

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
International Comparison and Consumer)	
Survey Requirements in the Broadband)	GN Docket No. 09-47
Data Improvement Act)	
)	
A National Broadband Plan for Our Future)	GN Docket No. 09-51
)	
Inquiry Concerning the Development of Advanced)	
Telecommunications Capability to All Americans in a)	
Reasonable and Timely Fashion and Possible Steps to)	GN Docket No. 09-137
Accelerate Such Deployment Pursuant to section 706)	
of the Telecommunications Act.)	

COMMENTS OF THE NEW AMERICA FOUNDATION – NBP PUBLIC NOTICE #1

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I. INTRODUCTION

Determining an appropriate definition of broadband is a critical part of the Commission's development of a National Broadband Plan. An appropriate definition is essential not only for establishing "what is broadband" and "where is it available," but also for shaping the future trajectory of telecommunications innovation in the United States. The Open Technology Initiative of the New America Foundation makes the following recommendations for the Commission to consider in defining broadband:

- 1) Given the Commission's aim to ensure "access to broadband capability" for the entire nation, a broadband definition in terms of a baseline for determining universal service or access seems most appropriate, i.e. what minimal speeds and characteristics will be currently required for individuals to access the economic, educational, and societal benefits made possible by the Internet and high-speed access.
- 2) The baseline or minimum thresholds should reflect actual throughput or performance with some standards for reliability, rather than relying solely on the advertised speeds of providers.
- 3) Beyond transmission speeds or performance capabilities, the Commission should include a requirement that broadband provides high-speed access to the public Internet.
- 4) Although defining broadband in the near-term is important, it is also essential that Commission set high goals and reevaluate the definition and performance indicators to ensure the U.S. continues to be a leading innovator and remains competitive with other nations.

II. DISCUSSION

1. The General Form, Characteristics, and Performance Indicators of Broadband

Defining broadband would seem to be a relatively straightforward and simple process. However, as the Commission acknowledged “broadband can be defined in myriad of ways.”¹ From a strict technical level, a definition of broadband could be simply the opposite of narrowband, which was largely represented by the era of dial-up modems with data transmission speeds up to 56 kilobytes per second.² Such a definition on the basis of speeds was reflected in the Commission’s initial designation of broadband facilities in terms of transmission speeds, upstream and downstream transmission speeds in excess of 200 kilobytes per second (kbps)³ or more recently 768 Kbps but less than 1.5 megabytes per second (Mbps).⁴

The Recovery Act requires the Commission to develop a “National Broadband Plan” that seeks to ensure “access to broadband capability” for the entire United States.⁵ Thus, it would seem appropriate to define broadband in terms of a baseline “universal service” required for individuals to access the full opportunities afforded by the Internet and high-speed connectivity. This would mirror approaches by other nations in developing national broadband plans.

Several European nations have defined broadband in terms of a universal service with the goal of providing the minimum access to all households, business, and government agencies.

Britain utilized this approach making a universal service commitment of broadband service of 2

¹ “Comment Sought on Defining “Broadband,” Federal Communications Commission, August 20, 2009, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-09-1842A1.pdf.

² See “Definition of Telecom and Broadband Terms,” Shop for T-1.com, <http://shopfort1.com/t1/terms.cfm#N>.

³ *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, 2406, para. 20 (1999); *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).

⁴ *Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscriber Data, and Development of Data on Interconnected Voice over Internet Protocol*, WC Docket No. 07-38, Report and Order and Further Notice of Proposed Rulemaking, 23 FCC Rcd 9691, 9700-01, para. 20 n.66.

⁵ American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) (Recovery Act)

Mbps to all households by 2012.⁶ Sweden also utilized a minimum, speed-based guideline of at least data transmission meeting or exceeding 2 Mbps downstream to establish a goal for universal service.⁷ Using this speed guideline, the *Proposal for Swedish Broadband Strategy* seeks to expand this level of access to “all households, business, and public operations by 2010.”⁸

Most of these definitions, as well as past definitions by Commission, have relied upon advertised transmission speeds. As the Commission is well aware, actual throughput rates can substantially differ from advertised. Most residential broadband services are sold on an “up to” basis, with a qualification that speeds may vary depending upon network usage, time of day, and other factors. The extent to which speeds fluctuate often depends on the capacity of a network link and the level at which it is shared, often measured in terms of a contention or oversubscription ratio. Contention varies depending on provider and technology and can substantially affect the actual performance of a service. In the past, providers could utilize high ratios and still provide transmission speeds in the general range of advertised, as subscribers generally used considerably less throughput than their broadband connection would allow. Increasingly, this is no longer the case. With the growth of Internet video, and multiple and simultaneous users in a single household; subscribers are often utilizing the full performance capabilities of their broadband connection – creating performance issues on those networks with limited capacity. As a result actual throughput may vary considerably during peak usage or even normal usage periods. Given that the broadband definition will likely serve as a minimum

⁶ “Digital Britain,” Department for Culture, Media and Sport and Department for Business, Innovation and Skills, , Final Report, Executive Summary, June, 2009, <http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>.

⁷ “Proposal for Swedish Broadband Strategy,” National Post and Telecom Agency of Sweden, February 2007, http://www.pts.se/upload/Documents/EN/Proposed_broadband_strategy_eng.pdf.

⁸ *Id.*

benchmark for connectivity, it is essential that the Commission include some standards for reliability, in order to ensure the availability of sufficient broadband capability throughout the U.S.

Beyond transmission speeds, the Commission should include a requirement that broadband provides high-speed access to the public Internet. Although, the Commission has utilized the terms “broadband”, “high-speed Internet Access,” and “advance telecommunication capability” interchangeably, there still remains general ambiguity as to what exactly broadband should provide. With the advent of broadband technology utilizing services such VoIP and IPTV, some argue to define or recognize broadband increasingly in terms of facilities capable of delivering voice, data and video signals or other services.⁹ The Telecommunications Act of 1996 defined advanced telecommunications capability as “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.”¹⁰ At the time, broadband may have included other services such as “interactive computer services” as well as Internet access, although the terms could be synonymous.¹¹ This in some respects reflected the “gated” nature of early commercial Internet access services such as AOL and CompuServe that provided users with a “walled garden” of content before potentially allowing users to access the more open World Wide Web. But those remnants of the dial-up era have long been since replaced by largely unfettered connections to the Internet.

⁹ *A National Broadband Plan for Our Future*, GN Docket No. 09-51, Notice of Inquiry, para. 16, (2009), http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-09-31A1.pdf.

¹⁰ 47 U.S.C. § 1302(d)(1).

¹¹ See § 203(e)(2) of the Communications Act. “The term “interactive computer service” means any information service, system, or access software provider that provides or enables computer access by multiple users to a computer server, including specifically a service or system that provides access to the Internet and such systems operated or services offered by libraries or educational institutions.”

“In the world of digital communication infrastructures, the Internet is everything,” supporting a multiplicity of content, applications and services.¹² Debates concerning other functions of broadband distract from what has clearly become an essential, if not required, service for individuals to fully access the economic, educational and social opportunities of the 21st century. There are available substitutes for other related broadband services such as VoIP and IPTV, but there are no substitutes for Internet connectivity. It is the Internet that has transformed communications and the broader economy and society. In 2001, when Japan set out to become “world's most advanced IT nation within five years” its first goal was “building an ultra high-speed Internet network and providing constant Internet access at the earliest date possible.”¹³ Therefore any definition of broadband should include a requirement for high-speed access to the Internet. Such a requirement aligns with NTIA and RUS’s similar requirements for project funding from the Broadband Technology Opportunities Fund and Broadband Initiatives Program.¹⁴

2. Thresholds, Updates and Goals

In 1999, the Commission defined broadband as facilities capable of transmission speeds of more than 200 kbps.¹⁵ This remained in place until the *2008 Data Gathering Order*, where the Commission created the term “first generation data” to refer to those services with data rates greater than 200 kbps but less than 768 kbps in the faster direction, and the term “basic

¹² “Testimony of Lawrence Lessig,” Hearing on “The Future of the Internet,” Senate Committee On Commerce, Science And Transportation, April 22, 2008, 7, http://commerce.senate.gov/public/_files/LessigTestimony.pdf. .

¹³ Japanese IT Strategy Headquarters established e-Japan Strategy in January 22, 2001. See “e-Japan Strategy,” IT Strategy Headquarters, January 22, 2001, http://www.kantei.go.jp/foreign/it/network/0122full_e.html.

¹⁴ Eligibility for BIP and BTOP funding includes the ability to “connect to the public Internet and physical interconnection for the exchange of traffic.” Department of Agriculture, Rural Utilities Service and Department of Commerce, National Telecommunications and Information Administration, Broadband Initiatives Program and Broadband Technologies Opportunity Program, *Notice*; Federal Register: Vol. 140, NO. 130, (July, 2009).

¹⁵ *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, 2406, para. 20 (1999).

broadband tier 1” to refer to services equal to or greater than 768 kbps but less than 1.5 Mbps in the faster direction.¹⁶ It is unclear whether 768 kbps is sufficient capacity given the increasing throughput requirements of most Internet content, applications and services.

Several other nations have established near-term minimum thresholds in the 1 – 2 Mbps range. As previously noted, Britain established a universal service commitment of broadband service of 2 Mbps to all households by 2012¹⁷ and Sweden a minimum for universal service of at least 2 Mbps downstream.¹⁸ Finland established the goal of providing universal service of 1 Mbps by 2010.¹⁹ In 1996, South Korea established the goal to provide universal broadband access with minimum transmission speeds of 1 Mbps by 2005 with the transmission speed upgraded to a minimum of 2 Mbps by 2006.²⁰

Regardless of what minimum performance thresholds are determined, it is important that the Commission does not conflate near-term minimums in a broadband definition with longer-term goals of establishing the U.S as a technological leader. In many ways strictly defining “broadband” in terms of minimum indicators as the Commission has done in the past can be antithetical to being a technological leader, by reducing the technology to the lowest common denominator. The capacity of networking technology continues to exponentially increase, driven by doubling of computing power every 18 months, and even faster increases in optical bandwidth. Ethernet and optical fiber systems have increased their speeds roughly a hundredfold

¹⁶ *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).

¹⁷ “Digital Britain,” *supra* note 6.

¹⁸ “Proposal for Swedish Broadband Strategy,” *supra* note 7.

¹⁹ “Making Broadband Available to Everyone: The National Plan of Action to Improve the Infrastructure of the Information Society,” The Ministry of Transport and Communications, May 2008, http://www.lvm.fi/c/document_library/get_file?folderId=57092&name=DLFE-4311.pdf.

²⁰ The Ministry of Information and Communication in Korea established the Third Master Plan for Information Promotion E-Korea Vision (2002-2006). See “The Future of the Information Society in Korea”, Ministry of Information and Communications (MIC), December 2002, 22, http://www.ipc.go.kr/ipceng/public/public_view.jsp?num=2007&fn=&req=&pgno=5.

from 100 mbps in 1997 to 10 Gigabits per second (Gbps), with the availability of 100 Gbps expected soon.²¹ Thus it is essential that the Commission establish high goals and re-evaluate the definition and performance indicators in concurrence with achieving near-term goals to ensure the U.S. remains competitive.

Nations that have outpaced the U.S. have established ambitious goals and encouraged the deployment and adoption of best-breed technology. For example the Ministry of Internal Affairs and Communication (MIC) in Japan initiated *e-Japan strategy* in 2001 and set the goal of establishing a fixed network infrastructure with 30 – 100 Mbps of standardized ultra high-speed connectivity at affordable rates to at least 10 million households.²² By 2005, DSL and fiber-optic residential Internet connections from 20 to 100 Mbps down or upstream reached 14 million subscribers.²³ South Korea expects to provide broadband speeds of 50 – 100 Mbps to 20 million subscribers by 2010.²⁴

III. CONCLUSION

Defining broadband is a critical component of the Commission's development of a National Broadband Plan. It will be imperative for the Commission to establish an appropriate definition and minimum performance thresholds that will ensure all Americans have access to necessary high-speed Internet connections to succeed and prosper in the 21st century. Beyond defining broadband in the near-term it is essential that Commission set ambitious goals for widespread connectivity and reevaluate the definition and performance indicators to encourage

²¹ "Ethernet," *Wikipedia*, <http://en.wikipedia.org/wiki/Ethernet>.

²² "e-Japan Strategy," *supra note* 13.

²³ "Policy Framework For Ubiquitous Network Society in Japan," Ministry of Internal Affairs and Communications (MIC), March 2006, <http://www.oecd.org/dataoecd/43/28/36275193.pdf>.

²⁴ "U-Korea Master Plan 2007," Ministry of Information and Communications, June 13, 2006, http://www.ipc.go.kr/ipceng/public/public_view.jsp?num=2480&fn=&req=&pgno=1.

the deployment of best-breed networks and technology to ensure the U.S. remains competitive in the 21st Century.

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