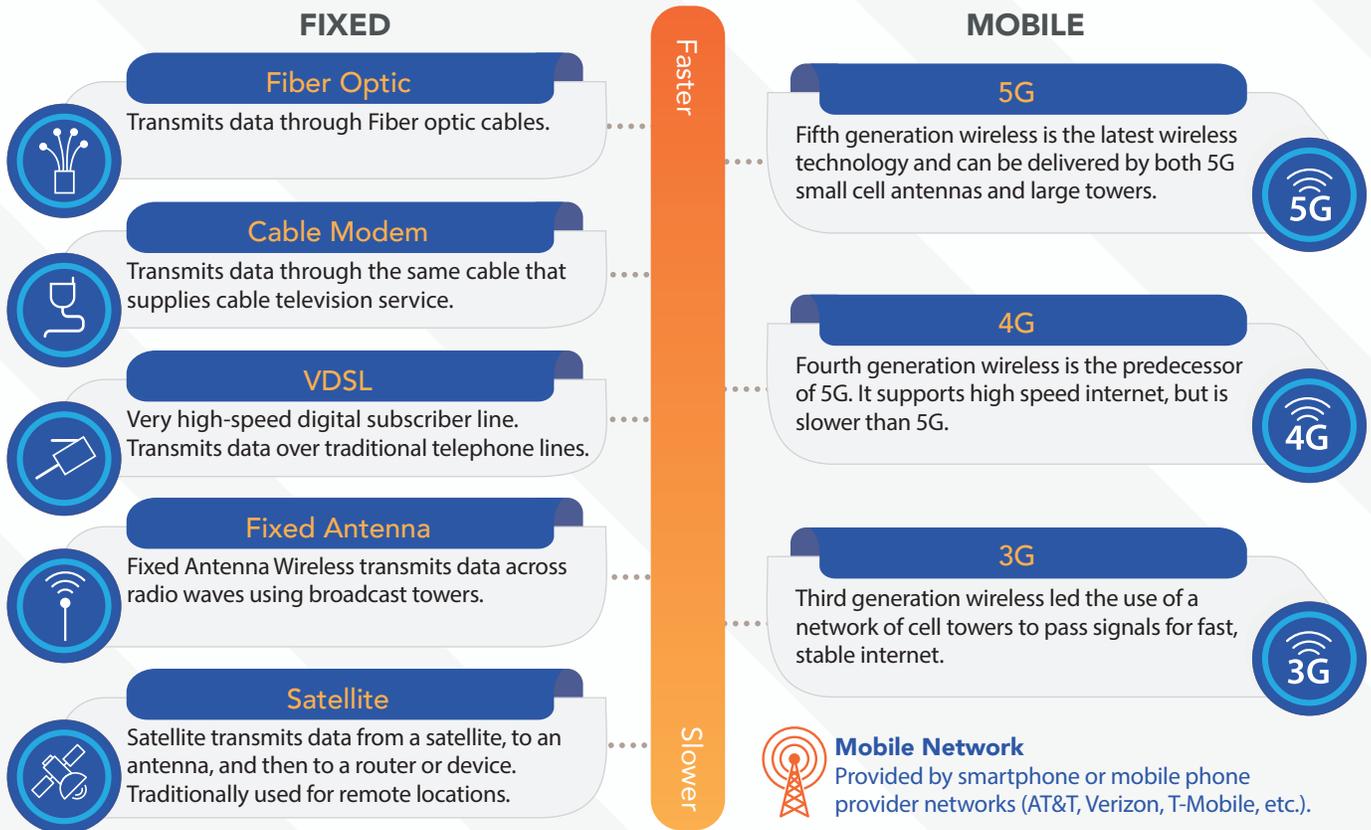# What is Broadband?

Broadband commonly refers to high-speed internet access that faster than the traditional dial-up access. Broadband access is considered "always-on" as connection types like dial-up requires a telephone line to connect and is not always connected.

Fixed broadband transmits data through physical wires and cables and connects networks to the internet. Mobile broadband connects home or business devices via a short-range wireless connection, like Wi-Fi or mobile, to the internet.

FIXED

Fiber Optic
Transmits data through Fiber optic cables.

Cable Modem
Transmits data through the same cable that supplies cable television service.

VDSL
Very high-speed digital subscriber line. Transmits data over traditional telephone lines.

Fixed Antenna
Fixed Antenna Wireless transmits data across radio waves using broadcast towers.

Satellite
Satellite transmits data from a satellite, to an antenna, and then to a router or device. Traditionally used for remote locations.

Faster → Slower

MOBILE

5G
Fifth generation wireless is the latest wireless technology and can be delivered by both 5G small cell antennas and large towers.

4G
Fourth generation wireless is the predecessor of 5G. It supports high speed internet, but is slower than 5G.

3G
Third generation wireless led the use of a network of cell towers to pass signals for fast, stable internet.

Mobile Network
Provided by smartphone or mobile phone provider networks (AT&T, Verizon, T-Mobile, etc.).

COMMON TERMS

Internet Service Provider (ISP)
- An ISP is any company that provides internet access (Verizon, Comcast, etc.).

High-speed Internet
- Defined by FCC as download speeds of at least 25 Mbps; and upload speeds of at least 3 Mbps initially established in 2015.
- New technology and increased data usage is leading to demand for a 100/100 Mbps standard.

Bandwidth
- The maximum capacity of a network or internet connection.
- Increased bandwidth means faster service across more devices.

Mobile Hotspot
- Using a phone or mobile device's data plan to create a Wi-Fi hotspot network.

Wi-Fi
- Wi-Fi provides wireless broadband access over short distances, connecting devices to the internet and to other devices.

Small Cell Technology
- Wireless transmitters and receivers (pizza-box sized) designed to provide network coverage to smaller areas.
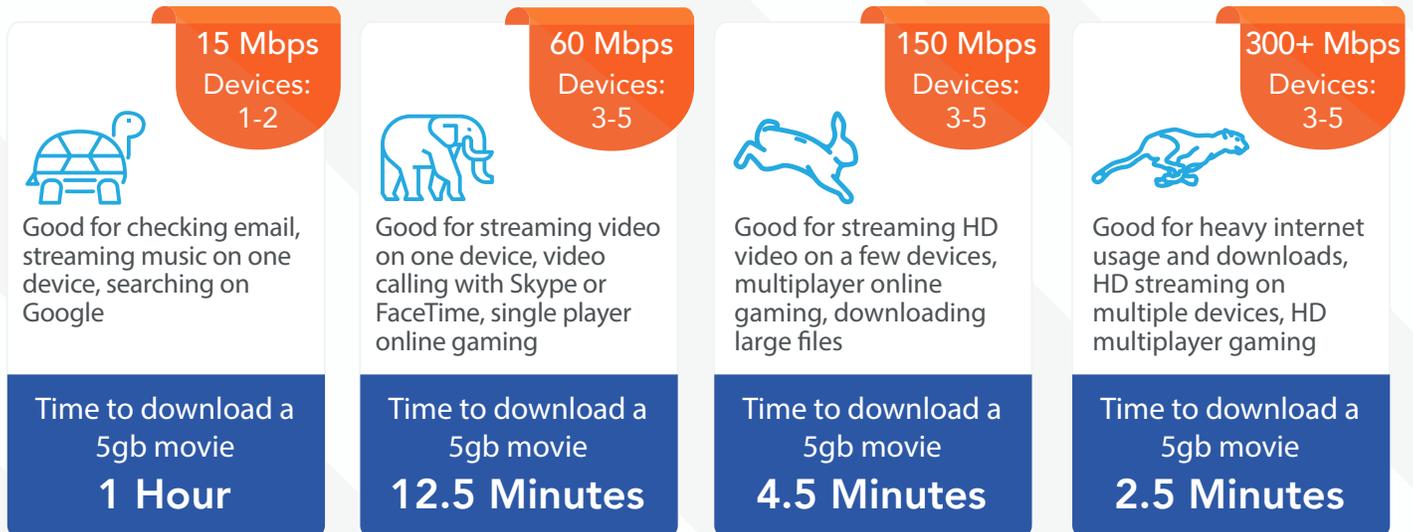
Mesh Networks
- A network of nodes that transmit data efficiently between all nodes in the network.

About Internet Speed

High-speed internet access is important because internet speed is the volume of information that can be transferred at a given time between the internet and your device. Everything that we do online requires an exchange of information whether it's virtual webinars, streaming videos, social media, or online shopping.
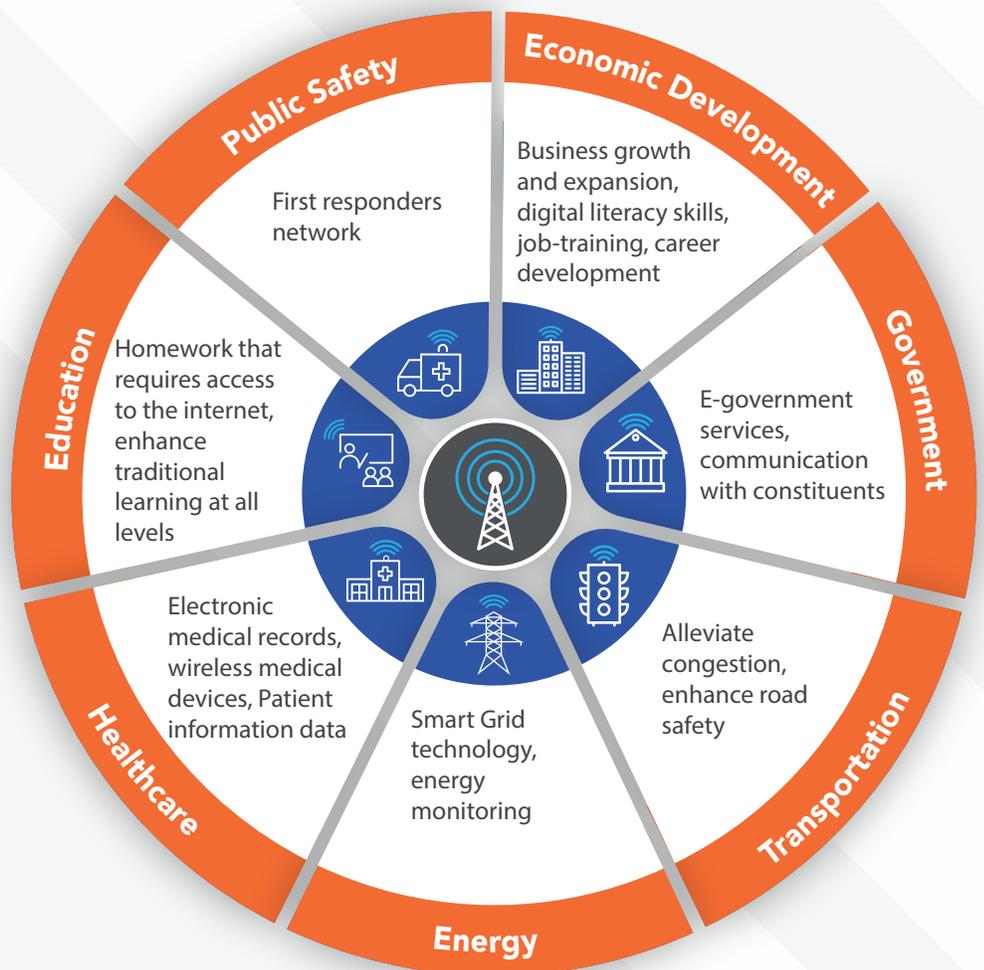
What Can I Do with My Internet?

15 Mbps
Devices: 1-2

Good for checking email, streaming music on one device, searching on Google

Time to download a 5gb movie
1 Hour

60 Mbps
Devices: 3-5

Good for streaming video on one device, video calling with Skype or FaceTime, single player online gaming

Time to download a 5gb movie
12.5 Minutes

150 Mbps
Devices: 3-5

Good for streaming HD video on a few devices, multiplayer online gaming, downloading large files

Time to download a 5gb movie
4.5 Minutes

300+ Mbps
Devices: 3-5

Good for heavy internet usage and downloads, HD streaming on multiple devices, HD multiplayer gaming

Time to download a 5gb movie
2.5 Minutes

WHY DOES HIGH-SPEED INTERNET MATTER?

The internet has become an integral part of our society. It connects us to information that is vital for every individual, business, and industry.

This access to information is why fast, reliable internet is important to our community. Most of us interact with the internet daily in some capacity, including for our health care, transportation, and even our homes.

Public Safety
First responders network

Economic Development
Business growth and expansion, digital literacy skills, job-training, career development

Education
Homework that requires access to the internet, enhance traditional learning at all levels

Government
E-government services, communication with constituents

Healthcare
Electronic medical records, wireless medical devices, Patient information data

Energy
Smart Grid technology, energy monitoring

Transportation
Alleviate congestion, enhance road safety

11.2.2021

Equal Access to Internet

Southwestern Pennsylvania
Connected
Equitable Broadband Access

WHAT IS DIGITAL EQUITY?

Digital Equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.

WHY IS DIGITAL EQUITY IMPORTANT?

With technology and the internet constantly evolving and becoming more integrated into our society, equal access to digital resources can eliminate gaps in our digital and social infrastructure that prevent people and communities from participating in society.

15%

of U.S. households with school-age children that **DO NOT have a high-speed internet connection** at home.

According to a previously published Pew Research Center analysis of 2015 U.S. Census Bureau data.

These broadband gaps are particularly pronounced in black and Hispanic households with school-age children – especially those with low incomes.

School-age children in lower-income households are especially likely to lack broadband access.

35% of households have an annual income below $30,000

6% of households have an annual income of more than $75,000
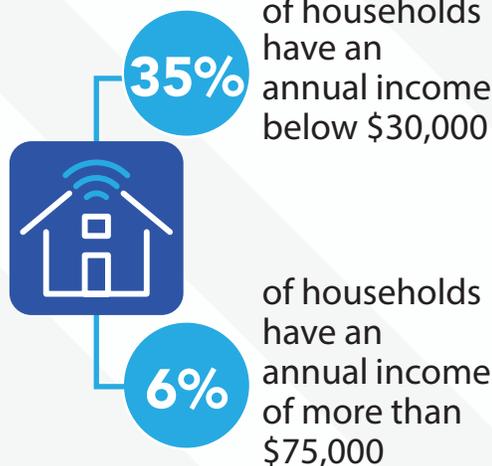
Rural and urban areas in our region are lacking access to high-speed internet and equipment that is fast and reliable, which impacts the quality of life for our residents and communities.

- **Rural issues:** high-speed broadband service is oftentimes unavailable.
- **Urban issues:** affordability where low-income households cannot afford access.

The Connectivity Improvement Plan's recommendations will equitably serve the region's most vulnerable populations who are unserved or underserved by current connectivity.

An example: The Homework Gap

- Homework assignments increasingly rely on internet access at home to complete, creating a "gap" in learning outside of the classroom for those with limited internet.
- Many families can't afford the cost of high speed internet.

The Role of Internet in Education

95%
Students who research and find information online

76%
Students who access/download assignments and submit assignments online

39%
Teachers of low-income students who feel their students have insufficent internet

Funding and Legislation

Southwestern Pennsylvania
Connected
Equitable Broadband Access

Funding Opportunities

🏛 Federal Resources

- Dept of Treasury Grants (ARPA Funding)
- Appalachian Regional Commission Grants
- Dept of Commerce Programs
- Dept of Education Funding Programs*
- Federal Communications Commission Funding Programs (Education & Healthcare)*
- Dept of Agriculture Funding Program (Rural Development)*
- Dept of Housing and Urban Development Programs (Community & Urban Development, Housing)*

State and Local Resources

- Business in our Sites Grants/Loans*
- COVID Relief Funds
- Dept of Community and Economic Development Funding
- Redevelopment Authority of Allegheny County Gaming and Economic Development Tourism Fund
- Redevelopment Authority of Allegheny County Infrastructure Tourism Fund
- Pittsburgh Foundation Grants
- Washington County Community Foundation

🏢 Private Resources

- AT&T K-12 Homework Gap Program*
- Verizon Foundation Grants*
- Heinz Endowments*
- PNC Foundation Economic Development Grants*

* Application-Specific Funding

TYPES OF FUNDING

Grants: Funding that does not require repayment.

Loans/Bonds: Funding that must be repaid either through revenue earned as a result of the project or through a locally developed method of funding. Typically, interest is paid during repayment.

Tax Credit/Exemptions: Programs may be developed to introduce tax incentives for investing in broadband or incentives for lenders to receive tax exempt interest. Tax-exemption programs also offer lower interest rates to borrowers.

FUNDING RESTRICTIONS AND LIMITATIONS

Application-Specific: Funding that is limited in what it can be used for. For example, funding may be limited to healthcare uses, educational uses, or may target specific geographic areas of smaller population or lower income.

Matching Funds: Some funding comes with matching requirements for local funds and others have provisions only allowing a grant or loan to be used for a certain percentage of project costs.

Eligibility: A majority of funding programs are intended for public sector entities with only few being available to private entities. This will be a consideration in determining possible funding sources.

🔍 WHAT TO WATCH

H.R. 3684 Infrastructure Investment and Jobs Bill
Includes $65 billion investment in broadband.

Pennsylvania HB 1075
Introduced in April 2021, this bill establishes the Pennsylvania Broadband Development Authority to provide broadband access to unserved and undeserved residents and provides power for financial assistance and grants.

Pennsylvania HB 956
Introduced March 2021, this bill establishes the County Block Grant – Broadband Deployment and Development Program.

Pennsylvania SB 442
Passed Senate May 2021, this act inventories state-owned assets that can be used to establish broadband services in unserved areas and establish a restricted fund for revenue generated using these assets.