligns with the predictions of a financial analyst who estimates that these operators enjoy “80 percent margins for wired high-speed Internet services”<sup>108</sup> The estimated costs for offering service and the minimal costs required to enhance speeds offerings bring an entirely different perspective as to whether the deployment of broadband is occurring in a “reasonable and timely fashion.” Given the low-cost of these upgrades, the incredibly high margins, the rising retails price of cable Internet services, the limited nature of the current and future planned DOCSIS 3.0 deployments by U.S. MSOs, and the fact that channel bonding technology was long-ago ready for prime-time, it is quite clear that deployment is neither reasonable, nor timely

**vi. The Stagnant Duopoly Portends A Continued Failure to Meet the “Reasonable and Timely Deployment” Standard of Section 706. The Future Increasingly Looks Like A Market with an Unconstrained Monopoly**

As most Americans are well aware, their only options for home broadband service are the local cable or local phone company (and millions of rural Americans don’t even have those

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result of our entering into new contracts with lower cost providers and renegotiating existing contracts.” Comcast Corporation, 2008 SEC Form 10-K, p. 28.

<sup>106</sup> Time Warner Cable, 2008 SEC Form 10-K, p. 78.

<sup>107</sup> *Ibid.*

<sup>108</sup> See Jeff Baumgartner, “Does Cable Really *Need* Wireless?” *Cable Digital News*, Dec. 5, 2008. See also Vishesh Kumar, “When Is the Cable ‘Buy’ Set to Come?,” *Wall Street Journal*, April 3, 2008.

options). While cellular companies have widely deployed 3G-level “high-speed” Internet services, this technology has not yet shown to be a viable substitute for a dedicated fixed home broadband line (what’s more, the same incumbent telephone companies control more than 80 percent of the mobile high-speed Internet market, and these services are far slower and far more expensive than a typical DSL or cable modem line).<sup>109</sup>

The simple fact is that our broadband market is a duopoly. Nationwide, incumbent phone and cable companies control 97 percent of the fixed-line residential broadband market. When the mobile data market is included, the incumbent phone and cable companies’ nationwide market share only declines to 95 percent (see Figure 10).

As high as these incumbent marketshares are, they still *overstate* the true level of local competition. First, in the case of the entire high-speed access market (fixed plus mobile lines), there is no evidence to suggest that any significant portion of mobile data customers are using

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<sup>109</sup> See *December 2007 FCC Form 477 Data*, Table 6, showing the ILEC share of the mobile wireless high-speed Internet market to be 81.5 percent. The mobile wireless high-speed Internet market, however, consists mostly of business lines, with only nine million of the 51 million reported lines being counted by the FCC as residential. A closer look at the market for mobile broadband reveals further evidence of the lack of 3G’s substitutability. See *e.g. infra*. Figure 22 showing evidence that the majority of residential mobile wireless high-speed connections are likely complementary services to a wireline cable or DSL connection. Further, ILECs like AT&T market mobile broadband as a complement to a home DSL connection. See Karl Bode, “AT&T Offers New 3G/DSL Bundle,” *DSLReports*, April 1, 2009. During the SBC-AT&T merger that resulted in the latter’s full acquisition of Cingular, AT&T touted “the merged firm’s ability to jointly market wireline and wireless services.” See *Application for Consent of Transfer of Control*, WC Docket No. 06-74, March 31, 2006, Declaration of Dennis W. Carlton and Hal S. Sider at para. 10. Most telling, consumers who reject the bundles and attempt to use a mobile broadband as their primary connection are explicitly prevented by the carrier from doing so. AT&T tells mobile data customers “AT&T’s wireless data services are NOT intended to be used as a replacement for DSL or cable services,” See AT&T, “Mini Laptops,” 2009, available at <http://www.wireless.att.com/cell-phone-service/specials/mini-laptops.jsp>. Both AT&T and Verizon specifically prohibit using the Internet connection “as a substitute or backup for private lines, landlines or full-time or dedicated data connections.” AT&T also tells customers that “wireless services are not equivalent to landline Internet”. See <http://www.wireless.att.com/cell-phone-service/legal/plan-terms.jsp> and [http://b2b.vzw.com/broadband/bba\\_terms.html](http://b2b.vzw.com/broadband/bba_terms.html) (accessed June 2009).

these services as their *sole or primary* residential broadband connection. Mobile data is a complementary service and will likely remain so for quite some time<sup>110</sup> Second, the other competitors accounted for in the above figure have very limited geographic deployment and customer bases. Given its high price, slow speeds and slow response times (or “high latencies”), satellite is only a sensible high-speed Internet option for customers living in areas where there is no other provider available. Fixed wireless deployment is also targeted toward rural areas with limited cable and DSL deployment. Traditional competitive local exchange carriers (CLECs) targeting residential populations and cable overbuilders have a limited presence in just a few large metropolitan areas. And broadband over powerline (BPL) is a sparsely deployed and declining technology.<sup>111</sup>

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<sup>110</sup> Even among mobile telephone customers, the substitution of mobile lines for fixed wired telephone lines is still relatively limited (17.5 percent of households in 2008), and much of this substitution is occurring in low-income homes. *See* “Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, January-June 2008,” Stephen J. Blumberg, Ph.D. and Julian V. Luke, Division of Health Interview Statistics, National Center for Health Statistics, rel. December 17, 2008. *See also* “Wireless Substitution: State-level Estimates From the National Health Interview Survey, January–December 2007,” Blumberg et. al., rel. March 11, 2009.

<sup>111</sup> Broadband over powerline peaked in June 2007 with an unremarkable 5,347 residential lines. It has since declined to 5,159 lines as of the end of 2007, accounting for just 0.007 percent of all residential U.S. high-speed lines. Furthermore, Phone and cable companies have long touted the technology as being poised to burst onto the broadband market. *See e.g.* Comments of Verizon, GN Docket No. 04-54, May 10, 2004, pp. 11-12 (“BPL will encompass six million power lines by 2006, promising revenues of \$3.5 billion”).

**Figure 10: U.S. Broadband Market Duopoly<sup>112</sup>  
(2008 Marketshare Estimates)**

Provider Type	Marketshare of Fixed Residential Broadband Market (2008)	Marketshare of Fixed AND Mobile Residential Broadband Market (2008)
Incumbent Phone Companies	39%	45%
Incumbent Cable Companies	57%	50%
Cable Overbuilders	1%	1%
Competitive Local Exchange Carriers (CLECs)	1%	1%
Others (satellite, wireless, powerline)	1%	3%
<b>Marketshare of Incumbent Cable and Phone Companies</b>	<b>97%</b>	<b>95%</b>

*Source: Free Press estimates based on FCC and provider data*

The cable-phone duopoly is failing to deliver the quality of broadband connections needed for American innovation to thrive. Simply stated, the current broadband duopoly can certainly not be seen as deploying broadband in a “reasonable and timely fashion.” To gain a full understanding of this, one need only look to at how the market has developed in most local areas. With multiple members of a household exploring new uses for high-speed Internet, the offerings of DSL providers have become increasingly less useful. This disparity exhibits direct effects in the market. As DSL providers began to lose market share in 2008, they looked to

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<sup>112</sup> For this table, “incumbent phone companies” include facilities-based incumbent Local Exchange companies such as the RBOCs (AT&T, Qwest, Verizon); mid-size price-cap incumbents such as Windstream and CenturyTel; and smaller local exchange carriers, such as the members of WTA, OPASTCO and NTCA. “Incumbent cable companies” includes the larger national cable operators such as Comcast, Time Warner Cable, Cox, Bright House, Charter, Cablevision, CableOne, etc... “Cable overbuilders” includes companies such as RCN. “CLECs” include competitive local exchange carriers such as Covad Communications and XO Communications. “Others” includes satellite companies like WildBlue and Hughes Networks; Powerline providers include local municipalities and fixed wireless carriers such as Lariet.net.

capture new customers by lowering the monthly cost of DSL.<sup>113</sup> Despite these attempts, cable operators steadily added customers. By the 2nd quarter of 2008, the three largest DSL providers had net additions of 130,000 customers, while the two largest cable operators added 479,000.<sup>114</sup> In the case of Comcast, a full two-thirds of their net additions came from DSL customers.<sup>115</sup> Of course, these changes certainly weren't due to price reductions on the part of cable operators. As Comcast noted "Average monthly revenue per high-speed Internet customer has remained relatively stable, between \$42 and \$43 from 2006 to 2008."<sup>116</sup> For instance, Comcast stated that in response to DSL price-cutting, "[w]e never changed our price... That is product superiority."<sup>117</sup> Comcast congratulated their advertising team whose efforts were able "to change the perception"<sup>118</sup> The Company proudly stated "[m]oving customers away from a focus on price is enormously difficult, we've done it."<sup>119</sup>

This disparity in speed has only grown over time. For instance, the highest advertised downstream speed available for AT&T DSL is 6 Mbps.<sup>120</sup> Meanwhile, with the widespread use of "Powerboost" technology, cable operators have been routinely advertising base downstream speeds well in excess of 6 Mbps.<sup>121</sup> In late 2007, Comcast found that the "number of customers

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<sup>113</sup> See e.g. Grant Gross, "Verizon Offers Free DSL for up to Six Months," *IDG News Service*, Sept. 2, 2008.

<sup>114</sup> See e.g. Sean Buckley, "Cable broadband is beating DSL to a pulp," *Telecom Magazine*, Sept. 16, 2008.

<sup>115</sup> "Comcast Corporation Q2 2008 Earnings Call Transcript," *Seeking Alpha*, July 20, 2008.

<sup>116</sup> Comcast Corporation, 2008 SEC Form 10-K, p. 26.

<sup>117</sup> Comcast Corporation, "Transcript of Comcast Investor Day A.M. Session," May 1, 2007.

<sup>118</sup> *Ibid.*

<sup>119</sup> *Ibid.*

<sup>120</sup> See <http://www.att.com/gen/general?pid=10938>

<sup>121</sup> For instance in non-DOCSIS 3.0 markets, Comcast promotes downstream speeds "up to 12 Mbps" as their base offering. See <http://www.comcast.com/customers/faq/FaqDetails.ashx?Id=4859>. It is worth noting that

taking our Blast tier is outpacing the number of customer coming in on the economy tier. We see broadband speeds as a real differentiator in the market, and in areas where DSL simply can't compete."<sup>122</sup> These trends have only widened with increased consumer demand for bandwidth. By mid-2008, Comcast found that "new premium tier additions are outpacing those of our economy service by four to one."<sup>123</sup> Similarly, Time Warner Cable found that "[r]esidential high speed data subs grew nearly 11 percent with over 40 percent of HSD net ads choosing our turbo service." As noted above, these customers are subscribing despite the considerable monthly expense. With Verizon and AT&T ultimately only offering service to 40 percent of the country, "cable modem service is looking more and more like it will be the only game in town... in the majority of America they will remain almost unchallenged."<sup>124</sup> The choice between DSL and cable modem service increasingly isn't becoming a choice at all.

Verizon, the only major broadband provider deploying fiber-to-the-home technology, appears to be embarking on a similar pricing strategy in the markets where they offer this service.<sup>125</sup> Verizon recently stated, "[y]ou will not see us advertising prices any more. You will see more about what the experience can be."<sup>126</sup> This, of course, came after the company increased the prices of their FiOS services and associated bundles. Cable operators with

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multiple cable operators do *offer* an "economy" tier that typically offer less than 1 Mbps downstream but that it is rarely, if ever, promoted to potential customers.

<sup>122</sup> See "Comcast Corporation Q4 2007 Earnings Call Transcript," *Seeking Alpha*, Feb. 14, 2008.

<sup>123</sup> See "Comcast Corporation Q2 2008 Earnings Call Transcript," *Seeking Alpha*, July 20, 2008.

<sup>124</sup> Eric Savitz, "Cable Vs. Wireless: Guess Which Is Growing Faster?" *Barrons Tech Trader Daily*, Aug. 21, 2009.

<sup>125</sup> It is worth noting that this upgrade is being done only in the most lucrative of areas. See e.g. Reply Comments of Free Press, In the Matter of *A National Broadband Plan for Our Future*, GN Docket No. 09-51, pp. 25-28.

<sup>126</sup> Karl Bode, "Verizon Stops Seriously Competing On Price," *DSLReports.com*, June 23, 2009.

overlapping footprints to Verizon have sought to fortify their gains outlined above by expending the minimal resources required to move to DOCSIS 3.0. Nonetheless, Verizon has the ability to move away from price, thanks to cable operators failing to offer new service tiers at an attractive price. In setting their prices for DOCSIS 3.0 service, Comcast stated “[t]he market is reasonably rational... We’re not going to be irrational.”<sup>127</sup> This attitude is certainly reflected in the market. Comcast highest service tier costs \$116.95, while Cablevision offers a similar speed tier for \$99.95 (along with a \$300 “activation fee”).<sup>128</sup> Cox has only deployed to the few markets where it is facing fiber competition.<sup>129</sup> The second largest MSO, Time Warner Cable, has yet to deploy the service to *any* areas.<sup>130</sup> Even for Comcast -- the single operator deploying DOCSIS 3.0 more widely than just areas where they face fiber competition -- their expanded deployment is driven by the trend of customers subscribing to premium tiers and thus the ability to move these customers to higher priced packages, all the while further distancing themselves from DSL in the majority of their markets. In the first quarter of 2009, Comcast stated “one of the reasons we think it is so important is for the vast majority of our footprint -- maybe 75 percent to 80 percent of our footprint -- the RBOCs can’t compete when we go up to 50 meg and beyond.”<sup>131</sup> Thus, the majority of consumers are quickly going to find themselves with a single choice while those

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<sup>127</sup> Todd Spangler, “Comcast Eyes Gradual Move to DOCSIS 3.0,” *Multichannel News*, July 2, 2007.

<sup>128</sup> Stacey Higginbotham, “Comcast Cuts Price on 50 Mbps Service,” *GigaOm*, June 9, 2009; Karl Bode, “Cablevision 101Mbps: \$300 ‘Activation Fee,’” *DSLReports.com*, May 11, 2009.

<sup>129</sup> Jeff Baumgartner, “Cox Kicks at Qwest,” *Cable Digital News*, Aug. 20, 2009. Cox charges 89.95 for the highest tier of service and charges a \$10 monthly fee for leased cable modems. See <http://ww2.cox.com/residential/sandiego/terms-and-conditions.cox>

<sup>130</sup> The company has further they intend for any DOCSIS 3.0 upgrades to be “surgical”. See e.g. Karl Bode, “Time Warner Cable: DOCSIS 3.0 ‘Soon,’” *DSLReports.com*, April 30, 2009.

<sup>131</sup> “Comcast Corporation Q1 2009 Earnings Call Transcript,” *Seeking Alpha*, April 30, 2009.

fortunate enough to live in the areas with FiOS deployment have the “luxury” of choosing which overpriced service to adopt.

#### **vii. Cable MSOs Show a Casual Approach to Deploying Higher Speeds**

This lack of timely deployment is clear with the cable industry’s attitude towards DOCSIS 3.0. As the DOCSIS 3.0 standard was being developed, a divide emerged. On one side were overseas cable operators and their equipment vendors; on the other U.S. cable operators and their equipment vendors.<sup>132</sup> The former began pushing for a DOCSIS standard to be created much more quickly that focused primarily on channel bonding and left the list of other features for DOCSIS 3.0.<sup>133</sup> This would significantly quicken the pace with which bonding equipment could receive CableLabs’ approval. The reasoning behind this is clear. Many other countries have far more intensely competitive markets (thanks in large part to unbundling policies), and ultimately saw much earlier FTTH deployments from competitors and the associated 50 and 100 Mbps offerings.<sup>134</sup> U.S. providers resisted, lacking any competitive reason to “rush” deployment of higher speeds; this resistance killed the formation of an interim standard.<sup>135</sup> This, of course, comes despite the minimal cost associated with these upgrades. The end result was that overseas providers, including those in countries such as Singapore, France, Japan and South Korea, were

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<sup>132</sup> For equipment vendors, this really came down to which manufacturers were ready to produce channel bonding equipment and which would benefit from a delay. *See e.g.* Jeff Baumgartner, “DOCSIS 2.0b,” *CedMagazine.com*, June 1, 2006.

<sup>133</sup> The other feature that reportedly would have been included was IPv6. *See e.g.* Jeff Baumgartner, “DOCSIS 2.0b,” *CedMagazine.com*, June 1, 2006. For a rundown of features left off, *see e.g.* Jeff Baumgartner, “Inside DOCSIS 3.0,” *CedMagazine.com*, Dec. 20, 2007.

<sup>134</sup> *See e.g.* Todd Spangler, “Waiting On Wideband Gear,” *Multichannel News*, Jan. 6, 2008. (“Operators in certain Asian markets are facing particularly aggressive broadband competition with 100-Mbps offerings from telcos, and have felt a more urgent need to get their hands on the channel-bonding capabilities than perhaps their North American kin.”)

<sup>135</sup> *See* Alan Breznick, “CableLabs Kills Interim DOCSIS Standard,” *Cable Digital News*, June 27, 2006. *See also* Alan Breznick, “CableLabs Issues DOCSIS 3.0 Spec,” *Cable Digital News*, Aug. 7, 2006.

forced to deploy pre-certified equipment.<sup>136</sup> The equipment manufacturers were similarly interested in seeing a quicker path to certified channel bonding equipment in order to meet the needs of their overseas customers. ARRIS' VP of marketing stated, "The sense of urgency is probably a little different, between U.S. MSOs and others around the world in terms of setting any pre-3.0 wideband strategies."<sup>137</sup> The Chief Architect of Cisco's cable business unit stated in 2006, "[t]he Asia community was screaming for this stuff probably a couple of years ago."<sup>138</sup> By 2007, U.S. operators still hadn't budged from their approach. The CTO of Cox stated "[t]here's lots of room to grow before we need 3.0."<sup>139</sup> The CTO of Time Warner Cable stated "[w]e're waiting for DOCSIS 4.0 (laughs). We're in the same boat....DOCSIS 2.0 serves us just fine, through '09 and '10."<sup>140</sup> One industry publication stated:

The cable industry took some important steps up the long climb to rollout the full suite of DOCSIS 3.0 capabilities over the past month, but it remains to be seen how rapidly the new platform will be embraced in the U.S. even as overseas operators are pushing aggressively ahead."<sup>141</sup>

A recent New York Times article sheds light on the answer to this query. The Japanese

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<sup>136</sup> See Eric Bangeman, "Pre-DOCSIS 3.0 rollout in South Korea hits 100Mbps," *Ars Technica*, Nov. 10, 2006; "StarHub Offers 100-Mbit/s," *Cable Digital News*, Dec. 27, 2006; Jeff Baumgartner, "Japanese MSO Moves 160 Mbit/s," *Cable Digital News*, April 8, 2007; "Numericable First to Deliver Broadband Services Across France based on 100Mbps Standard with Cisco IP Next-Generation Network," Cisco Press Release, Nov. 30, 2006. See also "Virgin Media 50Mbps Trials Expand," *DSLReports.com*, Sept. 17, 2007; "UPC Broadband, Cisco Drive Broadband Speeds to 120 Mbps in Amsterdam," *Huliq*, Sept. 13, 2007; Ed Gubbins, "Cisco offers RF channel-bonding," *Telephony Online*, June 21, 2006 ("In a statement released today by Cisco from the Cable-Tec Expo, chief technology officers from two operators testing the system-Com Hem in Sweden and TDC Kabel TV in the Netherlands--said the system can be used to deliver 100-Mb/s services.").

<sup>137</sup> Jeff Baumgartner, "Inside DOCSIS 3.0," *CedMagazine.com*, Dec. 20, 2007.

<sup>138</sup> *Ibid.*

<sup>139</sup> Leslie Ellis, "How Sexy is HFC? (Answer: Plenty.)," *CED Magazine*, May 1, 2007.

<sup>140</sup> *Ibid.*

<sup>141</sup> "Vendors Race to Expedite DOCSIS 3.0, But Usefulness in U.S. Remains at Issue," *ScreenPlays Magazine*, Sept. 2007.

cable operator, J:Com, is currently offering advertised downstream speeds of 160 Mbps at monthly cost of \$60.<sup>142</sup> U.S. operators on the other hand are taking a casual approach to competition, upgrading in limited areas and jacking up costs to consumers that have no relation to their own.

**C. The Commission’s Prior Misguided Reclassifications of Consumer Facilities-Based High-Speed Internet Access Services as Pure “Information Services” Has Legal Consequences Beyond the Removal of Title II Jurisdiction. This Classification Comes With the Consequence that Under the Law, “Advanced Telecommunications Capability” Is Not Being Deployed to Any Residential Premise in the United States**

The 1996 Act describes three distinct types of services that are of importance to the regulatory debate over broadband. First, “information service” is defined as “the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.”<sup>143</sup>

Second, “telecommunications service” is defined as “the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.”<sup>144</sup> Within this definition is the term “telecommunications,” which Congress defined as “the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received.”<sup>145</sup>

Third, the Act defines “cable service” to be “the one-way transmission to subscribers of

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<sup>142</sup> Saul Hansell, “The Cost of Downloading All Those Videos,” *New York Times Bits Blog*, April 20, 2009.

<sup>143</sup> 47 U.S.C. 153 (20).

<sup>144</sup> 47 U.S.C. 153 (46).

<sup>145</sup> 47 U.S.C. 153 (43).

video programming, or other programming service; and subscriber interaction, if any, which is required for the selection or use of such video programming or other programming service.”<sup>146</sup>

In defining these terms, Congress built upon the language of the court ruling that broke up Ma Bell and the Commission’s work in the *Computer II* proceeding. The Commission later clarified that “information services” and “telecommunications services” were mutually exclusive, mirroring the *Computer II* “enhanced” versus “basic” services dichotomy.<sup>147</sup>

In its 1998 *Advanced Services Order*, the FCC ruled that the “pro-competitive provisions of the 1996 Act apply equally to advanced services and to circuit-switched voice services.”<sup>148</sup> In doing so, the Commission also concluded that advanced services such as broadband are “telecommunications services” as defined under the Act. This ruling meant that all the interconnection and unbundling provisions of the Act applied to the Bells’ broadband services.<sup>149</sup> This classification of incumbent wireline broadband services as “telecommunications services” was the first in a series of FCC rulings on this issue -- an issue of semantics that would have far-reaching consequences both for broadband competition and for larger issues such as consumer

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<sup>146</sup> 47 U.S.C. 522 (6).

<sup>147</sup> See *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501, 11516-17, 11520, 11524, paras. 33, 39, 45-46 (1998).

<sup>148</sup> The term “advanced services” in this context means (per the Commission) “wireline broadband telecommunications services.” See *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket Nos. 98-147, 98-11, 98-26, 98-32, 98-15, 98-78, 98-91, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 24012 (1998) (*Advanced Services Order*), paras 3, 11.

<sup>149</sup> *Ibid.* para. 32, “Pursuant to the Act and our implementing orders, incumbent LECs are required to (1) provide interconnection for advanced services; and (2) provide access to unbundled network elements, including conditioned loops capable of transmitting high-speed digital signals, used by the incumbent LEC to provide advanced services. We also note that under the plain terms of the Act, incumbent LECs have an obligation to offer for resale, pursuant to section 251(c)(4), all advanced services that they generally provide to subscribers who are not telecommunications carriers. Finally, for the reasons discussed below, we conclude that incumbent LECs have an obligation under the statute and our implementing rules to offer collocation arrangements that reduce unnecessary costs and delays for competitors and that optimize the amount of space available for collocation.”

rights and Network Neutrality.

This semantic issue is important, because if ISP services are considered to be “information services” with a “telecommunications service” component, then the underlying transmission component is subject to Title II and *Computer Inquiry* regulatory treatment.

Thus, consistent with the approach of the *Computer Inquiries*, in its 1998 *Advanced Services Order*, the Commission ruled that the broadband *transmission path* was a “basic” service coupled with an “enhanced” Internet access service. Just because an incumbent’s DSL offering was transmitted via packet-switching did not matter, and just because the transmission was coupled with an information service (Internet access) did not matter. This opinion was in keeping with Commission precedent set before the 1996 Act. In 1995, the FCC ruled that AT&T’s enhanced frame relay<sup>150</sup> service was a combination of packet-switched transmission and an enhanced service, and the underlying transmission was subject to *Computer Inquiry* unbundling.<sup>151</sup>

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<sup>150</sup> Frame relay is a packet-switched technology that provides a high-speed always-on connection, but is a less expensive alternative than a dedicated line like a T-1 for enterprise customers.

<sup>151</sup> In the *Frame Relay Order*, the Commission rejected AT&T’s argument that since the frame relay service itself was sold to customers only as an enhanced service, that the service was one singular enhanced service. The Commission also rejected AT&T’s interpretation that the “contamination theory” applied to its frame relay service. The contamination theory holds that if an enhanced service provider sells a service that is a combination of computing and basic transmission, that the entire service is considered enhanced, and the provider is not obligated to abide by Title II regulations. But as the Commission made clear in the *Frame Relay Order*, the contamination theory is not meant to apply to facilities-based providers: “Application of the contamination theory to a facilities-based carrier such as AT&T would allow circumvention of the Computer II and Computer III basic-enhanced framework. AT&T would be able to avoid Computer II and Computer III unbundling and tariffing requirements for any basic service that it could combine with an enhanced service. This is obviously an undesirable and unintended result.” See *Independent Data Communications Manufacturers Association Inc. Petition for Declaratory Ruling that AT&T’s InterSpan Frame Relay Service Is a Basic Service*, *American Telephone and Telegraph Company Petition for Declaratory Ruling that all Interexchange Carriers be Subject to the Commission’s Decision in the IDCMA Petition*, Memorandum Opinion

But this logical consistency, which holds true to the law itself as well as 30 years of Commission precedent, was unraveled by a new FCC bent on undermining the Act's pro-competitive framework at every possible turn. For Congress, competition had meant opening up bottleneck infrastructures to multiple providers, which would nurture this nascent industry and eventually lead to more facilities investment.<sup>152</sup> But for the new FCC, competition meant protecting incumbents from access obligations under the misguided belief that this would somehow spur the foreclosed competitors to make massive new investments in their own facilities.<sup>153</sup> The new FCC felt that relieving the incumbents of unbundling obligations would

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and Order, 10 FCC Rcd 13717 (1995) (*Frame Relay Order*), at paras. 41-44, stating, "The assertion by AT&T and other commenters that the enhanced protocol conversion capabilities associated with AT&T's InterSpan service bring it within the definition of an enhanced service is beside the point. Under the Commission's *Computer II* and *Computer III* decisions, AT&T must unbundle the basic frame relay service, regardless of whether the [service] offering also provides a combined, enhanced protocol conversion and transport service for those customers who require it."

<sup>152</sup> In its 2003 *Triennial Review Order*, the FCC went far beyond eliminating line sharing. This proceeding was essentially the new FCC's chance to re-engineer the previous Commission's entire competition policy framework. The emerging competitive telecom carriers were already weakened from years of litigation and the bursting of the tech stock bubble. The *Triennial Review* pushed them closer to their grave. In the order, the majority also ruled that incumbents were not required to offer fiber-to-the-home or hybrid fiber-copper loops as UNEs, nor were they required to unbundle OCn-level fiber loops. And the order also eliminated the unbundling of packet-switching elements, including routers and Digital Subscriber Line Access Multiplexers (DSLAMs).

<sup>153</sup> The history here is complex. The early Bush-era FCC majority was united in its belief that relief from unbundling regulations would spur investment and competition, but not relief from *all* unbundling regulations. Chairman Powell said that line sharing was an important instrument for seeding future facilities-based competition. In the *Triennial Review Order* of 2003, Powell was joined by Republican Commissioner Kathleen Q. Abernathy in dissenting from the decision to eliminate line sharing, while Democratic Commissioners Jonathan Adelstein and Michael Copps both (reluctantly) concurred with Republican Commissioner Kevin Martin's vote to not reimpose this UNE. In testimony delivered to Congress just days after the *Triennial Review* vote, Powell stated, "I fear that the majority's elimination of the line sharing UNE ... flies in the face of the explicit Congressional goals of bringing the American public new infrastructure investment and innovation and meaningful competition. ... Line sharing has given birth to facilities-based competitive broadband telecommunications carriers and has provided a valuable source of inputs for broadband ISPs. The result has been lower prices for broadband users and, as a result,

lead them to investments that they would not have made if they had to share their infrastructure. The fact that this would likely destroy the competitive carriers did not matter, in the logic of the FCC majority, because the mere existence of a *single* market competitor -- local monopoly cable companies -- was proof that robust facilities-based *intermodal* competition<sup>154</sup> would emerge.

Where there is clearly a single market provider, regulators are compelled to intervene to prevent monopoly harms and anticompetitive conduct. But when there are two providers, the calculus is more complex, and politics plays a greater role. In a monopoly market, there are dozens of potential competitors each making the obvious case of lack of competition, and the potential benefits competition brings. But in a duopoly market, the two dominant players are quick to decry the certain harms that regulations encouraging further competition would bring. This is precisely the logic that led to the complete unraveling not only of Congress' 1996 vision, but of the FCC's own wildly successful 30-plus year *Computer Inquiry* regulatory regime.

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increased demand. I fear that the majority's elimination of line sharing strikes a blow to facilities-based competition. In addition, I fear that a result of this action will cause higher prices for broadband Internet access subscribers. Furthermore, I do not accept the argument that the elimination of line sharing provides an affirmative incentive for ILEC deployment of new broadband infrastructure. Line sharing rides on the old copper infrastructure, not the new fiber facilities that we seek to advance to deployment. For these reasons, I could not accept the majority's decision to eliminate line sharing." See "Oral Statement of FCC Chairman Michael K. Powell, Before the Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce, U.S. House of Representatives," Feb. 26, 2003 (*Powell 2003 House Testimony*).

<sup>154</sup> "Inter-modal" competition, or "platform competition" refers to competition between providers of a particular service, using different "platforms" or technologies. For example, cable modem is an intramodal competitor to DSL service. "Inter-modal" competition refers to competition between providers using the same platform or technology. An example of intramodal competition is a company like Earthlink, which obtains wholesale access to an incumbent's infrastructure and competes with that incumbent using the same technology. Intramodal competition can also be "facilities-based." For example, a company like RCN, which is a cable "overbuilder," deploys its own cable facilities and competes intramodally with the incumbent cable operator.

But while the then-new Commission could have implemented its new vision via a series of forbearance actions, they took a different path -- a path of semantic trickery that has direct consequences for the Section 706 evaluations.

From 1996 to 2002, the Commission declined to weigh in on the broader issue of the regulatory classification of Internet services provided over cable systems. But outside events finally forced the Commission to act. In the space of a few short months, three different federal courts issued three different conclusions on the appropriate regulatory status of cable modem Internet service.<sup>155</sup>

When the FCC finally made its decision on the matter in 2002, it ruled that “cable modem service as currently provided is an interstate information service, not a cable service, and that there is no separate telecommunications service offering to subscribers or ISPs.”<sup>156</sup> The Commission stated that cable modem service provides functionalities like Web surfing and e-mail “via telecommunications,” but that the “telecommunications component is not, however, separable from the data processing capabilities of the service.”<sup>157</sup>

This logic of redefining Internet service delivered by cable as an “information service” upended the entire approach of the *Computer Inquiry* proceedings and all the subsequent broadband rulings. The entire purpose of the regulatory approach before this point was that the

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<sup>155</sup> One decision held that cable modem service comprises both a “telecommunications service” and an “information service.” See *AT&T Corp. v. City of Portland*, 216 F.3d 871, 877 (9th Cir. 2000) (*City of Portland*). Another held that Internet service is neither a cable service nor a telecommunications service. See *Gulf Power Co. v. FCC*, 208 F.3d 1263, 1275-78 (11th Cir. 2000). And a third decided that cable modem service is a “cable service.” See *MediaOne Group, Inc. v. County of Henrico*, 97 F.Supp.2d 712, 714 (E.D. Va. 2000), 4th Cir. No. 00-1680).

<sup>156</sup> *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*, GN Docket No. 00-185 & CS Docket No. 02-52, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd 4798 (2002) (*Cable Modem Declaratory Ruling and NPRM*) at para. 33.

<sup>157</sup> *Ibid.* para. 39.

“telecommunications component” underlying Internet access services *absolutely* was separable from the data processing capabilities of the service. It did not matter that the transmission medium was “packet switched,”<sup>158</sup> or if traditional cable facilities were used. In fact, the 1996 Act defines telecommunications service as “the offering of telecommunications ... *regardless of the facilities used*” (*emphasis added*).<sup>159</sup> The fact that cable operators provide telephone services<sup>160</sup> clearly demonstrates that the underlying transmission facility is “separable.” It also suggests that because cable companies are offering telephone services on an indiscriminate basis to the public, they are essentially using their facilities as common carriers,<sup>161</sup> and that they

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<sup>158</sup> *Supra* note 96. With its *Cable Modem Declaratory Ruling* (*supra* note 121) the Commission essentially applied the contamination theory for the first time to a facilities-based provider.

<sup>159</sup> 47 U.S.C. 153 (43).

<sup>160</sup> 47 U.S.C. 153(47) defines “telephone exchange service” in part as a “service provided through a system of switches, transmission equipment, or other facilities (or combination thereof) by which a subscriber can originate and terminate a telecommunications service.” This definition on its face appears to encompass cable Voice Over Internet Protocol services (as well as any IP end-to-end communications). However, the FCC has yet to make a ruling as to whether such services are telecommunications services or information services. It has required these service oblige by a number of Title II regulations. It has also ruled that pure IP-to-IP computer voice applications (like Pulver’s FWD) are information services. And it ruled that phone-to-phone-with-IP-in-the-middle calls are telecommunications services. The closest the Commission has come to a definitive opinion on the matter came in a 1998 report to Congress, which seems to indicate that cable VoIP would be considered to be telecommunications: Such service would “bear the characteristics of telecommunications services,” so long as the particular service met four criteria: “(1) it holds itself out as providing voice telephony or facsimile transmission service; (2) it does not require the customer to use CPE different from that CPE necessary to place an ordinary touch-tone call (or facsimile transmission) over the public switched telephone network; (3) it allows the customer to call telephone numbers assigned in accordance with the North American Numbering Plan, and associated international agreements; and (4) it transmits customer information without net change in form or content.” See *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501 (1998) (*Stevens Report*) para. 88.

<sup>161</sup> And therefore *Computer II* and *Computer III* unbundling rules should apply. However, in the *Declaratory Ruling*, the Commission sidestepped and dismissed this specific argument by stating that “even if *Computer II* were to apply, however, we waive on our own motion the requirements of *Computer II* in situations where the cable operator additionally offers local exchange service.” See *Cable Modem Declaratory Ruling*, *supra* note 121, at para. 45.

therefore are subject to the resale provisions under Section 251(b)(1) of the Act.<sup>162</sup>

The cable modem ruling was appealed, and affirmed by the Supreme Court in its 2005 ruling in the *Brand X* case (though affirmed not on the merits of the decision, but on agency-deference).<sup>163</sup> The *Brand X* ruling gave the FCC, now led by Chairman Kevin J. Martin, the impetus it needed to remove the common carrier requirements on broadband services delivered by the phone companies,<sup>164</sup> ending the last vestiges of competition policies governing the Internet.<sup>165</sup>

Congress was clearly aware of the phenomenon of convergence when it crafted the 1996 Act, which is why much of the language of the Act is concerned not with specific technologies, but with their *functions*. Thus, we see terms like “telecommunications services,” “information

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<sup>162</sup> The unbundling, interconnection and resale requirements of Section 251(c) only apply to *incumbent* local exchange carriers, as defined in Section 251(h), which does not seem to include cable providers (absent an affirmative Commission declaration). However, 251(b) applies to all “local exchange carriers,” which the Act defines as “any person that is engaged in the provision of telephone exchange service or exchange access.” As discussed above (*supra* note 121) cable telephone providers appear to meet the definition of a local exchange carrier, and thus have “the duty not to prohibit, and not to impose unreasonable or discriminatory conditions or limitations on, the resale of its telecommunications services,” among other obligations. This is not a settled issue. See *IP-Enabled Services*, WC Docket No. 04-36, Notice of Proposed Rulemaking, 19 FCC Rcd 4863 (2004) (*IP-Enabled Services NPRM*).

<sup>163</sup> *National Cable & Telecommunications Ass’n v. Brand X Internet Services*, 125 S. Ct. 2688 (2005) (*NCTA v. Brand X*).

<sup>164</sup> *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Universal Service Obligations of Broadband Providers*, CC Docket No. 02-33, Notice of Proposed Rulemaking, 17 FCC Rcd 3019 (2002) (*Wireline Broadband NPRM*).

<sup>165</sup> *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities; Universal Service Obligations of Broadband Providers; Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services; Computer III Further Remand Proceedings: Bell Operating Company Provision of Enhanced Services; 1998 Biennial Regulatory Review –Review of Computer III and ONA Safeguards and Requirements; Conditional Petition of the Verizon Telephone Companies for Forbearance Under 47 U.S.C. §160(c) with Regard to Broadband Services Provided via Fiber to the Premises; Petition of the Verizon Telephone Companies for Declaratory Ruling or, Alternatively, for Interim Waiver with Regard to Broadband Services Provided via Fiber to the Premises; Consumer Protection in the Broadband Era*, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 (2005) (*Wireline Broadband Order*).

services” and “cable services.” Each has a different function, and each is given different regulatory status and treatment. Information services are kept largely unregulated, and information service providers are granted rights to access telecommunications facilities. Cable services are one-way providers of video programming. And telecommunications services offer an end-to-end transmission path for users to communicate, be it via a telephone call, fax or e-mail.

Through this definitional structure, Congress seemed to embrace the notion that “like services should be treated alike.” But what the Commission did was to make a deeply flawed decision in the cable modem case, and then use the resulting “unlike” treatment to justify the paramount need to make even more flawed decisions. Because it had declared cable modem service to be an information service inseparable from the underlying telecommunications, the Commission felt the only proper thing to do at that point was to reverse 30 years of regulatory and legal precedent by declaring that all broadband services were Title I information services.

The Commission in part justified its sweeping change to broadband policy based on the directives of Section 706 of the 1996 Act. This portion of the law directs the Commission to “encourage the deployment on a reasonable and timely basis of advanced *telecommunications capability* to all Americans” (emphasis added). This illustrates the truly ridiculous nature of the debate surrounding the regulatory classification of Internet access.<sup>166</sup>

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<sup>166</sup> To illustrate how ridiculous this debate was, one only need look at how some industry representatives would change their own thinking on the matter when it best suited them. In their 2001 *Reply Comments* in the *Cable Modem* proceeding, Verizon wrote, “Cable operators are presently offering residential customers a telecommunications service and an information service bundled together.” Less than a year later, the company (indeed, the same two lead attorneys) would tell the Commission in their *Wireline Broadband NPRM Comments* that “bundled broadband Internet access is unquestionably a Title I information service,” and “a particular service cannot be both an information service and a telecommunications service at once: by

In Section 706, Congress clearly stated, “advanced telecommunications capability is defined without regard to any *transmission media* or technology, as high-speed, switched, *broadband* telecommunications capability that enables *users* to originate and receive high-quality voice, *data*, graphics, and video telecommunications using any technology”<sup>167</sup> (*emphasis added*). There is no mystery as to congressional intent of how the FCC should treat retail broadband services: as *telecommunications services* offering *advanced capability* regardless of transmission media, which allows end users to transmit *data*, and which may or may not also involve an information service.<sup>168</sup>

The Commission's wildly irresponsible classification of consumer (i.e. non-enterprise) advanced telecommunications services as information services has a direct bearing on this instant proceeding. This reclassification effectively means that outside of enterprise services, advanced telecommunications capability is not being deployed at all -- *to anyone*. While this may at first blush appear to be a silly rhetorical parlor trick, it is no more outrageous than the original rhetorical end-run around the law that was at the center of the 2005 *Wireline Broadband Order*. The legal consequences of the 2005 and subsequent reclassifications of consumer broadband services as pure information services cannot be ignored.

In other words, if according to the Commission's 2005 and subsequent reclassifications, services like DSL, FTTH, and cable modem are legally considered as solely “information services” as defined in the Act, then they cannot also simultaneously be classified as services

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adding an information component to a telecommunications service, the entire service becomes an information service.”

<sup>167</sup> *Ibid*, §706(c)(1).

<sup>168</sup> In his enlightened and often amusing dissent in the *Brand X* case, Justice Antonin Scalia summed up the semantic debate perfectly: “After all is said and done, after all the regulatory cant has been translated, and the smoke of agency expertise blows away, it remains perfectly clear that someone who sells cable-modem service is ‘offering’ telecommunications.”

offering “advanced telecommunications capability.” Those who pushed for this semantic end-run around the plain language of the law cannot have it both ways. If these services do not contain a “separable” telecommunications “service” (“separable being a word not in the law itself, showing just how flawed the outcomes of the original 2002 and 2005 semantic games were), then the “advanced telecommunications capability” simply cannot be said to have been deployed, because consumers are not being offered the capability as a “service.”

The Act itself and the accompanying conference report make it quite clear that the term “advanced telecommunications capability” is legally equivalent to the term “advanced telecommunications *service*.” In describing the broadband Internet services that the newly created Schools and Libraries program would foster and support, the Conference Report described these services as “advanced telecommunications services.”<sup>169</sup> Section 254(h), to which this portion of the Conference Report refers to, uses the term “advanced telecommunications and information services” -- that is a truncated way of saying “advanced telecommunications *services* and information services.” Indeed, the instant *Public Notice* itself recognizes the interchangeable nature of the terms, stating that in “previous reports to Congress, the Commission used the terms ‘broadband,’ ‘advanced telecommunications capability,’ and ‘advanced services’ interchangeably to mean services and facilities with an upstream (customer-to-provider) and downstream (provider-to-customer) transmission speed of more than 200 kilobits per second (kbps).”<sup>170</sup>

Is this an absurd line of argument? Of course it is! But it is one that the Commission has committed itself to following. The Commission must either overturn the past reclassifications (the logical and only legally correct path) or follow the logic of its past decisions to wherever

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<sup>169</sup> 1996 Act Conference Report, page 132.

<sup>170</sup> *Sixth 706 Inquiry Public Notice*, at para. 4.

they may lead. In this case if all the retail high-speed Internet offerings of commercial providers are legally considered as *not* offering an “advanced telecommunications service”, then they are not services that offer consumers access to “advanced telecommunications capability.” Thus, until the Commission reverses its past reclassifications, the only legally correct and consistent conclusion is that almost no American home has access to advanced telecommunications capability”, and thus the Section 706 test is not being met. Under the current legal framework, reasonable and timely deployment won’t occur until providers begin wide scale deployment of enterprise-level services to residential homes.

#### **IV. ACTIONS TO ACCELERATE THE REASONABLE AND TIMELY DEPLOYMENT OF ADVANCED TELECOMMUNICATIONS SERVICES**

In the instant *Public Notice*, the Commission asks what action it should take in the event it makes a determination that advanced telecommunications capability is not being deployed in a reasonable and timely fashion. While we are glad the Commission is looking ahead, the answer to this question is entirely dependent upon how exactly the Commission makes its determination. If it applies a weak standard, and determines the problem to be rural in nature, then the basket of policy options under the Commission’s jurisdiction will largely be limited to reforms of the Universal Service Fund. But if the Commission applies a stronger standard based on an honest reading of the definitional language of Section 706, then the basket of policy options will include not only reform of USF, but a whole host of policies aimed at promoting competition in the wider broadband market.

In our initial comments for the *National Broadband Plan Notice of Inquiry*, we provided lengthy analysis and recommendations for getting our nation’s advanced services market to a place that was envisioned by Congress when it enacted the 1996 Act. Based on the analysis presented in those comments, we offered a variety of recommendations for how the Commission

should proceed. Many, if not all of these actions should be pursued as a course of responsible policymaking whether or not a negative Section 706 determination is made, but such a determination will provide clear legal authority for taking expansive action.

First, the Commission should review every major regulatory decision since the 1996 Act to determine whether or not its predictions for market competition and deployment have come true. If not, those decisions should be revisited and revised with a new set of assumptions and expectations.

Second, the Commission should develop a set of common standards for competition analysis. The Commission's decisions on competition policy have been plagued by inconsistencies, false assumptions, and incorrect projections. Once a standard has been set, a review should be conducted of rulings made using an incorrect competition analysis – and those decisions should be reversed.

Third, the Commission should reverse the foundational mistake of its broadband policy framework by reclassifying broadband as a telecommunications service. This will rationalize broadband policy, reduce arbitrage, and give the Commission the tools required to promote competition through the reinstatement of network sharing rules if a competition analysis indicates this is needed.

Fourth, the Commission should conduct a thorough review of its policies governing competition and pricing in the so-called “special access” and “middle-mile” or “enterprise” markets -- the broadband lines that connect cell phone towers and local area networks to the Internet. Deregulation in this area has produced monopolistic practices that have resulted in higher prices for consumers and stunted the deployment of competitive networks.

Fifth, the Commission should explore opportunities to open more of the public airwaves to unlicensed use as well as build on earlier decisions to promote shared spectrum for both low-power urban uses and high-power uses in rural areas.

Sixth, the Commission should codify nondiscrimination protections, or Network Neutrality, for consumers on the Internet. This can be done by expanding and codifying the *Internet Policy Statement* into permanent Network Neutrality rules. Protection of the open Internet is key -- as the plain language of Section 706 envisions an open network. Discriminatory network management practices run directly afoul of Section 706, and networks operated in such a manner do not meet the definition laid out in Section 706.

Seventh, the Commission should implement rulemakings to transition the Universal Service Fund programs from supporting telephone service to supporting broadband. This shift -- which could be conducted over a ten-year period -- would build fiber optic and robust wireless networks throughout rural America, reform the fund's administration to reduce waste, fraud and abuse, and gradually reduce the size of the fund to less than a third of its current size.

In one sense, Congress' mandating of the National Broadband Plan itself was an indication that it feels the Section 706 test is not being met. This Congressional directive was essentially a vote of no confidence in the Commission's broadband policymaking efforts conducted over the past decade. To achieve the goal of universal, affordable access and maximum adoption of the Internet in American homes, we will need to address key areas of openness, access and competition. We will need to use a combination of market incentives and regulatory oversight to trigger investment in higher-quality networks; to promote competition between ISPs; to make public investments in infrastructure in places otherwise left unserved; and to keep open the market for online content, applications and services that drives innovation.

## V. ACTIONS TO IMPROVE ONGOING BROADBAND DATA COLLECTION

A policy regime that aims to encourage the reasonable and timely deployment of advanced telecommunications capability needs data about what infrastructure exists, and where it is deployed. A policy regime that aims to encourage the maximal utilization of infrastructure needs data on the historical and forward looking costs of the infrastructure, and the revenues and charges earned and levied by the owners of the infrastructure. A policy regime that seeks to encourage adoption of broadband needs granular data on price, speed, customer satisfaction, and customer awareness of competitive alternatives, as well as data on other barriers to adoption such as digital literacy and computer ownership. A policy regime that aims to promote meaningful competition must be informed by data that enables the identification and measurement of market power, and the abuse of such power. In short, a national broadband plan needs benchmarks to be measured against, and those benchmarks must be based on good data.

### A. The Commission Must Complete the Reform of the Form 477 Data Collection System

Over the past several years the Commission has been on the receiving end of some sharp criticism for its broadband data collection and dissemination practices. And for good reason -- the data gathered and the reports produced provided very little meaningful information about the true state of broadband deployment and adoption, or the underlying factors influencing the spread of this vital technology.

The Commission created the Form 477 data reporting requirement expressly for the purpose of monitoring the progress towards meeting the goals of Section 706 of the 1996 Act.<sup>171</sup> The key question the data was meant to address was whether or not high capacity two-way broadband services were being deployed to all Americans in a reasonable and timely fashion.

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<sup>171</sup> See *Local Competition and Broadband Reporting*, Report and Order, CC Docket No. 99-301, 15 FCC Rcd 7717 (2000) (*2000 Form 477 Order*).

Initially, all providers of high-speed and advanced services with at least 250 customers in a given state were required to report twice a year about their broadband deployment activities. This information included the total number of subscribers in a state and type of technology to which they subscribed, as well as a listing of each 5-digit ZIP code where a provider had at least one subscriber residing. Providers were required to report connections based on the Commission's definitions of "high-speed" (200 kbps asymmetrical) and "advanced service" (200 kbps symmetrical) Internet connections.

But as originally implemented, the data gathered on Form 477 could not answer the central question about the state of broadband deployment -- because the form neglected to require the reporting of any data on actual broadband *deployment*, instead relying on the much-maligned and critically flawed ZIP code measurement.<sup>172</sup> The GAO noted that the reliance on the ZIP code data "overstated" the true level of broadband deployment and availability at any particular location.<sup>173</sup> Free Press has confirmed this overstatement, by contrasting the FCC's data

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<sup>172</sup> Using Form 477 data, the FCC would report the number of providers in a given ZIP code that report serving at least one subscriber in that ZIP code with Internet access services that are capable of delivering at least 200kbps of data in one direction. Given the large geographic size of ZIP codes, especially in rural areas, this metric provides no realistic measure of actual broadband deployment and adoption at the local level. The 1996 Act clearly requires the FCC to determine the pace and extent of the deployment of broadband to all Americans -- defined specifically as two-way connections that enable the user to originate as well as receive high-quality data (including video) content. As implemented, the ZIP code metric was clearly unable to produce the data needed to make an accurate Section 706 evaluation.

<sup>173</sup> "[T]he number of providers reported in the ZIP code overstates the level of competition to individual households." See "Broadband Deployment is Extensive throughout the United States, but it is Difficult to Assess the Extent of Deployment Gaps in Rural Areas", United States Government Accountability Office, Report to Congressional Committees, GAO-06-426, May 2006 (*GAO Report*). This report notes that the Commission itself admits that its ZIP code methodology is not meant to be a measure of broadband deployment. See *GAO Report*, p.15.

with the first-hand testimonies of citizens who are stuck on the wrong side of the digital divide.<sup>174</sup>

The Commission has made several attempts to improve the utility of Form 477 data. In 2004 the Commission eliminated the 250-subscriber threshold, requiring all providers of high-speed Internet to file regardless of how many subscribers they serve.<sup>175</sup> The 2004 revision also required companies to report some limited information on the speeds and types of the connections to which their customers subscribe. And the Commission also began collecting some limited actual deployment information -- albeit at the state level and only from cable modem and DSL providers.<sup>176</sup>

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<sup>174</sup> See Megan Tady, “Real World Examples of FCC’s Broadband Data Flaws”, *SavetheInternet.com*, March 4, 2009:

Jay Foushee and his family are stuck on dial-up in rural Roxboro: ‘I have called our local phone companies numerous times asking, ‘When can we get [high-speed Internet]?’ I keep getting, ‘Well, it’s coming, it’s coming.’ And this has been going on for about three years now.” The FCC says there are eight providers in Jay’s area. Layten Davis says only dial-up is available in Spring Creek: “We can’t turn the switch on to get the [broadband] turned on.” The FCC says there are six providers in Layten’s Zip code. Sam Adams had to erect his own wireless tower to get high-speed Internet in Rutherfordton: “Moving out here was digital culture shock in a way,” Sam says. “I assumed wrongly that I would at least be able to get cable out to the house, or DSL. As it turned out, neither of those are even close to where we live, and even our regular phone line, when it rains out here and the ground gets good and wet, our phones crackle and sometimes go out.” The FCC says there are five providers in Rutherfordton. Martha Abraham had to subscribe to expensive and unreliable satellite service in Mars Hill because broadband isn’t an option: “On some days, [satellite] is not any better than dial-up, and you don’t know when it’s going to be working and when it’s not. Rainstorms, it’s down. Snow, it’s down. Wind, it’s down.” The FCC says there are six providers in Martha’s area.

<sup>175</sup> See *Local Telephone Competition and Broadband Reporting*, Report and Order, WC Docket No. 04-141, 19 FCC Rcd 22340 (2004) (*2004 Form 477 Order*).

<sup>176</sup> Under the 2004 revision, cable modem providers were required to report, at the state-level, the percentage of end-user lines that are cable modem capable. Similarly, Incumbent Local Exchange Carriers were required to report, at the state-level, the percentage of end-user lines that are DSL capable. While providing informative data, this metric is not an ideal measurement of broadband deployment. It does not have any geographic granularity beyond the state-level; it does not separate out residential from business connections; it provides no indication of the

The 2004 revisions still did not go far enough. The data was still lacking any meaningful information on actual deployment, household-level adoption, competition, actual speeds, or prices. In 2007, responding to a chorus of criticism, some of it from the Commissioners themselves, the FCC launched a NPRM to once again reform its Form 477 data collection practices.<sup>177</sup>

From this NPRM came a series of changes to Form 477 that were long overdue.<sup>178</sup> The Commission has now moved to require the reporting of subscriber counts at a Census Tract level -- broken out by residential vs. business connections<sup>179</sup>, technology, and speed tier. The new speed tiers are a substantial improvement over the old tiers. Whereas the old reporting system

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speeds of these connections; it is limited to DSL and cable modem technologies; there is no indication whatsoever of the overlap between where cable modem is available and where DSL is available (e.g. at the extreme, a particular state could be listed with a 50 percent result for DSL and a 50 percent result for cable, and either have zero homes unserved (if there is no overlap) or 50 percent of the homes unserved (if there is complete overlap)); and the figure is a numerator with a missing denominator (i.e., a state could show up on the list with 100 percent availability of cable modem on cable lines, but that state could have a small level of cable service deployment, let's say only 60 percent of homes. This would mean that 40 percent of the homes in that state are not served by any cable modem services). Thus, this metric is interesting, but gets the Commission no closer to being able to make a meaningful Section 706 determination than the ZIP code data allowed for.

<sup>177</sup> *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38, Notice of Proposed Rulemaking, 22 FCC Rcd 7760 (2007) (*Data Gathering Notice*).

<sup>178</sup> *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691 (2008) (*2008 Form 477 Order and FNPRM*).

<sup>179</sup> This separation of residential from business connections was not in the *Order* as originally voted, but was dealt with *Sua Sponte*. See *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38, Order on Reconsideration, 23 FCC Rcd 9800 (2008) (*2008 Form 477 Order on Reconsideration*).

only had six speed tier “bins” which completely ignored upload speeds, the new system has seventy-two bins, placing a strong emphasis on upload speeds, and allowing for the monitoring of the proliferation of symmetrical services (see Figure 11).

To say that the 2008 changes were a huge improvement would be an understatement. By moving to a Census Tract-based reporting system, the Commission (and outside researchers if given access to the data) can use the vast amount of geographic and demographic data available from the Census Bureau to do real social science on broadband adoption. The subscriber count information will enable the Commission to calculate some of the most important metrics missing from its previous reports on broadband -- marketshare and market concentration.

**Figure 11: Form 477: Old versus New Speed Tiers**

Old FCC speed tier reporting system = Six Speed Tier Bins

Upload Speed	Download Speed				
	200 kbps to 2.5 Mbps	2.5 Mbps to 10 Mbps	10 Mbps to 25 Mbps	25 Mbps to 100 Mbps	Greater than 100 Mbps
Greater than 200 kbps AND...					
Less than 200 kbps in the upload direction, AND any speed above 200 kbps in the download direction					

New FCC speed tier reporting system = Seventy-Two Speed Tier Bins

Upload Speed	Download Speed							
	200 kbps to 768 kbps	768 kbps to 1.5 Mbps	1.5 Mbps to 3 Mbps	3 Mbps to 6 Mbps	6 Mbps to 10 Mbps	10 Mbps to 25 Mbps	25 Mbps to 100 Mbps	Greater than 100 Mbps
Less than 200 kbps								
200 kbps to 768 kbps								
768 kbps to 1.5 Mbps								
1.5 Mbps to 3 Mbps								
3 Mbps to 6 Mbps								
6 Mbps to 10 Mbps								
10 Mbps to 25 Mbps								
25 Mbps to 100 Mbps								
Greater than 100 Mbps								

Source: FCC

The 2008 Order also established for the first time a Commission definition that used the term “broadband.” Previously, any connection that exceeded 200kbps in at least one direction was classified as “high-speed Internet”, while those exceeding 200kbps in both directions were considered to be “advanced services.” Under the 2008 revisions, only connections exceeding 768kbps in the downstream direction are associated with the term “broadband,” though upload speeds continue to get short shrift in the classification system (see Figure 12).<sup>180</sup> However, this is largely an exercise in semantics, as the Commission is not making policy based on these somewhat arbitrary distinctions, but using this classification system to track the speeds of connections in the U.S. marketplace.

The central purpose of the Commission’s recent efforts to improve Form 477 was to enable it to accurately determine if advanced telecommunications capability is being deployed to all Americans in a reasonable and timely fashion -- a requirement of Section 706 of the Telecommunications Act of 1996. As discussed above, the Commission in its June 2008 *Report and Order* did make many substantial changes that go a long way towards making the improvements necessary for the adequate implementation of Section 706. But the key issue of availability reporting was left for further consideration. The issues of measuring actual broadband speeds and prices were also left for later consideration.

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<sup>180</sup> In the *2008 Form 477 Order*, the Commission stated, “[w]e will use the terms “first generation data” to refer to those services with information transfer rates greater than 200 kbps but less than 768 kbps *in the faster direction*, and “basic broadband tier 1” to refer to services equal to or greater than 768 kbps but less than 1.5 mbps *in the faster direction*. Subsequent tiers will be labeled “broadband tier 2” through “broadband tier 7” (*see note 66*). Thus, even though the Commission’s new speed reporting “bins” are able to capture various upload speeds, the Commission’s new “Broadband Tier” nomenclature ignores upload speeds. This is rather unfortunate, as it continues the disturbing trend of FCC indifference to the importance of upload speeds. We strongly urge the Commission to work to establish nomenclature that helps track the proliferation -- or lack thereof -- of upstream capabilities.

**Figure 12: Form 477: Old versus New Service Definitions<sup>181</sup>**

Upload Speed	Download Speed	Old FCC Definition
Less than 200 kbps	Greater than 200 kbps	"High-Speed Internet"
Greater than 200 kbps	Greater than 200 kbps	"Advanced Service"

  

Upload Speed	Download Speed	New FCC Definition
Not Specified	Between 200 kbps & 768 kbps	"First Generation Data"
Not Specified	Between 768 kbps & 1.5 Mbps	"Basic Broadband Tier 1"
Not Specified	Between 1.5 Mbps & 3 Mbps	"Basic Broadband Tier 2"
Not Specified	Between 3 Mbps & 6 Mbps	"Basic Broadband Tier 3"
Not Specified	Between 6 Mbps & 10 Mbps	"Basic Broadband Tier 4"
Not Specified	Between 10 Mbps & 25 Mbps	"Basic Broadband Tier 5"
Not Specified	Between 25 Mbps & 100 Mbps	"Basic Broadband Tier 6"
Not Specified	Greater than 100 Mbps	"Basic Broadband Tier 7"

Source: FCC

In the June 2008 *Report and Order and Further Notice of Proposed Rulemaking*, the Commission indicated that the issue of broadband availability data reporting would be dealt with in an expedited fashion, with a final Order issued within four months.<sup>182</sup> This time has come and gone, with nary a peep from the Commission about what it intends to do. This delay is rather unfortunate, given that good availability data could play a major role in ensuring the \$7.2 billion

<sup>181</sup> In the instant *Public Notice* the Commission asked if “broadband” or “advanced telecommunications capability” should be defined according to the tiers listed above in Figure 12. Because the tiers ignore upstream speeds, the answer to this question should be a resounding “no.” However, if the Commission were to use the symmetrical bins associated with these downstream speeds (as shown in Figure 11 above), then the Commission could choose the symmetrical 6Mbps bin as a cut off for which connections can be considered to be those that satisfy the Section 706 test.

<sup>182</sup> See *2008 Form 477 Report and Order and FNPRM*, page 75. In his accompanying statement Commissioner Copps noted, “[t]oday’s Order also makes an important tentative conclusion (followed by a commitment to reach the rules stage within *4 months*) that the FCC will collect information on broadband availability at the address level by using the many disparate databases developed by commercial providers to estimate where their broadband services are available. The distinction between availability and adoption is critical and has been highlighted for us by the GAO. Compared to the alternative—gathering geographic information on every network asset owned by every carrier in the country and then reinventing the wheel by transforming this information into address-by-address availability—using publicly-available databases is a win-win for the FCC and for industry. It will lead to a more accurate estimate of broadband availability and a reduced reporting burden for carriers (emphasis added).

recently allocated for broadband in the American Recovery and Reinvestment Act is spent wisely.

We believe the record before the Commission provides a sufficient basis for the Commission to modify Form 477 to require the reporting of availability information gathered at the Census Block (CB) level. The record establishes that this particular level of geographic granularity is required in order to maximize the utility of this information and to improve upon the current ZIP code availability methodology. The record also establishes that the reporting of such information is not burdensome, with a similar reporting requirement having successfully been implemented in the state of California. Furthermore, recent changes to the law clear up any ambiguity as to the proper path for the Commission to follow to bring a resolution to this issue.<sup>183</sup>

In the *Further Notice of Proposed Rulemaking* the Commission sought to “collect information that providers use to respond to prospective customers to determine on an address-by-address basis whether service is available.” We strongly agree that a highly detailed understanding of broadband availability is critical for the purposes of efficient allocation of the scarce resources available for broadband deployment to unserved areas. Address-by-address level information is obviously the greatest level of detail possible, as broadband deployment is a binary event at the individual household or business level -- you either can get it, or you can't. While this level of granularity should be strived for, comments in the record indicate that the carriers' databases that would be used for such reporting are of varying quality. This limitation may then require an alternative reporting method, one that can be more easily carried out by all

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<sup>183</sup> 110 P.L. 385; 122 Stat. 4096; 2008 Enacted S.1492, “The Broadband Data Improvement Act”, October 10, 2008.

providers, and one that is still of sufficient granularity to be a meaningful improvement on the ZIP code methodology.

We believe the most economical and valuable method of achieving this goal is through the collection of broadband availability information at the Census Block level. Under such a system, all carriers would be required to do is define their service footprints on a map overlaid with Census Block geographic boundaries. Such an exercise is trivial, and firms have already offered to perform these services for a nominal fee.<sup>184</sup> Indeed, most major U.S. carriers, via their associations or by their own declaration, have agreed to submit to the NTIA their services footprints defined at the Census Block level, and agreed to have their identities made publicly available at the Block level.<sup>185</sup>

In the 2008 *Report and Order* the Commission did make clear that ZIP codes as the basic unit of reporting geography (for subscribership data) “are less useful for [its] purposes” and that “census-based units provide more useful information for [its] policy purposes.”<sup>186</sup> We agree with the Commission’s conclusion that the use of the Census Tracts is superior to the use of 5-digit ZIP codes as the geographic unit for the reporting of subscribership information (reported by each company, and broken down by technology, speed tier, and residential or business classification). However, if the central goal of this proceeding is to improve upon the Commission’s current data -- in particular, to improve upon the much-maligned ZIP code availability data -- then the Commission must make Census Blocks the geographic unit of

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<sup>184</sup> The firm Technologies Management Inc. (TMI) recently introduced a service for carriers to comply with the new Census Tract-based Form 477 reporting requirements. For \$150 (plus \$25 per additional state), the firm will generate subscribership reports broken down by speed tier and technology, as required on the new form. See “COMPTTEL PLUS: TMI Solution Simplifies Form 477 Filing,” *xchange Magazine*, March 2, 2009.

<sup>185</sup> See Fawn Johnson, “Commerce Dept Drops Request for Sensitive Telecom Data”, *Dow Jones Newswires*, August 7, 2009.

<sup>186</sup> 2008 *Form 477 Report and Order and FNPRM*, para. 12.

reporting for availability data. Adopting a Tract availability-reporting requirement would actually compound the current problems endemic to the ZIP code methodology. This is because Census Tracts in rural areas typically encompass much larger geographic areas than ZIP codes. Thus, requiring reporting of information at the Census Tract level will lead to less detailed information concerning deployment in rural areas (see Figure 13).

The use of Census Blocks as the geographic unit for availability will mitigate this problem without increasing the reporting requirement burden in any significant manner. The fact that broadband providers of all sizes have already provided the state of California information at the Census Block Group level illustrates the feasibility of this approach. As does the fact carriers are now reporting highly detailed information on Form 477 at the Tract level. Reporting mere availability, even at the more granular Block level, is a far easier task, one that only needs to be repeated when service territories change. Furthermore, Congress and the President have made it clear that they intend for the FCC to gather availability information in a manner that “improves” upon its current methods and enables the Commission to merge this availability information with Census Bureau data.<sup>187</sup> It is worth noting that the BDIA requires the Commission to issue an annual Section 706 report, with (as mentioned above) a list of geographical areas that are not served.” The first of these reports is due in February of 2010. It is clear -- with its current ZIP code and even the new Census Tract data, the Commission does not possess the data needed to produce this list. Section 103(a) of the BDIA requires the Commission to “compile a list of geographical areas that are not served” and to use data from the Census Bureau to determine for

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<sup>187</sup> Section 103(a) of the Broadband Data Improvement Act requires the Commission to “compile a list of geographical areas that are not served” and to use data from the Census Bureau to determine for each of these areas metrics such as population, population density and average per capita income. The legislation also establishes a grant program for states to further assess the local broadband marketplace, and expressly directs the Commission to provide state designated eligible entities access for Form 477 data submitted by providers.

each of these areas metrics such as population, population density and average per capita income. While this section of the BDIA does not specify what geography to choose, it is clear from the evidence presented here in these comments, that if this list is compiled using ZIP Codes or Census Tracts, that it will be an empty list, since these methods will show 100 percent availability in rural areas. The Commission must recognize this shortcoming, and move quickly to adopt a Census Block-level availability reporting requirement, so it will be able to meet Congress' requirement within an acceptable timeframe.

We propose that the Commission require each provider to report the Census Blocks in which they offer service, for each technology offered. Thus, providers will simply report a list of the individual Census Blocks where they offer service, similar to how they currently report ZIP codes on Form 477.<sup>188</sup> To avoid reporting complexities, we propose that if a provider's service area encompasses all or part of a CB, it would report the identification number of that CB. If the provider's service area does not encompass any portion of a CB, the provider would not report any information for that CB. We recognize that in some Census Blocks -- particularly geographically large but sparsely populated rural Blocks -- that this approach could result in an incomplete picture that potentially overstates the scope of deployment. For example, a given rural Census Block could list two fixed wireless providers offering service, but their service footprints could be non-overlapping. Under this scenario, the Commission's database would overstate the level of deployment at a particular location within this Census Block. We believe that in most cases the potential overstatement will be low, and that this approach offers a reasonable balance between accuracy and reporting burden.

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<sup>188</sup> With one critical difference: the Census Block reporting will be based on the actual service territory, while the ZIP code method is based on the threshold of a single subscriber reporting service in a ZIP code, which could be a subscriber's billing and not premise address and thus have no connection to the geographic location where the service is deployed.

**Figure 13: Census Tracts, Block Groups and ZIP Codes and Population Coverage**

Geographic Unit	Yellowstone County, MT (most populated county in MT)					
	Number of Populated Geographic Units in County	Population Range	Average Population	Total Population	Median Land Area Size (sqmi)	Land Area Range (sqmi)
ZIP Code Tabulation Areas (ZCTA)	15	63 - 44,391	8,623	129,352	160	15 - 511
Census Tracts	27	380 - 9,976	4,791	129,352	2.2	0.68 - 1,285
Census Block Groups	96	380 - 4,430	1,347	129,352	0.48	0.09 - 1,101
Census Blocks	2933	1 - 699	44	129,352	0.01	0.001 - 267

  

Geographic Unit	Big Horn County, MT (14th most populated county in MT, out of 56 total)					
	Number of Populated Geographic Units in County	Population Range	Average Population	Total Population	Median Land Area Size (sqmi)	Land Area Range (sqmi)
ZIP Code Tabulation Areas (ZCTA)	10	96 - 4,726	1,267	12,671	480	41 - 841
Census Tracts	6	145 - 4,358	2,112	12,671	735	318 - 1,491
Census Block Groups	13	145 - 2,477	975	12,671	478	0.23 - 946
Census Blocks	694	1 - 213	18	12,671	0.25	0.001 - 226

  

Geographic Unit	Blaine County, MT (28th most populated county in MT, out of 56 total)					
	Number of Populated Geographic Units in County	Population Range	Average Population	Total Population	Median Land Area Size (sqmi)	Land Area Range (sqmi)
ZIP Code Tabulation Areas (ZCTA)	7	40 - 2,595	1,001	7,009	613	28 - 1,531
Census Tracts	4	1,353 - 2,733	1,752	7,009	877	339 - 2,133
Census Block Groups	8	426 - 1,448	876	7,009	275	0.4 - 2,133
Census Blocks	510	1 - 466	14	7,009	0.46	0.001 - 178

  

Geographic Unit	Granite County, MT (42nd most populated county in MT, out of 56 total)					
	Number of Populated Geographic Units in County	Population Range	Average Population	Total Population	Median Land Area Size (sqmi)	Land Area Range (sqmi)
ZIP Code Tabulation Areas (ZCTA)	3	211 - 1,533	943	2,830	234	97 - 866
Census Tracts	1	2,830	2,830	2,830	1,733	1,733
Census Block Groups	3	908 - 967	943	2,830	252	6 - 1,469
Census Blocks	243	1 - 84	12	2,830	0.14	0.001 - 152

  

Geographic Unit	Petroleum County, MT (least populated county in MT)					
	Number of Populated Geographic Units in County	Population Range	Average Population	Total Population	Median Land Area Size (sqmi)	Land Area Range (sqmi)
ZIP Code Tabulation Areas (ZCTA)	1	493	493	493	1,654	1,654
Census Tracts	1	493	493	493	1,654	1,654
Census Block Groups	1	493	493	493	1,654	1,654
Census Blocks	111	1 - 18	4	493	0.89	0.001 - 146

  

Geographic Unit	District of Columbia					
	Number of Populated Geographic Units in DC	Population Range	Average Population	Total Population	Median Land Area Size (sqmi)	Land Area Range (sqmi)
ZIP Code Tabulation Areas (ZCTA)	25	57 - 57,444	22,882	572,059	2.5	0.1 - 6.1
Census Tracts	188	1 - 7,278	3,059	572,059	0.22	0.06 - 2.6
Census Block Groups	432	1 - 5,234	1,324	572,059	0.09	0.01 - 2.6
Census Blocks	4,323	1 - 4,557	132	572,059	0.006	0.001 - 0.82

Source: U.S. Census Bureau; Block counts exclude those with zero inhabitants

While tackling the issue of availability was supposed to be dealt with on an expedited basis, the Commission also promised to reach a conclusion on the issue of monitoring actual speeds and prices. We believe the record here is complete, and provides a clear path for how the Commission should proceed.

In the 2008 FNPRM the Commission rightly recognized that advertised speeds are not what determine the potential uses of broadband connections -- actual speeds determine whether or not a connection can be used to “originate and receive high quality voice, data, graphics and video telecommunications.” Unfortunately, the most obvious method of obtaining this information -- self selected end user speed tests -- is also one of the least useful. As a variety of parties have noted, providing a web address for end users to test the speed of their connection fails to account for a variety of factors. The Commission sensibly recognized these hurdles in the 2004 Broadband Data Order.<sup>189</sup> These speed tests provide end users with helpful information regarding their connections, but are inadequate as a tool for the Commission to gain a more complete understanding of the broadband marketplace. Fortunately the Commission has other options at their disposal.

A recent study performed in the U.K. by the SamKnows Performance Monitoring Project illustrates a controlled experiment methodology that the Commission can reproduce (perhaps with the aid of qualified university researchers) to monitor the actual speeds delivered by U.S. ISPs.

The group deployed 223 monitoring units to volunteers who were subscribers of a variety of ISPs. The group operated five carefully monitored servers and performed a speed test once

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<sup>189</sup> See *2004 Form 477 Order*, *supra* note 409, para. 27.

every six hours for a six-week period.<sup>190</sup> The speed tests produced very interesting results -- results that dovetail with conventional wisdom about the practical differences in the broadband services offered using different technologies. For example, the lower speed tier connections from Virgin Media, the primary cable modem provider in the U.K., did deliver close to the advertised speeds. However, the higher speed tier packages saw significant performance issues. Of particular interest was the 20Mbps package, which failed to deliver the advertised even in off peak hours, with extremely poor performance during peak hours.<sup>191</sup> This means customers who were paying the provider extra for a higher speed tier of access were the least likely to experience the speed they paid for. These performance issues appear to be particularly problematic for providers using highly contented last-mile technologies, such as cable modem.

The findings of SamKnows illustrate how a provider can abuse the oversubscription model and fail to deliver the advertised product for any reasonable period of the time. This concern only grows when realizing that the same time a subscriber is most likely to be using their broadband connection is the exact same time they are least likely to experience the advertised speed. Unfortunately, neither the Commission nor the public currently has access to information to discern whether and to what extent this failure is occurring in the U.S. broadband market. This is where Form 477 can help.

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<sup>190</sup> Sam Crawford, "Performance Monitoring Report," SamKnows, Feb. 8, 2008, pp. 2, 11, Available at [http://www.samknows.com/broadband/pm/PM\\_Summer\\_08.pdf](http://www.samknows.com/broadband/pm/PM_Summer_08.pdf). More recently, SamKnows has partnered with Ofcom to conduct a study with a representative sample of UK broadband users. Initial results have been released with disturbing findings, only 5% of those with the 8 Mbps DSL speed tier received an average download speed of more than 6 Mbps. See Ofcom, "U.K. broadband speeds 2008." Jan. 2009, Figure 7.1.

<sup>191</sup> *Ibid.* at 31.

Advertising in the broadband industry is currently characterized by inaccurate and misleading marketing practices.<sup>192</sup> For example, a recent advertisement for a cable modem service brags that the connection is “Twice as fast as DSL”, but the ad fails to mention that cable modem connections are subject to a far higher level of bandwidth sharing than DSL connections, meaning that the claim of “twice as fast” is somewhat hollow.<sup>193</sup> Consumers buy connections based on “up to” speeds, but have no information on what might influence that “up to” figure, or what the likelihood is of actually receiving the advertised speeds. The only details disclosed to consumers is the language of “actual speeds may vary” buried down in the fine print of advertisements.<sup>194</sup> As the Commission recently noted “vague terms are of no practical utility to the average customer.”<sup>195</sup> Indeed, as a business practice, this model differs quite differently from that in another industry where speed is a primary consideration -- personal computers. One can imagine the outrage that would occur if consumers discovered that the computer they were sold with a 2.4Ghz processor could only achieve that speed during certain hours of the day. Rather than attempting to address this performance issue and be honest with customers, provider’s marketing strategies seek to hide this fact at every turn.

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<sup>192</sup> These advertising practices have only increased in deception. Many times the temporary PowerBoost speed is what is advertised and at times without even an “up to” qualifier. Thus, consumers are being told a speed that can only be achieved at certain times of the day and even then only for a few seconds. *See e.g.* Comcast, “The fastest fast is here.” May 2009 Mailing, available at <http://img41.imageshack.us/img41/6360/comcastad.jpg> (“Comcast High-Speed Internet with PowerBoost now offers speeds of 15, 20 and 30 Mbps.”). Note that consumers must turn over the mailer and review fine print to get an explanation of PowerBoost or to find out “Actual speeds vary and are not guaranteed”.

<sup>193</sup> *See* TV advertisement at 22 seconds, <http://www.youtube.com/watch?v=cOGv9SozBK8>

<sup>194</sup> *See e.g.* at 22 seconds, <http://www.youtube.com/watch?v=JH0myKzVGi0&NR=1>

<sup>195</sup> *See Comcast Order*, *supra* note 223, at para. 53.

The Commission has recognized that the broadband market is maturing, noting continued speed increases offered by both cable and phone providers.<sup>196</sup> Yet little is known as to whether these increases are real or simply an abuse of the oversubscription business model. A clear need exists for the Commission to monitor the true developments in the broadband market in terms of actual versus advertised speeds. Put simply, it is of little value that consumers are being offered higher advertised speeds if the purchased connections are so oversubscribed that these speeds can never be achieved.

Thus the Commission must find a way of monitoring the actual speeds that is both practical and comparable across technologies. Ongoing controlled experiments, utilizing a methodology like that described above, will be valuable in this effort. But such experiments will unfortunately suffer from a lack of granularity, and it will not be possible to merge the data from these experiments with the detailed data on broadband subscribership and availability.

Thus to overcome these limitations while still capturing meaningful information concerning actual speeds, we suggest the Commission compel that providers report contention ratios at the Census Tract level.<sup>197</sup> Contention ratios are a useful proxy for actual speeds, because they reflect

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<sup>196</sup> See *Fifth 706 Report*, para. 9.

<sup>197</sup> Contention ratio is defined as follows:

$$CR = \frac{\sum Dp}{S},$$

where  $\sum Dp$  = sum of potential bandwidth demand

and  $S$  = the total bandwidth supply.

Thus, a cable node with 500 customers all subscribing to 16Mbps service, sharing a 38.8Mbps channel, will have a download contention ratio of 206.2. Or a Verizon FiOS BPO fiber drop (total download capacity of 622Mbps) serving ten 20Mbps households will have a download contention ratio of 0.3. These examples are not wild assumptions, but close to the actual realities of the local broadband market. The vast difference between the two illustrate why the Commission tracking of contention ratios is extremely important for a detailed understanding of the development of the U.S. broadband market.

the degree to which customers share capacity, and thus the level of oversubscription on a local network.

We suggest that the Commission gather contention ratio data at the Census Tract level, so that it can be integrated with other data on subscribership and availability (if availability data is collected at the Block level, it can be aggregated up to the Tract level). Providers will be easily able to calculate the contention ratios for particular nodes and central offices, whose locations can be converted into census tract numbers. The Commission should dismiss arguments as to the burdens and feasibility of such a reporting system. In order to adequately manage their networks providers *must absolutely know* the contention ratios on their local networks. Furthermore the Commission currently requires providers to report portions of this information in existing forms and need only expand these efforts to collect the remaining information.<sup>198</sup> Contention ratios are certainly not an abstract concept to providers; such figures are routinely used in the advertisements of overseas broadband providers,<sup>199</sup> with at least one foreign government requiring the publishing of contention ratios.<sup>200</sup> Given that the Commission sought comment on “how we might require service providers to report this information, *and any alternative means*, in addition to or other than requiring such service provider reporting, for effectively capturing meaningful information about actual speeds”,<sup>201</sup> we suggest that the required reporting of contention ratios is clearly less burdensome than requiring providers conduct speed tests throughout their entire service area.

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<sup>198</sup> See Comments of Consumers Union, Consumer Federation of America and Free Press, in Comments, *In the Matter of Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, July 2008, at page 15-19.

<sup>199</sup> See e.g. [http://www.u-want.com/internet\\_faqs.html#one](http://www.u-want.com/internet_faqs.html#one); <http://www.vaioni.com/ultra20>

<sup>200</sup> See [http://www.telkom.co.za/athome/products/dsl/home\\_faq.html#adsl](http://www.telkom.co.za/athome/products/dsl/home_faq.html#adsl)

<sup>201</sup> See *2008 Form 477 Report and Order and FNPRM*, at para. 36 (emphasis added).

On the issue of monitoring retail broadband Internet access prices, we believe the Commission should collect the published, stand-alone, non-promotional, non-contractual price, categorized within the Commission's improved speed tiers on a Census Tract level. In doing so, the Commission can create a uniform dataset of broadband price information. Similar to subscribership data, this information should also distinguish between residential and business connections. Given that many providers create uniform pricing across their service territories, a requirement for reporting pricing information at this level of detail will not be burdensome.

In addition to stand alone prices reported by Commission speed tier, the FCC should also require the reporting of average price per megabit per second (\$/Mbps), as well as Average Revenue per User (ARPU) data -- all at the Census Tract level. The latter is commonly calculated for investment reports, and the former is the closest measure of "value" the Commission could possibly collect.

Finally, when collecting information on price, the Commission should attempt to account for the "real" price of long-term contracts. Contracts create switching costs that must be taken into account. If a provider does not offer broadband without a contract, the Commission must reflect this in the price. One such way to do this is to amortize the cancellation fee into the monthly price. The Commission's price data must reflect the true costs of the service.

We applaud the Commission for directly confronting the need to improve the precision, accuracy and meaningfulness of the broadband data it gathers on Form 477. Substantial improvements have already been implemented. But the job is not finished until action is taken on the issues of availability, actual speed and price data. We hope the Commission recognizes the consensus that Census Block availability data is the right metric for the successful implementation of Section 706, and moves quickly to issue a final Order.

**B. The Commission Should Follow Through on the Tentative Conclusion of the ARMIS NPRM and Create a Unified Broadband Data Reporting System**

Much of the data gathered (and proposed to be gathered) in Form 477 is concerned with issues surrounding the retail market for broadband: number of subscribers; types of technology subscribed to; speeds of technologies subscribed to; and if further reforms are enacted, the geographic location of retail services, and their prices and actual speeds. Some of this information will be useful to the Commission in efforts to identify the local areas where providers possess market power -- but only in the retail markets. As structured, Form 477 offers no information about the equally important high-capacity data markets -- markets that include special access data services and enterprise data services. Consequently, the Commission is unable to assess the impacts of any policies that are aimed at opening up this secondary “middle-mile” bottleneck to greater competition -- policies that are intended to lead to greater levels of last-mile intermodal competition.

Knowing the subscriber counts, average speeds and prices is important. But in order to act as a responsible regulator the Commission needs much more information about the underlying economics of the data communications market. It needs to know where all the lines are, both retail and enterprise lines. It needs to know the historical and forward-looking cost of all infrastructure elements. It needs to know the prices charged for all elements, whether or not they are offered pursuant to tariff. It needs to know the revenues earned on each service and element, and the rates of return earned on services that are not subject to effective competition.

In short, the Commission needs financial and operational data from all carriers in the market in order to effectively identify and curb abuses of market power. The Commission had gathered such information from the large price cap carriers in the Automated Reporting Management Information System (ARMIS). However, late last year the Commission decided to

abandon this system, and issued an NPRM with a tentative conclusion that some type of similar reporting system should be established for all broadband infrastructure providers.<sup>202</sup>

This is a typical pattern of Commission behavior: make the justification to deregulate, ignore the evidence that the benefits of deregulation might be outweighed by the harms, remove the regulation with a nod to those concerns, and leave nothing in place but a vague promise to address the harms of deregulation at a latter date. But the new Commission should not adopt this pattern. It should follow through on this promise made in the *ARMIS NPRM* and establish a unified broadband data reporting system.

Current broadband reporting requirements are void of information related to the underlying infrastructure -- both financial and operational. Successful regulatory oversight of these industries can only be achieved if policymakers have access to detailed and accurate network infrastructure data. Indeed, the Commission has for years collected infrastructure information from both the phone and cable industries. Only by adopting a modernized reporting system that collects information from all owners of broadband facilities will the Commission be able to effectively implement a national broadband plan.

**C. The Commission Should Strive for Openness and Transparency in Public Dissemination of Broadband Data. Provider Claims of Competitive Harms from Public Disclosure are Overstated**

**i. The Commission has Long operated with a Presumption in Favor of Disclosure**

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<sup>202</sup> “[W]e find that significant forbearance from the existing ARMIS service quality and infrastructure reporting requirements is warranted pursuant to section 10 of the Act, subject to certain conditions. However, we recognize that collection of certain of that information might be warranted, if tailored in scope to be consistent with Commission objectives, and if obtained from the entire relevant industry of providers of broadband and telecommunications. See *Service Quality, Customer Satisfaction, Infrastructure and Operating Data Gathering*, WC Docket No. 08-190, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 23 FCC Rcd 13647 (2008), at para. 33.

The Commission requested comment on “how the Commission should balance legitimate confidentiality interests in the data it collects against goals of accountability and openness, as well as allowing the public to measure and review progress.”<sup>203</sup> There have been numerous proceedings related to broadband data conducted at the Commission over the past two years. While the information being considered for collection in these various proceeding is wide-ranging, a constant theme emanating from industry has been the paramount need to keep any and all information confidential. These baseless, self-serving requests, which are often granted at face value run counter to previous Commission precedent. Furthermore, the recent calls for absolute confidentiality fail to recognize not only the value this information offers to the public but also the measures that already exist for receiving confidential treatment.

The law is clear. A presumption in favor of disclosure exists.<sup>204</sup> The law outlines the specific information that should not be “routinely available for public inspection.”<sup>205</sup> Otherwise, a request can be submitted for non-disclosure. The request must contain “a statement of the reasons for withholding the materials from inspection” and includes nine specific conditions.<sup>206</sup> One requirement is an “explanation of how disclosure of the information could result in *substantial* competitive harm.”<sup>207</sup>

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<sup>203</sup> *National Broadband Plan NOI*, para. 32

<sup>204</sup> 47 U.S.C. § 0.459(a).

<sup>205</sup> 47 U.S.C. § 0.457.

<sup>206</sup> 47 U.S.C. § 0.459(b). The Commission added this language, due largely to “reduce the number of unsubstantiated requests.” The Commission also rejected requests to “automatically accord confidential treatment to any non-public information that can offer a competitor an advantage over the submitting party.” *Examination of Current Policy Concerning the Treatment of Confidential Information Submitted to the Commission*, GC Docket No. 96-55, Report and Order, 13 FCC Rcd 24816 (1998), paras. 12, 60.

<sup>207</sup> 47 U.S.C. § 0.459(b)(5) (emphasis added).

This mechanism, which puts the public interest first, has adequately addressed the needs of the Commission, the public and reporting entities. In 1987, when the Commission first established the ARMIS reporting requirement, they rejected the requests of ILECs for confidential treatment, stating:

Our existing rules set forth procedures by which carriers may obtain confidential treatment of proprietary filings. Those rules provide that information subject to such a request will not be released until the person making the request has had an opportunity to present its arguments against disclosure. We will weigh the considerations favoring disclosure and non-disclosure in light of the specific factual situation when ruling on such arguments. We are not persuaded that those rules will be inadequate to protect the carriers' legitimate concerns for the confidentiality of the information they submit in response to this Order.<sup>208</sup>

Two years later, as the Commission finalized the move to price cap regulation, it expanded the data collected through ARMIS. Predictably, ILECs again argued that all of the data must be treated as confidential. The Commission wisely declined to act on these requests. The decision to make this data available to the public was based in part on the expertise of the Common Carrier Bureau, who had determined that the release of the data “offers no competitive advantage to LEC competitors.”<sup>209</sup> The Commission recognized that during the 1987 proceeding “that LECs fears of competitive disadvantage with regard to automated reporting were overstated and that the existing rules regarding confidential treatment of proprietary information are adequate.”<sup>210</sup> The Commission sought to ensure “enough data is available to the public to allow thorough monitoring.”<sup>211</sup> As a result, the majority of the data collected through ARMIS is

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<sup>208</sup> *Automated Reporting Requirements for Certain Class A and Tier 1 Telephone Companies (Parts 31, 43, 67 and 69 of the FCC's Rules)*, CC Docket No. 86-182, Report and Order, 2 FCC Rcd 5770 (1987) at 5773, para. 49 (internal footnotes omitted).

<sup>209</sup> *Policy and Rules Concerning Rates for Dominant Carriers*, CC Docket No. 87-313, Second Report and Order, 5 FCC Rcd 6786 (1990) at 6832, para. 368, fn. 513 (“Price Cap Order”).

<sup>210</sup> *Ibid.* at note. 512

<sup>211</sup> *Ibid.* at para. 368

publicly available.<sup>212</sup>

Cable operator filings are no different. For instance, Form 325, the Annual Cable Operator Report, is made available to the public in full, except under an adequate showing of harm.<sup>213</sup> Form 325 offers the public a glimpse into the local infrastructure of their cable operator. Similarly, Form 320, the Basic Signal Leakage Report, is publicly available. Form 320 allows the public to assess the level of interference in the cable system. This can reveal why their service only works intermittently, especially valuable given the upstream channel used for Internet service.<sup>214</sup> All of this information is available through the Media Bureau's Cable Operations and Licensing System (COALS). A core purpose of COALS is "making all filed information quickly and easily available to interested parties and the public."<sup>215</sup> Similar to ARMIS, the Commission implemented this automated reporting system because of the benefits to all stakeholders. The Commission is able to "monitor spectrum use and competitive

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<sup>212</sup> *Service Quality, Customer Satisfaction, Infrastructure and Operating Data Gathering*, WC Docket No. 08-190, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 23 FCC Rcd 13647 (2008), at 13666, para. 36.

<sup>213</sup> *See e.g. Cox Communications, Inc Request for Confidentiality for Information Submitted on Forms 325 for the Year 2003*, Order, 21 FCC Rcd 2309 (2006).

<sup>214</sup> Cable upstream spectrum is notoriously "noisy". Noise is signal interference that can disrupt the communication. The cable upstream operates in the 5-42 MHz range. This is the worst-quality spectrum in the cable plant in terms of noise. Without proper plant maintenance, a cable modem cannot tune to the upstream path thus making the entire Internet service unusable. Much of this is due to interference created by a break in the wire's shielding. Form 320 includes information to allow a customer to address whether it is the provider's own interference issues that may be causing the problem (and possibly interfering with aviation communication). *See* 47 U.S.C. § 76.611.

<sup>215</sup> *Amendment of the Commission's Rules For Implementation of its Cable Operations And Licensing System (COALS) to Allow for Electronic Filing of Licensing Applications, Forms, Registrations and Notifications in the Cable Services Bureau*, CS Docket No. 00-78, Notice of Proposed Rulemaking, 15 FCC Rcd 9305 at 9310, para. 10 (*COALS NPRM*). Furthermore, the search tool was vastly improved in November 2008 to provide the public a more user-friendly method of seeking out information. *See* Federal Communications Commission, Cable Operations and Licensing System, Media Bureau.

conditions in the cable marketplace more easily.”<sup>216</sup> Reporting entities can “save time and resources by filing electronically.”<sup>217</sup> Most importantly, the public is able to access the information online after having “historically had little or no access to this information.”<sup>218</sup> In creating COALS, the Commission stated, “it is our intention to make electronic filing as widely available and successful as possible.”<sup>219</sup>

A similar system is in place for radio services licensed by the Wireless Bureau. The Universal Licensing System (ULS) was created recognizing the benefits to all stakeholders. With the creation of the system in 1998, the Commission stated:

ULS will enhance the availability of licensing information to the public, which will for the first time have access to all publicly available wireless licensing information on-line, including maps depicting a licensee's geographic service area.<sup>220</sup>

The ULS system offers users an unrivaled source for wireless information. The Wireless Bureau continues, “to improve the system using feedback from the public.”<sup>221</sup> Furthermore, the ULS now includes “software mapping technology that will enable you to see the market areas of individual FCC licenses on a map.”<sup>222</sup>

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<sup>216</sup> *COALS NPRM* at 9308, para. 5.

<sup>217</sup> *Ibid.* at para. 3

<sup>218</sup> *Ibid.* at para. 4

<sup>219</sup> *COALS NPRM* at 9310, para. 14

<sup>220</sup> *Biennial Regulatory Review - Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97, and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services; Amendment of the Amateur Service Rules to Authorize Visiting Foreign Amateur Operators to Operate Stations in the United States*, WT Docket Nos. 98-20, 96-188, RM-8677, Report and Order, 13 FCC Rcd 2102 (1998) at 2104, para. 4 (*ULS Order*).

<sup>221</sup> Federal Communication Commission, “FCC Universal Licensing System (ULS): About ULS,” Wireless Telecommunications Bureau, March 3, 2008, available at <http://wireless.fcc.gov/uls/index.htm?job=about>.

<sup>222</sup> *Ibid.*

The Commission has implemented similar changes to broadcast licensing data. The Media Bureau's Consolidated Database System (CDBS) offers the public access to a variety of databases. During the creation of the CDBS in 1998, the Commission specifically noted the system "will, in fact, improve the public's ability to participate in the Commission's processes."<sup>223</sup> The goal of the system was to "facilitate...openness."<sup>224</sup> All of these systems share the common trait of encouraging public consumption of data collected by the Commission in the public's name.

**ii. The Non-Disclosure Policy of Form 477 was an Abrupt Departure From Precedent**

The Commission made an abrupt departure from past precedent with the creation of Form 477. The overwhelming majority of the data collected is not made public. This non-disclosure is not in response to a specific formal request from a reporting party. Instead, the Commission made a blanket presumption against public availability from the outset. This rejection of Commission precedent came with little explanation. The Commission simply stated that it was done in response to "our desire to maximize the level of voluntary compliance with the information collection."<sup>225</sup> This statement comes one sentence after noting that, "this is a mandatory collection."<sup>226</sup> Providers were allowed to make vague references to competitive harm,

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<sup>223</sup> *1998 Biennial Regulatory Review -- Streamlining of Mass Media Applications, Rules, and Processes -- Policies and Rules Regarding Minority and Female Ownership of Mass Media Facilities*, MM Docket Nos. 98-43, 94-149, Report and Order, 13 FCC Rcd 23056 (1998) at 23059, para. 3.

<sup>224</sup> *1998 Biennial Regulatory Review -- Streamlining of Mass Media Applications, Rules, and Processes*, MM Docket No. 98-43, Notice of Proposed Rulemaking, 13 FCC Rcd 11349 (1998) at 11352, para. 7.

<sup>225</sup> See *2000 Form 477 Order*, *supra* note 405, at para. 91.

<sup>226</sup> *Ibid.*

and gone was the detailed nine-condition submission.<sup>227</sup> Instead, the Commission reversed course entirely stating:

Accordingly, providers submitting data concerning these services may check the box on Form 477 to request confidential treatment of their data, which will afford them the protection of the Commission's confidentiality rules.<sup>228</sup>

The Commission continued to praise the benefits of public disclosure but failed to provide the public with any meaningful information about what the state of the market was at a local level.<sup>229</sup> When the Commission revisited the issue four years later in the *Second 477 Order* they stated their intent to “retain our current policies and procedures regarding the confidential treatment of submitted Form 477 data, including the exclusive use of aggregated data in our published reports.”<sup>230</sup> Providers were reassured that the Commission’s “current policies and procedures afford more than adequate protection.”<sup>231</sup> What’s more, the Commission found “because filers submitting Form 477 data routinely assert that some or all such data are competitively sensitive, we see no need to continue to require them to provide a separate, redacted file.”<sup>232</sup> The data policy was taken a step further and included protection for “even historical data” that the Commission was told, “remains competitively sensitive.”<sup>233</sup>

The negative effects of these decisions are difficult to quantify but clearly damaging. The broadband information available to the public stands in stark contrast to the datasets of other industries monitored by the Commission. Gone are searchable databases with each filing. In its

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<sup>227</sup> For instance, the Commission cites AT&T’s statement that simply states this information “would help reveal where a carrier's customers are located, how many there are, and even a carrier's capabilities.” See *ibid.* at para. 88, fn. 226

<sup>228</sup> *Ibid.*, para. 92.

<sup>229</sup> *Ibid.* at 7762, para. 96.

<sup>230</sup> See *2004 Form 477 Order*, *supra* note 409, para. 24.

<sup>231</sup> *Ibid.*

<sup>232</sup> *Ibid.* at para. 25.

<sup>233</sup> *Ibid.* at para. 24

place is a single excel spreadsheet containing highly aggregated data of limited use to the public. Of course, broadband information is arguably the most important data currently collected by the Commission. Yet, the public is offered the most inferior interface and information of any industry monitored by the Commission.

**iii. Providers Requests for Confidentiality Ring Hollow. The “Deal” Struck With NTIA Reveals that Concerns About Public Disclosure of Availability Data Were Never Sincere**

The unprecedented nature of the Commission’s decision to preemptively deem all Form 477 information competitively sensitive was not lost on providers, and they were eager to continue down this path of unwarranted secrecy. In the Commission’s most recent review of Form 477, reporting entities demanded complete confidentiality from the outset for all information.<sup>234</sup> AT&T even went so far as to suggest “the Commission should, at a minimum, formally amend its rules to provide a presumption of non-disclosure for Form 477.”<sup>235</sup> Of course these entities would prefer to not report any information, requiring them to go through the tortuous logic of claiming the data would be useless -- but if it was collected it should be treated as proprietary AND confidential.<sup>236</sup> Providers have defended these non-disclosure requests with

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<sup>234</sup> See e.g. Comments of NCTA, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriber Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscriber Data*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 14 (2007) (“NCTA urges the Commission to reiterate and continue its existing policy of preserving the confidentiality of Form 477 data”).

<sup>235</sup> Comments of AT&T, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriber Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscriber Data*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 15 (2008).

<sup>236</sup> Comments of Free Press et al., *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriber Data, and Development of Data on Interconnection Voice*

vague statements of how disclosure would cause competitive harms. Whereby information used to require a specific nine-condition defense of this request including a showing of “*substantial* competitive harm,”<sup>237</sup> now reporting entities simply state “if such information were made public, it undoubtedly would be used by competitors in developing their own strategies to compete with other broadband provider.”<sup>238</sup> Given the level of doom predicted, it is remarkable that these commenters have failed to provide the Commission with specific cases or plausible scenarios of exactly how public disclosure will cause competitive harms. This is likely due to these vague claims being directly contradicted by the realities of the data collection.

The most obvious evidence that this data is not sensitive is the fact that potential competitive broadband providers already have access to sources for this “sensitive” information - - namely other provider’s websites.<sup>239</sup> Every major broadband provider offers visitors the ability to see where they offer service, in many cases disclosed down to a specific address.<sup>240</sup> The coverage maps of mobile operators are no different. These maps are constantly updated with the

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*over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 9 (2008).

<sup>237</sup> 47 U.S.C. § 0.459(b)(5) (emphasis added).

<sup>238</sup> Comments of the NCTA, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 6 (2008).

<sup>239</sup> In fact, the John Adams Innovation Institute utilized this fact in creating an availability map for the state of Massachusetts. See Joint Comments of the Massachusetts Department of Telecommunications and Cable and the Maine Public Utility Commission, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscribership*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 4 (2007).

<sup>240</sup> An interested party can also simply call the toll-free numbers and reach a company representative that can provide information on service availability, along with pricing and speeds.

latest information -- so much so that Verizon Wireless must tell visitors when the map was generated.<sup>241</sup> This cannot be surprising; potential and current customers must know where service is available.

Providers are anxious to make potential customers aware of service being available or new services or promotions being introduced. For instance, T-mobile has begun upgrading its markets to 3G technology. Details on where this technology has been deployed would certainly be of interest to competitors. It would also be of interest to potential customers, which is why T-mobile offers a page solely to listing the cities in which it is available.<sup>242</sup> None of the information being proposed for collection asks about construction or where future expansion will take place.<sup>243</sup> The Commission would merely collect information on where broadband is already available.

Verizon is no different. Verizon's fiber-to-the-home service can be checked on an address-by-address basis.<sup>244</sup> Furthermore, Verizon routinely publishes announcements when

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<sup>241</sup> Verizon Wireless, "Coverage Locator," available at <http://www.verizonwireless.com/b2c/CoverageLocatorController>.

<sup>242</sup> T-Mobile, "The T-Mobile 3G network for the T-Mobile G1 phone with Google," 2008, available at <http://www.t-mobileg1.com/3G.aspx#>.

<sup>243</sup> That's not to say companies don't release this information as well. *See e.g.* "T-Mobile USA Announces Commercial 3G Network Availability in 21 Markets By Mid-October," T-Mobile Press Release, Sept. 18, 2008 ("The company plans to expand its service by mid-October to additional markets, including Atlanta, Chicago, Los Angeles, Orlando, Philadelphia, Sacramento, San Francisco and Seattle. An additional six markets — Birmingham, Denver, Detroit, Kansas City, Memphis and Tampa — are expected to have the network available before the end of the year, increasing the number of markets with T-Mobile's 3G network to 27 markets.")

<sup>244</sup> Verizon, "Verizon FiOS Internet Check Availability," 2009, available at <http://www22.verizon.com/residential/fiosinternet/checkavailability/checkavailability.htm>. Ironically, Verizon argues, "a competitor could learn the specific geographic areas in which a broadband provider is relying on fiber technology." Comments of Verizon and Verizon Wireless, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP)*

service becomes available in an area. A visitor to their “Newscenter” can even use pull down menus to search for FiOS announcements by state.<sup>245</sup>

Not to be left out, information on the deployment of DOCSIS 3.0 by cable operators is easily located. Comcast was making announcements about upgraded areas *before* the service was introduced.<sup>246</sup> Furthermore, Comcast allows visitors inquiring about availability to plug in a zip code and when it is not available, Comcast offers to email the visitor when it is.<sup>247</sup> Of course, providers, both mobile and wireline, spend millions in advertising, marketing and public relations to ensure public awareness. All of this information is current (if not forward looking), which is in stark contrast to the backward-looking Form 477 data.

Beyond information directly at customers, publicly traded companies release a wealth of information aimed at investors. While this information is, in general, aggregated to a national

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*Subscribership*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 14 (2008).

<sup>245</sup> Verizon, “News Releases Archive,” 2009, available at <http://newscenter.verizon.com/press-releases/>. See e.g. Verizon, “Juanita, Washington, Consumers Can Now Get Verizon’s Hyper-Fast FiOS Broadband,” Press Release, Sept. 19, 2007. DSL service is no different. See Verizon, “Verizon Widens Availability of Its Fastest DSL-Enabled High Speed Internet Service,” Press Release, May 26, 2009 (“In Massachusetts, Verizon is making its super-fast 7.1 Mbps available to 23,000 more households and businesses in five more Massachusetts communities - Carver, East Hampton, Orange, Scituate and parts of the South End of Boston”).

<sup>246</sup> See e.g. Comcast, “Comcast to Roll Out Extreme 50 MBPS High-Speed Internet Service in Oregon and Southwest Washington in December,” Press Release, Nov. 17, 2008. Specific locations are also announced. See e.g. Mike Robuck, “Comcast’s 3.0 service now available in Pittsburgh area,” *CedMagazine.com*, May 15, 2009 (“Comcast’s new services are now available to residential homes and businesses in many areas of its Three Rivers Region, including: Pittsburgh, Green Tree, Carnegie, Castle Shannon, Washington, Waynesburg, Canonsburg, McDonald, South Fayette, Monongahela, Charleroi, Monessen, Belle Vernon, Donora, McKeesport, Duquesne, Wilkinsburg, Monroeville, Plum, Penn Hills, Murrysville, Irwin, Greensburg, Punxsutawney, Indiana, Blairsville, Ross Township, Franklin Park, Shaler, Fox Chapel, New Castle, Etna, Coraopolis, McKees Rocks, Moon, North Fayette, Aliquippa and Beaver Falls in Pennsylvania; Deep Creek, Md.; Wheeling and Fairmont, W.Va.; and Martins Ferry, East Liverpool and St. Clairsville in Ohio, among other areas.”)

<sup>247</sup> Comcast, “the new Comcast High-Speed Internet is coming,” available at <http://comcast.p.delivery.net/m/p/com/wid/wideband.asp>.

level, specific plans on future deployments and offerings are routinely discussed. For instance, in reporting on its financial results for 2008, Clearwire, still in the early stages of its nationwide deployment, provided the cities where it intended to launch in 2009.<sup>248</sup> Quarterly earnings presentations, along with frequent SEC filings, offer a wide breadth of information on a company. Of course these documents always offer a warning about the “forward-looking statements” due to the discussion of the companies future plans.<sup>249</sup>

Furthermore, on a local level, a company is certainly aware of a competitor’s offerings. This is even more relevant to telecommunications service, which many times require approval from city or state regulatory officials.<sup>250</sup>

All of this data on current or future offerings stands in contrast to the broadband data collected by the Commission. The highly aggregated data that is currently publicly available is released well after submission. For example, the last *release* of Form 477 data was on January 16, 2009 -- for data that was reported as of December 31, 2007, over a year earlier.<sup>251</sup>

Providers attempt to deter collection of data in the first place by claiming this data will be “extremely outdated,” yet in the same breath they demand confidentiality. With the Commission’s tentative conclusion in the *2008 Form 477 FNPRM* to collect broadband price information, the providers illustrated just how far they were willing to take these confidentiality claims. Apparently, the release of the price of a heavily marketed service by *all* relevant

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<sup>248</sup> Clearwire, “Clearwire Reports Fourth Quarter and Full Year 2008 Results,” Press Release, March 5, 2009.

<sup>249</sup> See e.g. AT&T, Form 10-K, Feb. 25, 2009, p. 9.

<sup>250</sup> For instance, when providers require access to public rights-of-way.

<sup>251</sup> “Federal Communications Commission Releases Data on High-Speed Services for Internet Access,” News Release (rel. Jan. 16, 2009).

competitors, a year after it's being offered will have the effect of "distorting competition."<sup>252</sup> However, the Commission will only be collecting "meaningless" data if it moves forward.<sup>253</sup> We hope the Commission dismisses these self-interested and illogical claims.

But recent developments make the debate over public disclosure moot. As mentioned above, providers have agreed to be publicly identified where they offer service, defined at the granular Census Block level. It seems that for all their hemming-and-hawwing, once the incumbents were aware that data disclosure was inevitable, they used public disclosure as a bargaining chip to trade away for the agreement to not collect other middle and last-mile related infrastructure and revenue data.

#### **iv. The Benefits of Public Data are Expansive, and Far Outweigh any Potential Competitive Harms**

The Commission has recognized that releasing data to the public easily accessible manner serves the important goal of getting the public involved in the policymaking process. Moreover, the benefits extend well beyond public involvement. As the Commission has noted:

First, public availability allows consumers and experts the opportunity to review the data to ensure the accuracy of the information. Second, wide dissemination of the information promotes a more informed, more efficient market.<sup>254</sup>

One can hardly argue with these observations. A consumer who accesses Form 320 to

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<sup>252</sup> Comments of AT&T, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 14 (2008).

<sup>253</sup> Comments of NCTA, *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 3 (2008).

<sup>254</sup> See *2000 Form 477 Order*, at 7757, para. 86.

assess the likelihood of service interruptions is undoubtedly more informed than one who has not. Consumer groups and state regulators have stated their intention to be “eager and capable monitors” through the use of this data and, as we have detailed previously, a more informed market is exactly what is needed in today’s communication marketplace.<sup>255</sup>

Technological advances have resulted in a large segment of the public being very capable of utilizing detailed broadband infrastructure and market data.<sup>256</sup> Data “mashing” is an increasingly popular practice.<sup>257</sup> Internet users combine data from a variety of sources to produce unique analysis and secondary data tools -- ones not intended or foreseen by the data source. Mashups commonly rely on the open application programming interfaces (APIs) that have proliferated the Internet. A variety of mashup editors are available allowing for even casual Internet users to “mash”.<sup>258</sup>

Another area of certain innovation with the release of broadband data is with the burgeoning online mapping community. With an open standard known as “Keyhole Markup Language” (KML), Internet users have the ability to create image overlays with mapping applications such as Microsoft’s Virtual Earth, AOL’s MapQuest, NASA’s World Wind and

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<sup>255</sup> See *Price Cap Order*, at 6832, para. 369.

<sup>256</sup> In moving to the electronic systems reviewed above, the Commission did have concern that much of the public lacked access to the equipment necessary to access the information. See e.g. ULS Order at 2117, para. 27.

<sup>257</sup> One of the better-known examples is HousingMaps, which combines craigslist postings with Google Maps to provide a visualization of where housing is available. However, mashups are routinely performed with government information such as EarmarkWatch.org. Perhaps the most relevant example is the mash-up using broadband stimulus comments submitted to the NTIA with Google Maps. Kate Williams, “NTIA Map,” Community Informatics Lab, Graduate School of Library and Information Science, University of Illinois at Urbana Champaign, available at <http://echicago.illinois.edu/bband/>.

<sup>258</sup> See e.g. Clint Boulton, “Mozilla Ubiquity Enables Mashups for Dummies via Firefox,” *eWeek*, Aug. 26, 2008.

Google Maps.<sup>259</sup> Other federal agencies have begun to recognize the value of such a tool.<sup>260</sup> With data released on a Census Block level, any Internet user could quickly begin mashing it to create new and useful secondary data sources.<sup>261</sup> In short, release of this data allows the Commission to leverage the creativity of the Internet community. Allowing the public to interact with the underlying data increases its value.

There are promising signs that the new Commission intends to break the habit of non-disclosure begun with Form 477. In the ongoing review of the AT&T purchase of Centennial Communications, the Commission only partially granted a protective order for documents pertaining to the merger, noting “We are mindful of their highly sensitive nature, but we must also protect the right of the public to participate in this proceeding in a meaningful way.”<sup>262</sup> This decision aligns with the stated policy of the Obama Administration. The day after taking office President Obama sent a memo to the heads of executive departments and agencies on “transparency and open government.”<sup>263</sup> The memo directed the Government to be transparent, participatory and collaborative including to allow Americans “to provide their Government with

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<sup>259</sup> See John Timmer, “Google’s KML map markup language now an official standard,” *Ars Technica*, April 14, 2008.

<sup>260</sup> The National Weather Service<sup>25</sup> and National Severe Storms Laboratory, among other National Oceanic and Atmospheric Administration programs, have implemented such a system with their weather related information. See National Oceanic and Atmospheric Administration, “Google Earth Access to NOSA Observing Systems,” July 21, 2008.

<sup>261</sup> See Expedited Comments of Free Press et al., *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Service to All Americans, Improvement of Wireless Broadband Subscriberhip Data, and Development of Data on Interconnection Voice over Internet Protocol (VoIP) Subscriberhip*, WC Docket No. 07-38, Notice of Proposed Rulemaking, at p. 20 (2008).

<sup>262</sup> *Applications of AT&T Inc. and Centennial Communications Corp. For Consent to Transfer Control of Licenses, Authorizations, and Spectrum Leasing Arrangements*, Second Protective Order (rel. May 27, 2009), para. 3.

<sup>263</sup> President Barack Obama, “Transparency and Open Government,” White House Memorandum, Jan. 21, 2009. In fact, the District of Columbia has already begun this process offering citizens access to 277 datasets. See <http://data.octo.dc.gov/>.

the benefits of their collective expertise and information.”<sup>264</sup> The recently launched Data.gov website has the express purpose of allowing “the public to participate in government by providing downloadable Federal datasets to build applications, conduct analyses, and perform research.”<sup>265</sup> As the Commission moves to expand Form 477 collection, and considers the creation of a unified broadband data reporting system, which includes the types of data previously collected through ARMIS, they should also import the public availability that was a hallmark of the filing system. With publicly available data, the Commission will give the public the means to participate and truly allow for policymaking in the public interest.

## VI. CONCLUSION

We hope that with this *Sixth Inquiry* the Commission can usher in a new era of impartial, fact-based analysis of the Section 706 test. The vision laid out in the 1996 Act, and in the many predecessor bills and legislative hearings that took place in the early 1990s is one of a truly robust, very high-capacity, two-way broadband network -- one available in the home of every American, rich or poor, rural or urban, black or white. This vision was made into a promise by Section 706 -- a promise that has been broken in the five prior Commission reports.

We can no longer afford to take what the stagnant duopoly marketplace has chosen to deliver, and call it “advanced”, for it simply is not. In enacting Section 706, Congress was wise not to affix a number to the term “advanced telecommunications capability”, for they understood that technology evolves, and so too must the standards that technology is measured against. Congress was equally as wise to not give a detailed meaning to the phrase “reasonable and timely”, as this too varies according to how others are progressing. In the years hence it has

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<sup>264</sup> *Ibid.*

<sup>265</sup> Data.gov, “About,” available at <http://www.data.gov/about>.

become quite clear that our global economic counterparts are proceeding in a reasonable and timely manner, while we are content to take what we are given with a smile -- to be given day old bread and told to ignore the fact that it is sold as filet mignon.

If the Commission makes yet another positive Section 706 determination in the sixth report, then it will signal to all American consumers the agency's lack of concern for their plight. It will also be a slap in the face of the 110th Congress, whose mandate of a National Broadband Plan was in and of itself a tacit admission that broadband is not being deployed in a reasonable and timely fashion.

The questions have now all been asked, in just about every way that they can be asked. The evidence is in, and the evidence is clear: advanced telecommunications capability is not being deployed to all Americans in a reasonable and timely fashion, and the Commission needs to exercise its power to reverse this outcome in a bold and decisive manner.

Respectfully submitted,

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