DSL and Cable

As per incumbent telephone company obligations, “twisted pair copper connections” were deployed by TELUS to virtually all residential and business premises in rural Alberta. However, the physical limitations of twisted pair copper loops are such that, in rural areas, only dial-up internet connection speeds are possible over this infrastructure.

Digital subscriber line (DSL) refers to a technology that can be used to transmit digital data over telephone lines. The DSL connections available in urban regions are not widely available to rural customers because DSL performance degrades as the distance from the digital subscriber line access multiplexer (DSLAM) increases, making connectivity in remote sites utilizing copper difficult and expensive. For example, 5 Mbps download speeds on ADSL and ADSL2/2+ technologies are only possible at line distances of less than 4 km from the DSLAM exchange point[92].

Advanced DSL technologies are still being developed, although it’s not known how much it could be used in Alberta, as most landline solutions appear to be moving to fibre. G.fast is a DSL technology that can offer speeds in excess of 100 Mbps. It has been deployed in parts of the United States and Europe, but there are no known deployments in Canada. Emerging DSL technologies like G.mgfast (XG-fast/NG-fast) and Terabit DSL (Waveguide over Copper) promise speeds of 5 Gbps, all the way up to 1,000 Gbps (1 Tbps)[93].

Shaw is a major provider of wireline coaxial cable connections in rural parts of the province. Broadband internet access over coaxial cables leverages the data transmitted over a cable service interface specification (DOCSIS) standard. This requires two components: a cable modem termination system, usually located at the head-end of the network, and an end-user cable modem device located at the customer’s premise. Shaw’s top residential service offering of 1 Gbps download is achieved using a FTTN architecture made up of fibre to the nodes in its service communities, and copper cable to each home[94]. Shaw’s Gig service is available wherever Shaw is offered in Alberta, meaning that all of its middle-mile services must be fibre.

References

[92]Increase Broadband Speed. Chart of ADSL and ADSL2+ Speed Versus Distance. 25 October 2019. Accessed 03 March 2021.

[93]Wikipedia. G.fast - Wikipedia. 19 February 2021. Accessed 03 March 2021.

[94]Shaw. Lightning Fast Fibre+ Internet (shaw.ca). Accessed 21 February 2021.