

# Broadband Technology in British Columbia

With regards to broadband technologies, there is no standard solution. The "right" technology and service option to extend connectivity vary depending on the community. Each type of technology provides different levels of service to the consumer, has various types of costs to deploy and operate, and is suitable for types of environments. The following tables serve as a guide to understanding the different technologies used to deliver services to homes and businesses in British Columbia.

## Wired Technology

Wired technology delivers services over some type of wire connected to your home or office.

Technology	Description	Benefits	Considerations
<b>Digital Subscriber Line (DSL)</b>	Service provided over copper telephone lines. Developed by phone companies to replace dial-up. Unlike dial-up, both internet service and phone calls can occur at the same time.	<ul style="list-style-type: none"> <li>• Use existing and ubiquitous infrastructure.</li> <li>• Speed: up to 100 Mbps per user with latest technology</li> <li>• Each user has a dedicated link, and the speed won't be impacted by other users in the neighborhood</li> </ul>	<ul style="list-style-type: none"> <li>• Requires access to copper telephone lines</li> <li>• Speed affected by distance to DSL equipment: limited to 50 Mbps within 500 meters of DSL equipment</li> <li>• Unlikely to provide reliable services for large businesses</li> </ul>
<b>Coaxial Cable</b>	Service provided using cable to the building. Cable internet service uses the same coaxial cable as cable television.	<ul style="list-style-type: none"> <li>• Can provide ultra broadband speeds if engineered correctly</li> <li>• Fastest of the legacy wired technology: up to 160 Mbps, but performance can be impacted by concurrent users</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive initial installations</li> <li>• Speed can suffer from high numbers of concurrent users and may vary at different times of the day</li> <li>• Upload speeds never match download speeds</li> </ul>
<b>Fibre</b>	Service provided over fibre optic cables. It is the fastest of all connection types, capable of providing broadband speeds greater than 1 Gbps.	<ul style="list-style-type: none"> <li>• Allow symmetrical upload and download speeds</li> <li>• Future-proof: fibre has enough capacity to meet foreseeable future demands</li> <li>• Fibre lasts a long time: estimated lifespan of 40-50 years</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive to deploy at first. Once capital costs are paid, fibre is relatively cheap to install, maintain, and upgrade</li> <li>• Speeds of fibre connections are limited by the electronics attached to the end of the fibre optic cables, not by the network itself</li> </ul>

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## Wireless Technology

Wireless technology uses radio waves and does not require a wire running to your home or office.

Technology	Description	Benefits	Considerations
<b>Fixed Wireless</b>	<p>Fixed wireless is a type of connection that is delivered via radio waves from towers to a fixed location.</p> <p>The receiving antenna is mounted on the exterior of the building with wired connection to the modem located in the house or office.</p>	<ul style="list-style-type: none"> <li>• Cost-effective way to provide coverage to remote and sparsely populated areas</li> <li>• Speed: up to 100 Mbps download and upload in total (e.g. 80 Mbps download/ 20 Mbps upload)</li> <li>• Less intrusive to deploy: it doesn't require wired connections with each premise</li> </ul>	<ul style="list-style-type: none"> <li>• Typically not as fast as wired connections</li> <li>• Performance affected by numbers of users on tower</li> <li>• For most spectrum bands, receiver must be within line-of-sight of the tower to connect</li> </ul>
<b>Mobile Wireless</b>	<p>Connections provided from radios located on towers to mobile devices (e.g. smartphones or mobile broadband hubs), using wireless spectrum.</p>	<ul style="list-style-type: none"> <li>• Coverage in major populated areas and major roads.</li> <li>• Speed: LTE advanced technologies can achieve speeds up to 225 Mbps</li> </ul>	<ul style="list-style-type: none"> <li>• Generally high data costs impact usability</li> <li>• Requires the acquisition and use of specific radiospectrum frequencies that are governed by the federal government, as well as a supporting ecosystem of devices (handsets and/or mobile distribution hubs)</li> </ul>
<b>Satellite</b>	<p>Service provided through satellites orbiting the earth that transmit signals to a small satellite dish located on the house or business.</p>	<ul style="list-style-type: none"> <li>• Region-wide coverage</li> <li>• Most cost-effective way to provide coverage to low-density areas</li> </ul>	<ul style="list-style-type: none"> <li>• Latency (delays)</li> <li>• Data caps</li> <li>• Service slows down under load</li> <li>• Costly and long time to deploy new satellites</li> </ul>
<b>Low Earth Orbit (LEO) Satellite</b>	<p>LEO satellites orbit closer to earth in multiple orbital planes. Most communications satellites are located above 1,000 km. LEOs are typically located below that line.</p> <p>They are also smaller and cheaper to produce than traditional satellite technology,</p>	<ul style="list-style-type: none"> <li>• Limit delays inherent to transmission and associated latency that characterize traditional satellites which are further from Earth's surface</li> <li>• Effective method of serving areas with low-population density or hard to reach</li> </ul>	<ul style="list-style-type: none"> <li>• Few service providers authorized to provide services to date</li> <li>• Connection to single users rather than community-wide coverage</li> </ul>