



Innovation, Science and
Economic Development Canada

Innovation, Sciences et
Développement économique Canada

Canada

Broadband Overview

Connectivity critical foundation for digital economy

What it is

- Broadband and mobile networks are the enabling foundations of the digital economy
- These are the wired and wireless networks that connect millions of Canadian devices together and to the Internet

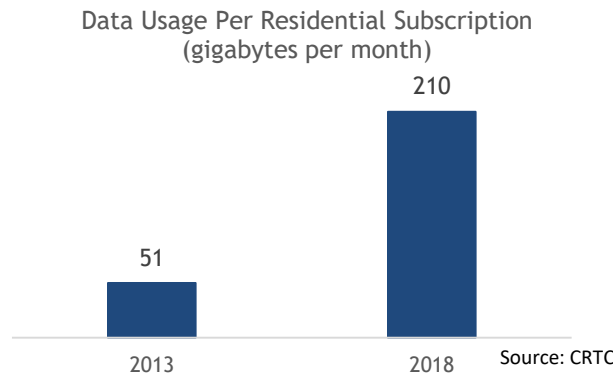
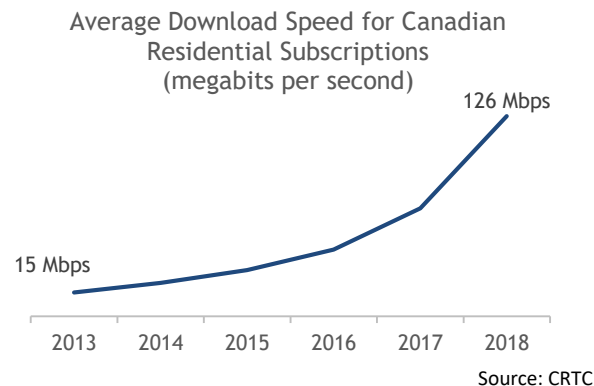
Why it's important

- Integrated into virtually all facets of daily life - essential for communications, commerce, employment, education, healthcare, research, precision agriculture, entertainment, and more
- The private sector invests in network infrastructure where it is economic to do so. This has served Canada well, but areas where there is a lack of business case are underserved
- Millions of Canadians lack access to critical services needed for the 21st century

Need to use all available tools given the scale of the challenge

Services are evolving with technology and user needs

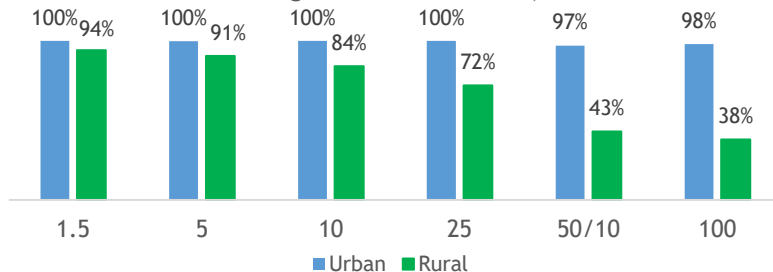
- Demand for faster speeds and greater data usage is continually growing, with substantial increases in recent years
 - Driven by more sophisticated applications, online services, and number of devices, e.g., Cisco forecasts there will be 11 connected devices per capita by 2021 in Canada
- What was considered basic Internet has also evolved:
 - 1.5 Mbps: Good for email and basic web applications
 - 5 Mbps: Streaming video and more intermediate media uses
 - 50 Mbps: Speed identified by the government and CRTC to take advantage of cloud-based software applications, multiple government services (e.g., business support and telehealth), online learning, high-definition streaming, and support multiple simultaneous users
- Similarly, mobile needs have also grown with smartphones, apps, and other uses



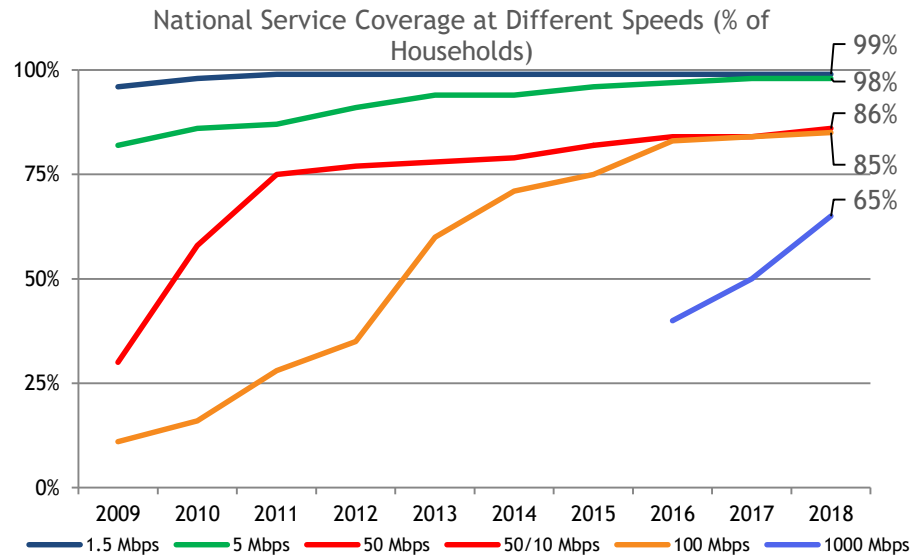
Broadband coverage is strong nationally, but rural gap is growing

- The private sector invests heavily where it is economic to do so, but areas with a lack of business case are underserved
- Nationally, virtually all Canadians have access to lower speeds
- Some further progress outside urban areas but in general there is a pronounced divide

Fixed Broadband Availability, by speed in Mbps, (not including mobile or satellite) 2018



Source: CRTC



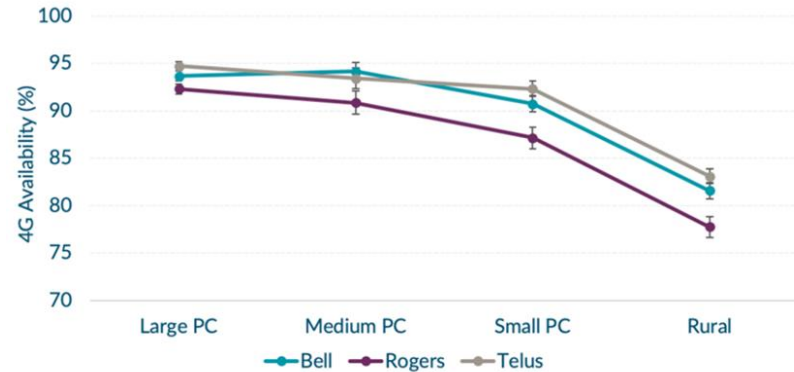
Source: CRTC

Nearly 5 million Canadians lack access to high-speed Internet at benchmark speeds

Mobile wireless access is an issue in rural areas too

- Mobile wireless coverage for smartphones and other devices is good, with successive generations of mobile wireless coverage built out to approximately 99 percent of homes
- However, outdoor coverage can have substantial gaps, in particular along highways and major roads, approximately 20,000 km of which lack coverage
- Mobile gaps can inhibit the adoption of new technologies and pose a significant public safety risk

4G Mobile Network Coverage by Population Centre (PC), 2019



Source: OpenSignal

Internet to homes/businesses and mobile wireless service are generally not substitutes - Canadians need access to both services

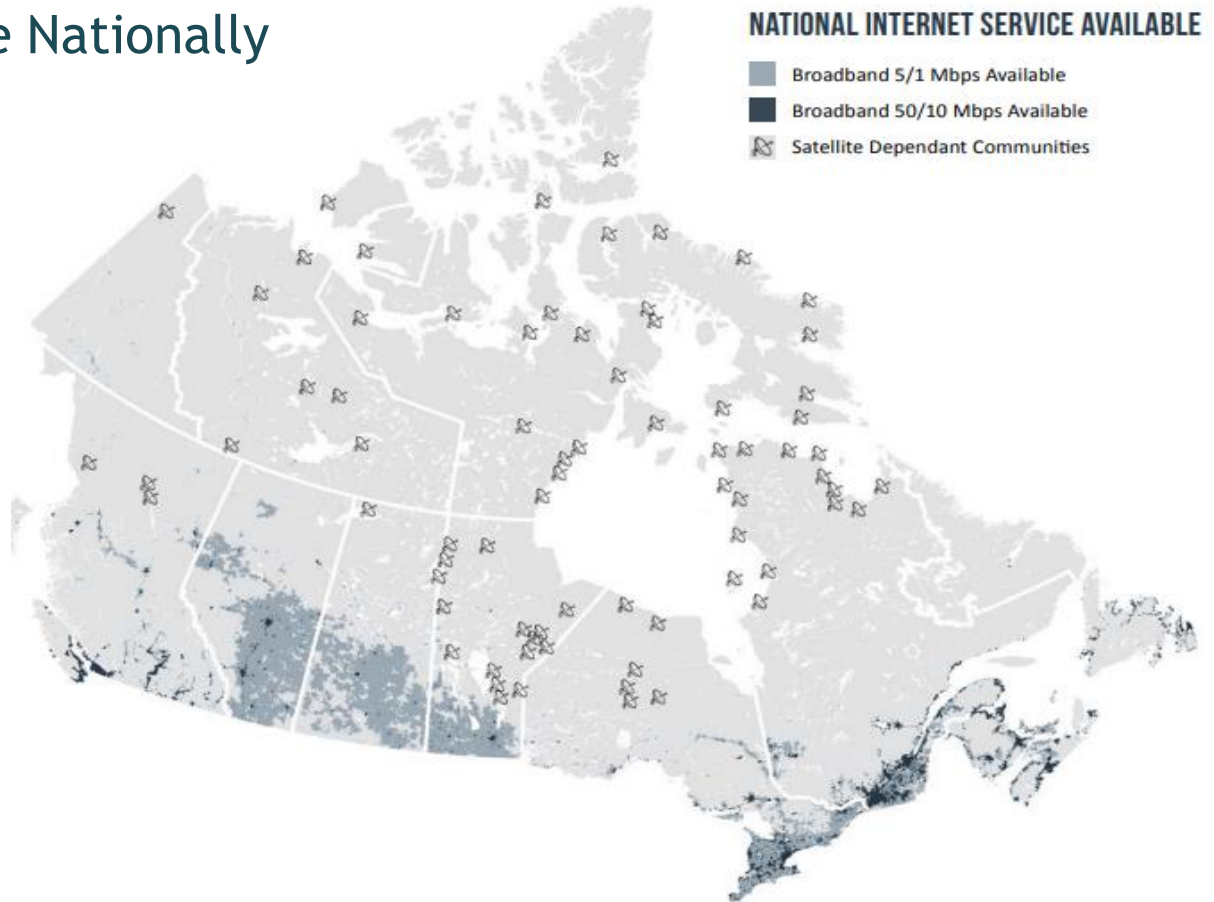
Rural and remote context

- Difficult physical environment for business
 - Remoteness - especially the North
 - Low density in regions across the provinces
 - Terrain, e.g., interior British Columbia
- Capital and operating costs often higher
- Projects can require long lead time to develop
- Coordination and broad set of interests
- Variable local capacity
- Over 300 Internet service providers in these areas
 - Well-known large operators
 - Smaller to mid-size private companies specializing in rural areas or serving particular regions
 - Indigenous or municipally-owned providers



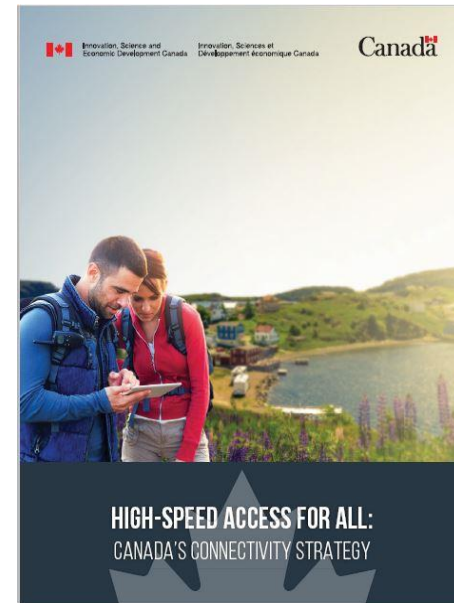
Broadband Coverage Nationally

- There are underserved regions in every province and territory
- The total cost to expand universal high-speed access is about \$8 billion (all levels of government and private sector)



Policy Frame and Funding

- Canada's Connectivity Strategy (2019), a roadmap for universal access with three pillars:
 1. **High-Speed Access for All** - Set targets of 50/10 Mbps (download/upload) and expanded mobile wireless; to reach 95% by 2026, and 100% by 2030. Other important considerations include affordability, reliability, and scalability (ability to upgrade for faster speeds).
 2. **Investing for Impact** - Target funding to where private sector is not investing and leverage other tools like access to spectrum and existing infrastructure.
 3. **Partnering for Progress** - Coordinate new funding with existing programs and new tools such as better data and an online portal.
- Budget 2019 announced \$1.7 billion for new initiatives:
 - \$85 million top-up for Connect to Innovate
 - \$1 billion for a new Universal Broadband Fund
 - \$600 million to secure low-Earth orbit satellite capacity
 - The above to be delivered in concert with other federal programs: CRTC, INFC, and announced Canada Infrastructure Bank to seek to invest \$1B for broadband



Funding Landscape

- A range of federal programs need to be leveraged to meet the Government's goals

Program	Description
ISED <ul style="list-style-type: none">• Connect to Innovate (CTI)• Low Earth Orbit Satellite (LEO)• Universal Broadband Fund (UBF)	<ul style="list-style-type: none">• <u>CTI</u>: \$585M - 200+ projects, 975 communities being connected• <u>LEO</u>: \$600M - MOU with Telesat; satellite for the North• <u>UBF</u>: \$1B - design underway; large, flexible fund to sequence with CRTC
CRTC Broadband Fund	<ul style="list-style-type: none">• \$750M (from a levy on industry); broadband and mobile eligible• National call closes Mar. 27
INFC Rural and Northern Stream	<ul style="list-style-type: none">• Broadband eligible, competes with other PT priorities• In 2019, \$340M for broadband projects• Rolling intake; off-cycle option when other intakes are closed
Canada Infrastructure Bank	<ul style="list-style-type: none">• Repayable financing on favourable terms; crowding in private investment• Targets nearly viable, large (~\$40M+) projects in underserved areas• 1 project identified for corporate plan inclusion, discussions ongoing with other proponents
ISC - First Nations Infrastructure Fund	<ul style="list-style-type: none">• First Nations focus; broadband competes with other priorities• Since 2016, \$75M for 20 connectivity projects
Accelerated Investment Incentive	<ul style="list-style-type: none">• Capital asset tax incentive available since Fall 2018

PT Landscape

- PTs can be strong partners, though available funding and stage of program development varies substantially across jurisdictions.
 - British Columbia (\$50M), Ontario (\$315M), Quebec (\$305M), Nova Scotia (\$193M), and Prince Edward Island (\$10M) have active funding programs
- Collaboration on passive infrastructure (i.e. existing underground conduits, utility poles, wireless towers) can reduce costs and accelerate deployment.
 - Jurisdiction is split across multiple levels of government and domains. Efficient access can have a substantial impact.

Near Term Agenda

- Continue to implement current funding commitments (i.e. CIB projects, UBF development)
- Work to deepen coordination across federal and other broadband funding partners
- Develop common federal guidance to steer applicants to the best funding options
- Continue to engage with stakeholders on UBF design and how to best integrate with CIB financing and investment
- Overall, using a combination of the available tools will help ensure maximum impact

