A primer on Broadband

What is Broadband?

Broadband is another term used for bandwidth - or the amount of data that can be sent through a connection - to access high-speed Internet. The more bandwidth, the more information a user can send or receive at any given time.

Why is Broadband Important?

Broadband allows citizens more affordable and efficient access to basic amenities such as education, healthcare, public safety and government services by:

- Affording citizens the opportunity to participate in online learning and distance education;
- Giving entrepreneurs and small and home-based business owners the opportunity to compete alongside large corporations;
- Increasing the productivity and efficiency of businesses who utilize the Internet for their operations;
- Connecting patients in remote areas to healthcare services;
- Making government services more readily available to citizens;
- Saving companies and organizations money by letting employees telework; and
- Allowing friends and families to stay in touch with one another.

Why does Speed Matter?

Broadband speed is important because it allows for faster transmission (uploading and downloading) of data. Data is transmitted digitally therefore text, images and sound are all translated into "bits" of data.

The Federal Communications Commission (FCC) defines basic broadband as transmission speeds of at least 4 megabits per second (Mbps), or 4,000,000 bits per second, downstream (from the Internet to the user's computer) and 1 megabits per second upstream (from the user's computer to the Internet). Slower speeds, such as dial-up, run at 56 kilobits per second and cannot transmit data as quickly.

Broadband is accessed through various high-speed transmission technologies, which allows these bits to move faster.

How is Broadband Accessed?

Broadband is accessed through a number of technologies including:

- Digital Subscriber Line (DSL)
- Cable Modem
- Fiber-Optic Cable (Fiber)
- Wireless
- Satellite
- Broadband over Powerline (BPL)

Digital Subscriber Line (DSL) transmits data over traditional copper telephone lines already installed to homes and businesses. However, not all copper telephone lines are capable of transmitting data.

Cable Modem services transmit data through the same coaxial cables that generate pictures and sounds from someone's TV set.

Fiber-Optic Cable (Fiber) converts to light electrical signals carrying data and sends the light through transparent glass fibers about the diameter of a human hair. Fiber transmits data at speeds much faster than DSL or cable, typically by tens or even hundreds of mbps.

Wireless can be mobile or fixed. Fixed wireless involves the wireless transmission of data from a local antenna to a permanent location such as a home or business. The service is similar to what is delivered over DSL or a cable modem, but the transmission is wireless. Mobile wireless connects users who are in temporary locations, such as coffee shops. Mobile broadband is transmitted through technologies such as portable modems and mobile phones.

Satellite is another form of wireless that is useful in serving remote or sparsely populated areas.

Broadband over Powerline (BPL) is an emerging technology, but delivers broadband over low and medium voltage power lines and is provided to homes using existing electrical connections and outlets.