

Understanding Internet Speed Discrepancies

A Summary of Findings

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Ministry of
Citizens' Services

➤ Minister's Message

From the Honourable Lisa Beare — Minister of Citizens' Services



Hon. Lisa Beare

BRITISH COLUMBIANS NEED access to dependable, high-speed internet to be able to work and access the vital services they count on. This is particularly important in rural and Indigenous communities where reliable connectivity can still be a challenge.

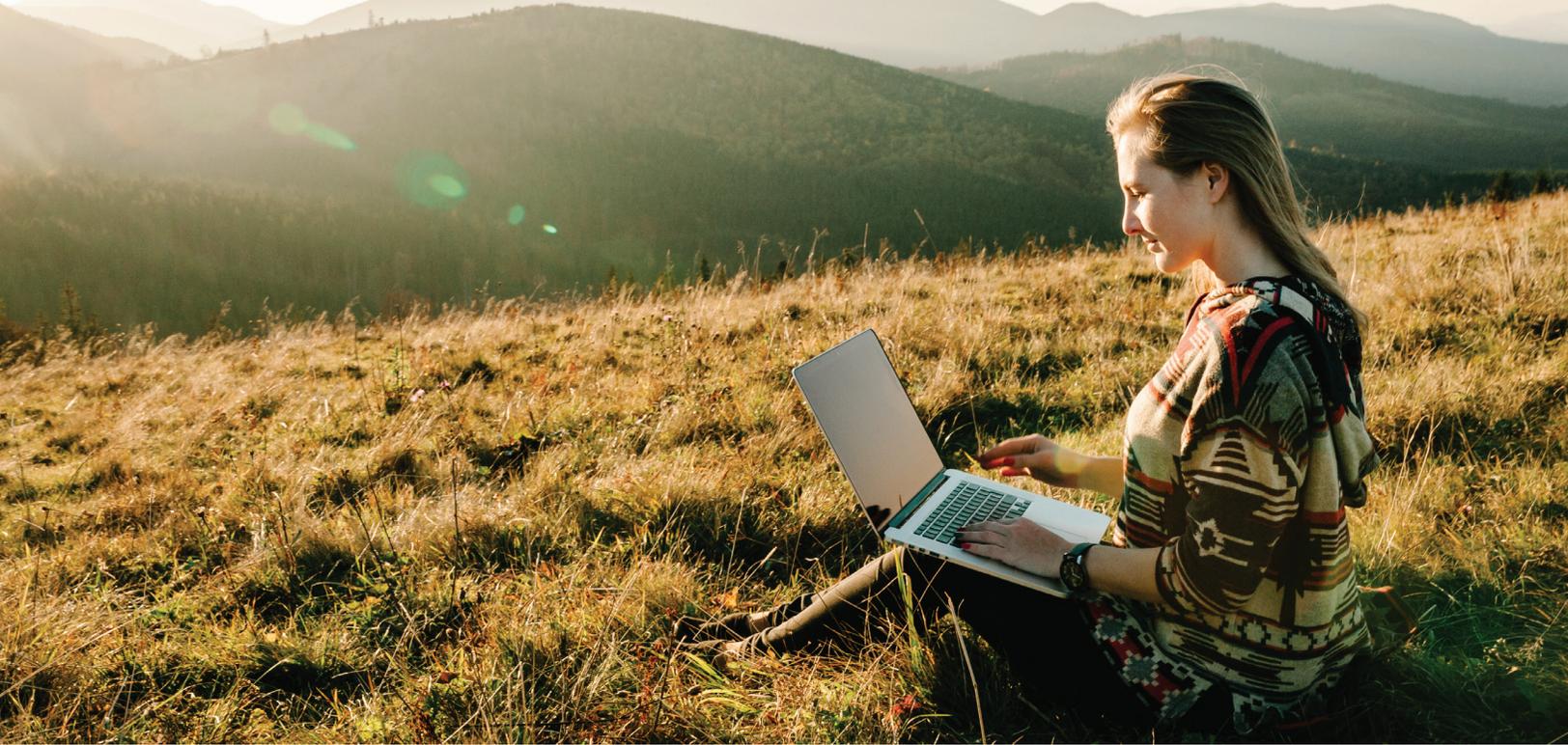
In 2021 we heard from communities that they were not receiving the internet speeds reported as being available on the federal National Broadband Internet Service Availability Map. We responded to these concerns by undertaking research into the issue in partnership with the Union of British Columbia Municipalities (UBCM) and Northern Development Initiative Trust. I am pleased to present a summary of the research findings here.

A special note of recognition goes to local government and Indigenous partners who took time to participate in measuring speeds in what was a busy summer and fall. Thank you. This research is a good first step to understanding some of the factors associated with reduced internet speed and the findings will inform some immediate actions from my Ministry to address this issue in our communities.

Honourable Lisa Beare
Minister of Citizens' Services

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➤ Introduction

THIS REPORT SUMMARIZES the findings of a study that aims to better understand the possible discrepancies of internet speeds shown on the [National Broadband Internet Service Availability Map](#) (the map)* and the experience of communities in rural and remote British Columbia.

The study by TANEx Engineering Corporation was commissioned in response to concerns raised by a number of local governments in rural and remote communities that internet speeds reported on the map appeared not to reflect actual speeds experienced in some communities or areas surrounding the communities. Speeds outlined on the map are one factor (among others) that determine eligibility for federal funding.

TANEx was asked to examine the nature and potential cause of possible discrepancies with the goal to better understand the issue and ultimately provide a compass for actions. The full technical report [can be found here](#).

DEFINITION

*** National Broadband Internet Service Availability Map:** Describes availability of retail broadband internet services and wholesale backbone infrastructure in Canada. The data plotted on the map is collected in partnership between the Canadian Radio-television and Telecommunications Commission (CRTC) and the federal government's Innovation,

Science, and Economic Development (ISED) through annual surveys and consultation with key stakeholders, including internet service providers, federal partners, industry associations, and provinces.

This data is collected and used for the statistical measure of broadband Internet service availability in Canada as well as the administration of various broadband related contribution programs.

➤ Context

IN THE WAY that building roads and highways became essential to economic prosperity in the 19th century, access to reliable high-speed internet and cellular connectivity has become inexplicably tied to British Columbia's health, education, public safety, prosperity and social well-being in the 21st century.

While most British Columbians live in urban centres where internet coverage is well established, many remote, rural, and less densely populated areas and Indigenous communities that are major contributors to our economy and food production, do not have access to basic high-speed internet to, for example, run a business or have a video call. This creates a digital divide between those who have reasonable access and those who do not. Local governments and Indigenous leaders are understandably keen to close that divide, and both the federal and B.C. governments are committed to programs and funding to improve connectivity in those areas.

What minimum internet speed should consumers and businesses be able to access? The Canadian Radio-television and Telecommunications Commission (CRTC) through regulation aims to facilitate affordable and high-quality telecommunication service for all Canadians. It has established a Universal Service Objective* that says service subscribers should be able to access speeds of at least 50 megabits per second (Mbps) download and 10 Mbps upload*, which throughout this summary will be referred to as 50/10.

To track how many parts of Canada have reached that Universal Service Objective, the federal government's Innovation, Science, and Economic Development (ISED) documents reported internet speeds on the map which also informs funding eligibility for government connectivity programs.

DEFINITION

***Universal Service Objective:**

Canadians, in urban areas as well as in rural and remote areas, have access to voice services and broadband Internet access services, on both fixed and mobile wireless networks. To measure the successful achievement of this objective, the CRTC has established several criteria, including:

- Canadian residential and business fixed broadband Internet access service subscribers should be able to access speeds of at least 50 megabits per second (Mbps) download and 10

Mbps upload, and to subscribe to a service offering with an unlimited data allowance; and

- The latest generally deployed mobile wireless technology (currently LTE) should be available not only in Canadian homes and businesses, but on as many major transportation roads as possible in Canada.

***Mbps:** Stands for Megabits per second, or millions of bits per second. This is a measurement of how much data can be transmitted through a connection.



Mapping the level of internet service across Canada — right down to details in small rural communities and clusters of homes — is understandably a significant task, and as service providers* offer new services the map needs to be updated periodically. When it was updated in January 2021, community leaders raised concerns, believing there may be discrepancies in some areas indicating 50/10 service which may warrant an examination.

With governments at all levels aspiring to the goal of affordable and high-quality telecommunications for citizens, the Province, Union of BC Municipalities and Northern Development Initiative Trust collaborated on the independent study to understand the nature of this concern including its magnitude and factors contributing to potential discrepancies.

DEFINITION

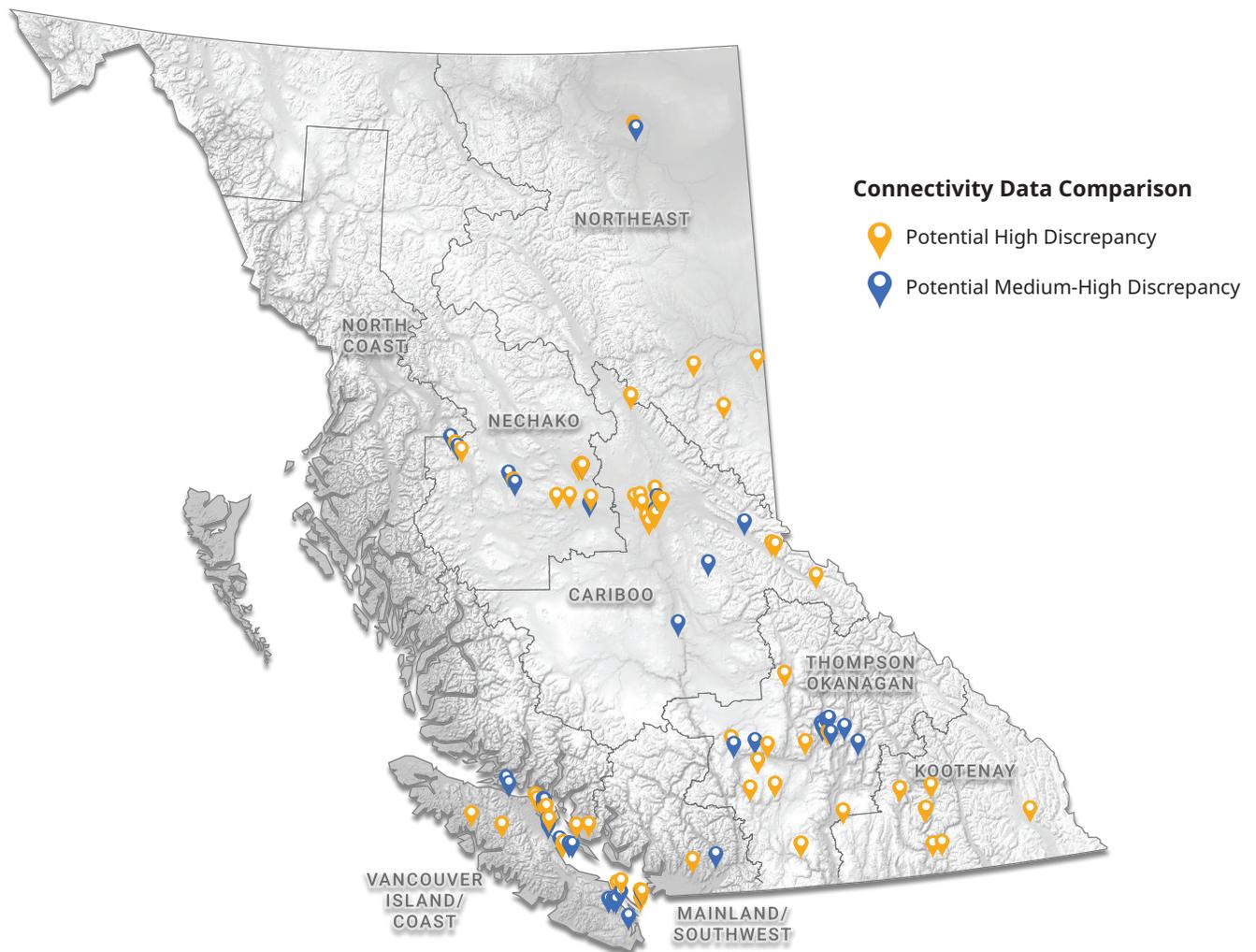
***Service Providers:** A generic term that refers to an organization that delivers telecommunication services, including internet services, to its customers.

➤ What the Study Found

THE STUDY LOOKED at 940 rural locales — communities and/or clusters of homes — that were marked on the map as having 50/10 service. These represent different community types such as incorporated municipalities, non-incorporated rural locales and Indigenous communities.

The study found that discrepancies between service speeds reflected on the map, and speeds experienced at the local level may exist in some locales. In particular, there was medium to high evidence of possible discrepancies in 106 locales.

The study found that the reasons for any discrepancies are complex, multifaceted and likely differ from place to place. In some locations, further analysis will be required to confirm the causes and determine an effective solution or remediation path for the community or locale.





➤ Factors Influencing Internet Speed

THERE ARE A wide range of factors that contribute to internet speeds experienced, and differences in reported internet speeds.

The factors fall into three general categories:

- Technical or network challenges, including the quality of the network;
- Consumer preference and/or whether internet service in their home or business is optimized; and
- Inconsistent ways of measuring internet speeds.

Technical or network challenges

Technology is a powerful enabler and ever changing. Not all technologies are created equal; changes in needs happen over time and the capability of service provider components or technology in the consumer's premises can impact performance. Its capacity to perform in optimal ways depends on ideal conditions which may change for a range of reasons and might cause discrepancies in speed.

Conditions affecting the ability for technology to perform optimally include:

- Operating factors like over subscription, network congestion, level of maintenance, and type and condition of the cable;
- Environmental factors like topography and/or foliage that block line of sight access to wireless; and
- Business/cost factors might include the lack of a business case for a service provider to provide the same service everywhere in a locale. For example homes in a downtown core may receive 50/10, but some outlying homes in the locale, where there is less of a business case for network expansion, do not.

Consumer preference and/or whether internet service in the home or business is optimized

The consumer internet speed experience can be affected by factors beyond the control of service providers and this reduction of speed will not be reflected on the map. These range and can include:

- Number of users accessing the internet at the same time on a consumer's network;
- Consumer purchasing choices such as the internet plan purchased and service provider;
- Compatibility with network and the number and age of devices such as computers, laptops, TVs, telephones, personal tablets and mobile devices, gaming systems, security monitoring systems and others; and
- Issues related to the wireless technology of WiFi such as quality, distances signals need to span, and construction materials used in buildings where it is being used.

Some of the choices around the types of technology used — perhaps made without full appreciation or knowledge of their impact on internet speed — can be driven by consumer preferences, brand loyalty, cost, and the desire to bundle services. The study noted, however, that consumer-related factors would not explain discrepancies found throughout a community or larger area.

While the study did not make suggestions for consumers on ways to evaluate their internet service, things to consider when wanting to improve internet speeds are:

- | | |
|---|--|
|  <p>OPTION
01
Consider if your router is outdated, or too far away from your devices.</p> |  <p>OPTION
04
Reboot your modem and router.</p> |
|  <p>OPTION
02
Gather factual information on whether upgrading service could improve service.</p> |  <p>OPTION
05
Be informed about the number of providers offering service in an area.</p> |
|  <p>OPTION
03
Review the details of the service plan purchased including speed to be delivered. Terms like "... up to 50 Mbps" may be used in the service agreement meaning the provider does not guarantee that level of service.</p> |  <p>OPTION
06
Conduct a speed test available through the Canadian Internet Registration Authority (CIRA) https://www.cira.ca. Conduct the test at different times of the day because speeds can be slower depending on the number of people using it at any one time.</p> |



Inconsistent ways that internet speeds are measured and reported

Service providers, consumers and governments talk about internet speed in different ways. Furthermore, there is an inconsistent approach to 50/10 measurement and reporting. How, when, and where internet speeds are measured, and who is doing the measuring, varies widely, contributing to discrepancies in some areas. Service providers report measurements taken from sections in the network they own to confirm 50/10. Yet there may be components along the chain — and outside of the scope of the internet service provider — that affect the consumer experience. The provider's measurement may be accurate but does not reflect the metric that matters most to the consumer: how fast the internet functions using one of their devices.

Specifically the study identified that:

- Definitions intended to guide service providers in their internet speed reporting that help form the map are inconsistent;
- The map relies on reports that are not validated by a third party;
- Map updates may reflect new services before completion of a project. For example, a service provider might be in the midst of a new fibre* project for a community and reports 50/10 Mbps, yet that speed is not available to the consumer at the time of reporting and map update;
- There is no consistent agreement of where along the internet supply chain that 50/10 should be measured; and
- Service speeds alone do not reflect the experience of the end-user, and thus there will, understandably, be dissonance between what the map indicates, and what end-users experience.



➤ In Conclusion

SINCE 2017, THE BC government has invested \$190 million into expanding connectivity (internet and cellular), with almost \$90 million committed to new connectivity projects throughout B.C. since October 2020 as part of Stronger BC.

The internet speed experience by consumers in B.C. is among the best in Canada, yet similar to other provinces there is a service gap between urban and rural areas where work still needs to be done.

A plan to ensure that all communities are connected with the minimum standard speed of 50/10 will be more complex than ever, and have to address all the factors affecting speed raised in the study, and ultimately require a collective approach spanning all levels government, service providers and, in some instances, the consumer.

