Broadband 101 Quick Guide For PA Public Libraries

This Broadband 101 Quick Guide is designed to help your library plan for Internet connectivity decisions.

Internet use is growing rapidly. It is **mission-critical** that public libraries, as community anchor institutions, offer quality access to the Internet on up-to-date public access computers and via Wi-Fi so that customers can access Internet on mobile devices like laptops, tablets, and phones.

Reliable, high-speed Internet connectivity at your public library ensures:
- Equity of access to education, information, and recreational resources for your community.
- Access to shared resources, inter-library loans, online catalogs and software, reference/information sources, training opportunities, marketing tools, email, advanced communication tools, government forms, and more.
- Your library can meet community needs for connectivity in case of an emergency.

Choosing an Internet Connection Service for your Library is a Strategic Decision

The library's connectivity needs change over time. Consider all the factors involved as you review and plan for Internet connectivity for your library. *Make the best decision for your community.*

Answer and discuss these questions about your Internet service:

1. **Who** is your Internet service provider? _____
    - Do you work with other libraries or schools to contract for Internet service?
    - What are the options for Internet Service Providers / connection types in your area?
      Try this tool: http://www.bakerbb.com/pabroadbandmapping/
    - Do you have more than one line or type of Internet connection? If so, how do you use it?

2. Do you have a **written contract** with a set price, speed, and an end-date?   Yes   /   No
    What are the terms in your contract?
    - When does the contract end?   _____
    - What type of Internet service is offered?   Fiber / Cable / DSL / Other: _____
    - What is your download speed? _____ (Typically expressed in Mbps or Gbps)
    - What is your upload speed? _____ (Typically expressed in Mbps or Gbps)
    - Is it a business class account or a residential class connection?
    - Are there restrictions, such as limits to the amount of data that can be used? Yes   /   No
    - Is the service reliable? Can the public and community organizations rely on the library to quickly regain a connection in an emergency?
    - Understand termination clauses, outage remediation, support and performance expectations.

3. **How many** concurrent users can connect your Internet and download a large file at the same time, including those on Wi-Fi, and have a positive experience? _____

4. Do staff and/or customers often request faster or more reliable Internet?   Yes   /   No

5. **What** cost do you pay each month before discounts? _$_____
    - What other services, hardware, or support does the Internet service provider offer?
    - Do you take full advantage of e-rate discounts for Internet service?   Yes   /   No

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Does your Library Receive a FREE or Donated connection?

Consider the costs of "free". Your library accepts donations of books, but you don't solely rely on donations to build your collection. Donated connections are often the last to receive service and do not always have dedicated/contracted speeds.

How is Internet speed measured? Speed is measured by the number of bits of data that move over the connection. Internet providers advertise or state in a contract the maximum bandwidth speed you can expect. 1 Megabit (Mbps) = 1 million bits per second. 1 Gigabit (Gbps) = 1 billion bits per second.

How fast is fast enough? Each library should plan to meet their community needs.
A guideline seen in the Edge Benchmarks is: "Each public Internet user is allocated at least 500Kbps upload and 1Mbps download of network bandwidth capacity."
Libraries connecting at less than 10Mbps download/2Mbps upload are some of the slowest and are recommended to plan for upgrades.

Try this exercise at home: The FCC reports that 4 out of 5 people don't know the speed of their home Internet connection. Use a speed test (instructions at www.speedtest.net) or call your own Internet Service Provider to find out the speed you have.
Consider the number of users needing bandwidth all at the same time when they visit your library.
   How much faster and more reliable should the library's Internet be than your home connection?

Measure how much Internet your library uses
One way to help you understand and monitor the speed you need is to **measure** your current use.
- **Can you measure bandwidth utilization?** What is your average use per day / per week / per month? How many times in a week do you reach your maximum bandwidth available?
- **Can you measure how much data you use?** How much data does your library download and upload each month? Data is typically measured in bytes.

The table below provides information about common types of Internet connections:

Connection Medium	Service	Comments	Speed
Copper (twisted pair)	T1 (private line)	Dedicated line. High reliability. Low speed.	1.5Mbps
	DSL	Typically has slower upload speed.	256Kbps – 30Mbps
Cable (coaxial cable)	Cable modem	Relative reliability: When many users in your neighborhood are on, your connection slows. Business class connections tend to be more reliable than residential connections.	256Kbps – 105Mbps (DOCSIS 3 can be faster)
Wireless (Intermediate)	Cellular	Depends on your area. Typically charged by data consumed.	64Kbps – 500Mbps
	Wi-Fi	Speed depends on the connection. Many libraries provide this for customers who bring laptops, tablets, or smartphone devices.	54Mbps – 400Mbps
	Satellite	High latency.	1Mbps – 1Gbps
	Microwave	With point to point set up can be very reliable, used in emergency networks	1Mbps – 37Mbps
Fiber (High Reliability)	Private Line	Best reliability. Highest cost. Capable of fastest speeds.	1Mbps – 1Tbps Terabits (Trillions)

Summary: Review your existing Internet connection to ensure the connectivity is enough to serve your community. Make informed choices about Internet service for staff and library customers.