Broadband is defined by the National Telecommunications and Information Administration (NTIA), as "advanced communications systems capable of providing high-speed transmission of services such as data, voice, video, complex graphics, and other data-rich information over the Internet and other networks." Stakeholders often seek to define broadband in terms of download and upload speeds, in part because these are discrete, convenient, and standardized metrics. Download and upload speeds measure the amount of data transmitted per second, as reported in kilobits (kbps), megabits, (mbps) and gigabits (gbps).

At the state level, the New Hampshire Broadband Mapping and Planning Program (NHBMPP) is tasked with mapping where broadband is currently available, determining how it can be made more widely available in the future, and encouraging increased levels of broadband adoption and usage. NHBMPP is also offering broadband planning and technical assistance to a wide range of groups and organizations throughout the state.

For the purposes of discussion and planning, the NHBMPP has developed the attached matrix to assist stakeholders in understanding the diverse levels of broadband available in the state today, and the typical functions a user might be able to perform within a range of download and upload speed tiers. Using these tiers, the Program has established broadband availability categories ("served", "underserved", and "unserved") to describe access to broadband service. These categories are based solely on the maximum speeds available to the end-user or end-device. While some states are also considering the number of providers servicing a given area when determining access levels, e.g. a degree of competition, the NHBMPP has not chosen to incorporate those analyses in its availability categories.

When using the attached matrix to evaluate access, determine the category by assessing both the download and upload speeds. Most broadband technologies (cable, wireless, satellite, etc.) are not capable of sending and receiving data at the same speed, with upload speed typically being more limited.

This document does not seek to supersede other national and/or state efforts to establish a standard definition for "broadband." It also limits the focus to transmission speed, while recognizing that affordability and functionality are also key factors when assessing broadband needs and barriers to adoption.

Broadband functions, applications and technologies are continually changing. Only 15 years ago, a 56 Kbps connection was sufficient to conduct most business on the internet. Today, in order to use many internet applications successfully, a minimum download speed of 1.5 Mbps is required. This trend towards increasing requirements for bandwidth capacity will certainly continue into the future, and the matrix of uses presented herein will evolve as well.

- For more information on the NHBMPP, please visit http://www.iwantbroadbandnh.org
- To take a customized speed test and measure your actual delivered upload/download speeds, please visit http://www.iwantbroadbandnh.org/speed_test

Category	Download Speed	Upload Speed	Typical Functions/Use (functions additive to level above)
Unserved	< 768 Kbps	< 200 Kbps	• Email (Client/Server-based; POP)
Underserved	768 Kbps to < 6 Mbps	200 Kbps to < 1.5 Mbps	**Minimum Download Speed: 768 Kbps** — **Minimum Upload Speed: 200 Kbps** • Web-based email • Limited web browsing and shopping • Minimal social media use • Sending/receiving small documents/files (photos, word processing, invoices) • Use of internet not integrated in daily life function • Single user internet device **Minimum Download Speed: 1.5 Mbps** — **Minimum Upload Speed: 768 Kbps** • Web browsing and shopping • Medium social media use • Sending/receiving medium-sized documents/files (photos, word processing) • Limited streaming content; buffering a concern Standard Definition (SD) content • VPN access possible, but speed of operation not critical to job function • Internet integrated in daily life, and "always" connected • 1-3 simultaneous internet devices possible • Multiple functions working simultaneously possible (e.g. web browsing, streaming video/music, downloading content). Not concerned with speed of transmission. • VoIP (Voice over IP, i.e. telephone over the Internet) **Minimum Download Speed: 3 Mbps** — **Minimum Upload Speed: 768 Kbps** • Medium to high social media use • Sending/receiving medium to large-sized documents or files (photos, word processing) • Streaming SD content; buffering not a concern; downloading High Definition (HD) content (movies, video) • 3-5 internet devices possible • VPN access needed, speed of operation important but not critical to job function • Multiple functions performed simultaneously required (e.g. web browsing, streaming video/music, downloading content), but not concerned with speed of downloads • Low quality, small window frame videoconferencing (Skype) • Cloud-based computing and data storage
Served	6 Mbps to 25+ Mbps	1.5 Mbps to 6+ Mbps	**Minimum Download Speed: 6 Mbps** — **Minimum Upload Speed: 1.5 Mbps** • Heavy social media use • Sending/receiving large documents or files (photos, word processing, small videos) • Streaming HD content (movies, video); buffering not a concern • 5+ internet devices possible • VPN access needed, speed of operation critical to job junction • Higher quality, codec-based videoconferencing • Multi-player online gaming **Minimum Download Speed: 10 Mbps** — **Minimum Upload Speed: 3 Mbps** • Sending/receiving large files and small to medium-sized databases • HD quality, codec-based, large frame videoconferencing; multiple (bridged) sites/users • Remote synchronous education, professional development, workshops, etc., facilitated simultaneously at multiple classrooms and/or other locations • Telehealth/telemedicine applications possible **Minimum Download Speed: 25+ Mbps** — **Minimum Upload Speed: 6+ Mbps** • Sending/receiving medium to large-sized databases • HD quality, codec-based, large frame videoconferencing (Telepresence) connecting multiple (bridged) sites/users • High speed end to end network and business to business applications • Telemetry-based applications (rely critically on the ability of broadband to continuously monitor and multiplex data, i.e. remote patient monitoring, sensing systems, etc.) • Real-time HD medical imaging and consultation (remote dermatology, etc.) • "Internet 2" connectivity and applications

NEW HAMPSHIRE broadband MAPPING & PLANNING PROGRAM