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July 22, 2011

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

**Re: Consumer Disclosure, CG Docket No. 09-158
IP-Enabled Services, WC Docket No. 04-36
Truth-In-Billing, CC Docket No. 98-170**

Dear Ms. Dortch:

On July 21, 2011, I sent the attached document to Ellen Satterwhite of the Consumer and Governmental Affairs Bureau by e-mail.

Please do not hesitate to call should you have any questions regarding this filing.

Respectfully submitted,

/s/ **Steven F. Morris**

Steven F. Morris

cc: E. Satterwhite

Attachment

**NCTA Supplemental Observations on “Need for Speed” Information
CG Docket No. 09-158, DA 11-661**

In light of the Commission’s plan to release the results of the SamKnows Broadband Performance Test that commenced earlier this year, NCTA would like to take this opportunity to supplement its comments filed on May 26, 2011 regarding information that may benefit consumers in reviewing broadband performance data.

Scope of FCC guidance. To the extent the Commission moves forward in issuing some sort of speed-related consumer guidance in conjunction with the SamKnows results, it should make clear that the performance in a household depends on many factors not within the ISP’s control, such as the number and type of device(s) being used by the consumer to access the Internet. With the growing frequency of use of Internet-connected devices such as laptops, iPads and other tablets, gaming devices, and even televisions and desktop computers, this is a significant factor that the Commission should include in any guidance it issues. In addition to devices, the performance of the particular application or website the customer is attempting to use affects performance, as does the speed at which content companies or their content delivery networks are serving content. The Commission has acknowledged that a broadband user’s Internet experience is affected by three distinct networks – the home network, the Internet Service Provider’s (ISP) network, and points beyond the ISP’s network on the Internet – and the Commission should base any consumer advice on data-driven metrics for all three of these elements of the broadband ecosystem, not just the ISP network.

Characterization of ISP services. As NCTA and some of our member companies explained in previous comments, it is important that any FCC guidance not create the impression that ISPs offer service with any “guaranteed” level of performance. ISP broadband offerings are (and are marketed as) “best efforts” products delivered over a shared network, with performance levels dependent on the variety of factors referenced above. The performance metrics that are ultimately published from the SamKnows test are simply numbers based on a controlled test and cannot be used as “guarantees” that consumers can use to “predict” the speed they will receive at all times. The Commission should be careful not to suggest otherwise.

Benefits of higher speed connections. If the FCC issues “need for speed” guidance to consumers, it should clearly explain that there are many situations where increased speeds will improve performance. For certain applications, like large file downloads or adaptive bit rate applications, there may be a significant benefit from greater speed. For example, Apple recently released its latest operating system, OS X Lion. Apple is no longer selling OS updates on CD; to

purchase updates, customers must download them.¹ A higher speed connection obviously would be useful to customers that plan to purchase OS X Lion or similar updates.

Moreover, consumers should take into consideration the times during which multiple devices may be concurrently tapping into the household’s Internet connection – the more users and the more devices in the home, the more likely that the customer will benefit from a higher speed connection. Some cable operators offer tools on their websites to help consumers decide which tier of service is right for them based on these factors.² The following chart provides a matrix of general guidelines for different levels of service associated with varying levels of concurrent usage of current applications.

	1 user on 1 device	2 devices at a time	3 devices at a time	More than 3 devices
Low usage – basic functions	BASIC	BASIC	BASIC MIDDLE	MIDDLE
Moderate usage – basic plus one high demand application	BASIC	BASIC MIDDLE	MIDDLE HIGH	MIDDLE HIGH
High usage – basic plus more than one high demand application	MIDDLE	MIDDLE HIGH	HIGH	HIGH

BASIC – 1 to 5 Mbps

MIDDLE – 6 to 15 Mbps

HIGH – more than 15 Mbps

The Commission should make clear that this is general guidance and that the needs of any particular household will vary. At the same time, however, the Commission can use examples to make the guidance more practical for consumers, such as the following: if you are downloading an HD movie online while your teenager is playing a video game and your spouse is accessing the Internet over your home WiFi network, you may want to select a higher speed tier.

Latency. For now, the Commission should limit its guidance to download and upload speeds and defer any discussion of latency. Latency is unlikely to be an issue for the companies that are part of the SamKnows test and including it in any FCC guidance may cause more confusion, not less. Moreover, other than a limited number of ITU recommendations, there generally is no consensus

¹ <http://www.apple.com/macosex/how-to-buy/> (“To upgrade your Mac to OS X Lion, you don’t need to drive to a store, bring home a box, and install a bunch of discs. All you do is click the Mac App Store icon, buy Lion for \$29.99, and your Mac does the rest.”).

² Cox, for example, has established a Speed Advisor tool that makes recommendations based on the number of people in the home, the number of connected devices, and the activities performed on those devices. http://ww2.cox.com/residential/northernvirginia/internet/speed-advisor.cox?campcode=xl_internet_1_speedadvisor_1105

on latency measures for most applications, largely because latency is largely dependent upon the location of the two points that are communicating.

Role of application providers. Recognizing the variety of factors that affect performance, some application providers offer specific guidance to their customers for handling what appear to be speed-related issues. For example, the Xbox LIVE website provides a troubleshooting menu recommending a checklist of areas for the customer to consider.³ The Commission should consider providing similar information to consumers and should encourage other application and online service providers to do the same.

Needs of applications and services. If the Commission includes a chart similar to the one attached to the Need for Speed public notice, certain improvements are needed to ensure that the guidance is accurate and useful for consumers. For example, speed ranges are not appropriate for a number of applications. Instead, it would be more accurate to say xx Mbps or higher. In addition, to provide some context for some of the figures, the chart should include links to guidance from popular applications. These improvements are reflected in the chart below, which provides examples of representative speeds for certain typical applications and online activities. For many of these services, higher speeds than the ones in this chart will generally deliver better Internet performance.

Finally, it is important for the Commission to explain to consumers that Internet applications and services are extremely fluid and many of these representations can be expected to change as technologies evolve and become more efficient. Indeed, application and online service providers themselves frequently change their own speed guidance, and it would be unfortunate for consumers to rely on Commission-provided guidance that did not keep pace with such updates and consequently no longer was accurate.⁴

³ See XBOX Support, Improve Xbox LIVE speed, at <http://support.xbox.com/en-us/pages/xbox-live/troubleshoot/connection-issues/performance.aspx>. The eight steps in the checklist are as follows: (1) Restart your network hardware; (2) Improve your wireless signal; (3) Maximize your bandwidth - make sure that other computers in your home are not downloading or transferring files; (4) Reduce the number of players; (5) Play at a different time of the day; (6) Try a wired connection; (7) Contact your ISP; and (8) Have a friend try these solutions.

⁴ For example, if the FCC had provided consumer guidance three months ago regarding minimum streaming video download speeds, such guidance already would have been out of date based on more recent guidance issued by Netflix.

Representative download speeds for various online activities for a single user

<u>Activity</u>	<u>Download speeds</u>	<u>Link to guidance from application providers</u>
Web browsing	512 Kbps and faster	Faster download speeds will result in improved experiences for web browsing, file transfer, and email activities. Faster speeds will be particularly helpful for large file transfers and email with attachments.
Email	512 Kbps and faster	
File transfers	512 Kbps and faster	
Streaming radio	150 Kbps	http://blog.pandora.com/faq/contents/481.html
VoIP/voice	100 Kbps	https://support.skype.com/en-us/faq/FA1417/How-much-bandwidth-does-Skype-need https://support.vonage.com/app/answers/detail/a_id/1060
Video streaming		using Netflix as a reference
Good	700 Kbps	http://blog.connectedplanetonline.com/unfiltered/2011/06/22/facing-cap-impact-netflix-lets-customers-manage-their-own-bandwidth/
Better	1.6 Mbps	
HD	3.8 Mbps to 4.8 Mbps	http://blog.netflix.com/2008/11/encoding-for-streaming.html ; and http://techblog.netflix.com/2011/01/netflix-performance-on-top-isp-networks.html
Video calling		using Skype as a reference
Standard	300 Kbps	https://support.skype.com/en-us/faq/FA1417/How-much-bandwidth-does-Skype-need
High-quality	500 Kbps	
HD	1.5 Mbps	
Gaming	128 Kbps and faster	http://support.ea.com/app/answers/detail/a_id/781/kw/minimum speed requirements http://support.ea.com/app/answers/detail/a_id/5124/kw/minimum speed requirements

Upload speeds are particularly important for certain online activities

<u>Activity</u>	<u>indicative upload speeds</u>	<u>link to guidance from application providers</u>
Email with attachments	512 Kbps and faster	Faster upload speeds will result in improved experiences for file transfers and uploading of email with attachments.
File transfers	512 Kbps and faster	
VoIP/voice	100 Kbps	https://support.skype.com/en-us/faq/FA1417/How-much-bandwidth-does-Skype-need https://support.vonage.com/app/answers/detail/a_id/1060
Video calling		using Skype as a reference
Standard	300 Kbps	https://support.skype.com/en-us/faq/FA1417/How-much-bandwidth-does-Skype-need
High-quality	500 Kbps	
HD	1.5 Mbps	
Gaming	128 Kbps and faster	http://support.ea.com/app/answers/detail/a_id/781/kw/minimum speed requirements http://support.ea.com/app/answers/detail/a_id/5124/kw/minimum speed requirements