

Canadian Wireless Telecommunications Association
Submission to the National Digital and Data Consultation

September 28, 2018

EXECUTIVE SUMMARY

The world is undergoing a digital and data transformation. Digital technologies and the innovative use of data are, and will increasingly be, at the forefront of how Canadians interact with one another, businesses increase productivity, and government delivers services. And as Canadians embrace digital technologies and the use of data, they will increasingly do so using wireless communications.

Today, over 31.5 million Canadians subscribe to wireless services. Data traffic on Canada's mobile wireless networks is expected to grow five-fold from 2016-2021, with mobile data traffic in 2021 is expected to be equivalent to 3x the volume of the entire Canadian internet in 2005.

Canadians heavy adoption and use of wireless technologies, and with it the adoption of digital technologies and growing consumption of data, is due in large part to the fact that Canadians enjoy some of the best performing wireless networks in the world. Additionally, Canada benefits from having a proven legal privacy framework that strikes a balance between the protection of privacy and the legitimate and innovative uses of data to improve Canadians' quality of life, spur economic growth, and create jobs.

The importance of Canada's wireless networks to Canada's embrace of the digital and data-driven economy will only increase with the global introduction of the next generation of wireless networks, best known as 5G networks. 5G is revolutionary and will transform the way in which digital technologies and data can be used to transform our lives. Estimates show that the adoption of 5G networks will deliver \$40B annual GDP uplift by 2026 to the Canadian economy and contribute close to 250,000 permanent jobs in the same time period.

However, the deployment of 5G networks faces significant challenges involving the allocation of radio frequencies, or spectrum, the need to modernize the rules and fee structures concerning the deployment of wireless infrastructure, and need for massive private sector investment. To address these barriers, we encourage the Government of Canada to:

1. Ensure the timely release of more exclusively licensed low, mid, and high-band spectrum for wireless services;
2. Modernize the process for the deployment of wireless infrastructure; and
3. Establish a regulatory environment that encourages private sector investment in Canada's wireless network infrastructure, including:
 - a. Continuing to recognize facilities-based competition as the best way to ensure investment in Canada's wireless infrastructure;
 - b. Accelerate capital cost allowance for telecommunications equipment; and
 - c. Increase R&D tax credits to sustain capital investments.

To maintain trust in Canada's digital and data economy CWTA supports the current Canadian legal framework for balancing the protection of privacy with legitimate and responsible use of data to help improve Canadians' quality of life, spur economic growth, and create jobs.

INTRODUCTION

The Canadian Wireless Telecommunications Association (CWTA) is pleased to provide its comments to the Government of Canada's National Digital and Data Consultations. CWTA is the authority on wireless issues, developments and trends in Canada. Its membership is comprised of companies that provide services and products across the wireless industry, including wireless carriers and manufacturers of wireless equipment, who combine to deliver Canada's world-class wireless services, one of the key pillars on which Canada's digital and data-driven economy is built.

As set out in the Government of Canada's consultation discussion paper ("Discussion Paper"), the world is undergoing a digital and data-driven transformation which must be embraced by Canadians. While the discussion paper raises many important questions regarding how best to position Canada to lead and succeed in this new transformative era, our submission focuses on the following two questions from the Discussion Paper:

- **Unleashing Innovation:** How can we further encourage the next generation of digital infrastructure, including rural broadband, 5G and the Internet of Things?
- **Trust and Privacy:** What is the right balance between protecting privacy interests and supporting innovation? How can we best ensure the privacy and willing consent of Canadians in the digital and data-driven economy?

1. UNLEASHING INNOVATION: THE IMPORTANCE OF CANADA'S WIRELESS NETWORKS

As outlined in the Discussion Paper, realizing the increased productivity, economic growth and international competitiveness delivered by the digital and data revolution requires a digital communications infrastructure that meets the needs of innovative digital-enabled and data-driven businesses, academic research, and government services. An infrastructure that is key to delivering this future for Canadians is Canada's wireless network infrastructure.

Since its launch over thirty years ago, Canada's wireless industry has been transforming the way Canadians interact with the world and has helped pave the way for Canada's digital economy. Whether to stay in touch with family and friends, consume content or services, or work while on the move, wireless services have become indispensable for the over 31.5 million Canadian subscribers who for wireless services.¹

As Canada endeavors to transform into a data-driven, digital economy, it is evident that Canada's wireless networks will play a prominent role in such efforts. We are increasingly becoming a wireless society, with Canadians consuming more wireless data than ever, and estimates predicting continued data consumption growth. According to the Cisco VNI Forecast, 2016-2021:²

- Canada's mobile data traffic grew 45% in 2016;
- In Canada, mobile data traffic will grow 5-fold from 2016 to 2021, a compound annual growth rate of 38%;

¹ CRTC and Statistics Canada, Joint Quarterly Survey Q4 2017

² Cisco, VNI Mobile Forecast Highlights, 2016-2021.

- Canadian mobile data traffic will grow 2 times faster than Canadian fixed IP traffic from 2016 to 2021; and
- In Canada, mobile data traffic in 2021 will be equivalent to 3x the volume of the entire Canadian internet in 2005.

To keep up with Canadians' increasing demand for wireless services, Canada's wireless networks have been constantly evolving. Since the launch of wireless services in Canada in 1985, Canada's facilities-based wireless carriers – the carriers that invest in the development of Canada's wireless networks – have been building and re-building their networks to provide broader coverage and to incorporate new wireless standards that improve network performance and provide Canadians with more robust signal strengths, speeds and functionality.

These continuous efforts have resulted in Canada having some of the world's best wireless networks with Canadians enjoying some of the fastest average mobile download speeds found anywhere.³ In addition, despite Canada having a relatively small population spread over the world's second largest country land mass, Canada's LTE wireless networks⁴ are available to 98.5% of Canadians.

5G Networks: Enabling Canada's Digital and Data Transformation

In conjunction with the digital and data transformation outlined in the Discussion Paper, the wireless industry is at the dawn of its own transformation: the introduction of the next generation of wireless infrastructure, known as fifth-generation, or 5G, wireless. 5G is revolutionary and will further transform the way Canadians interact with the world. It will not only enhance current uses of mobile communications but also pave the way for new digital and data-driven businesses and services. Whether it is transportation, natural resources, retail, entertainment, advanced manufacturing, agriculture, "smart cities", or healthcare, there are very few sectors that will not be transformed by the introduction of 5G wireless networks. In large part, Canada's successful transition to a digital and data-driven economy will depend on a successful and timely introduction of 5G wireless.

In a recently published report, Accenture found that "the adoption of 5G technology in Canada will propel innovation across industries and significantly improve Canadians' quality of life and the economy to the tune of a nearly \$40B annual GDP uplift by 2026."⁵ Accenture adds that 5G will also contribute to sustained job creation and add close to 250,000 permanent jobs by 2026.

The benefits of 5G are a result of its transformative characteristics. While current networks focus primarily on data transmission (i.e. throughput), 5G networks are being designed to not only provide faster transmission speeds but also to ensure more widespread coverage, to handle more connected devices and traffic types, and to support different use cases. 5G will connect infrastructure, vehicles, sensors, buildings, machinery, and people in a way that will change how we use technology and data to work, play, and interact.

³ OpenSignal, State of LTE – Global, February 2018 – Canada has the fastest average mobile download connection speeds in the G7, including twice the average found in the United States.

⁴ CRTC, Communications Monitoring Report, 2017

⁵ Accenture, Fuel for Innovation: Canada's Path in the Race to 5G, <https://bit.ly/2tAEhn3>

While it is not possible to mention all of the different ways in which 5G will help enable Canada's digital and data economy, a few examples will help illustrate its importance.

(a) Superfast data speeds

From a peak speed perspective – meaning under ideal conditions – 5G is expected to have a peak download speed of 20 Gbps. That is 20 times faster than the 4G peak download speed of 1 Gbps. To put that in context, at peak speed you could download a standard feature-length movie over a 5G network in less than a second, or 20 movies in the time it takes you to download one movie at peak 4G speed. While peak download speed represents what could occur in ideal conditions, it is important to look at what kind of speed a user should reliably expect in average conditions. While speed can be affected by many factors, the 5G benchmark for reliable download speed per user is a minimum of 100 Mbps. While lower than 5G's peak download speed, it is still 10 times faster than the reliable download speed per user benchmark for 4G.

Faster data rates will help make the mobile internet experience richer and more seamless, enabling reliable streaming of high quality video for entertainment, public safety, and video conferencing, augmented reality (AR) and virtual reality (VR) applications, as well as immersive education and entertainment.

(b) Ultra-low latency

Latency refers to the time it takes for data to get from one point to another over a network. Today's networks allow us to experience multimedia and connect with other people and machines wirelessly, but these interactions are at times affected by transmission delays.

The 5G benchmark for what is referred to as Ultra-Reliable Low-Latency Communications (URLLC) is a minimum of 1 millisecond; much lower than the 50-millisecond latency benchmark for 4G networks. URLLC will allow us to interact and connect in real time. This opens up a vast world of possibilities that did not exist prior to 5G. Examples include:

- Telemedicine, where doctors using connected robots will be able to remotely examine, test, diagnose, and even perform surgical procedures on a patient;
- Emergency response, such as first responders using robots, drones or other machines to monitor or intervene in dangerous situations endangering the lives of human firefighters; and
- Connected cars, which will be able to receive critical data from sensors embedded in roadside infrastructure, buildings, and other cars, enabling drivers or autonomous car systems to take swift action to avoid danger.

URLLC will also greatly enhance the capabilities of augmented and virtual reality which will be able to match human interaction with these digital environments in real time. This will better enable AR/VR use for education and training purposes. When paired with other technologies that permit users to feel the actions of another – the so-called "Tactile Internet" – training professionals will be able to instruct and correct the actions of the trainee simultaneously.

(c) Massive connectivity

The number of physical devices, or “things”, connected to the internet (commonly referred to as the Internet of Things, or IoT) is growing exponentially. While estimates vary, the number of IoT devices – fixed and mobile – is expected to jump from tens of billions to hundreds of billions over the next decade. While not all connected devices require superfast speeds or ultra-low latency, the sheer number of connections will strain the capabilities of today’s networks.

If you have attended a large gathering such as a concert or a sporting event, you may have found it was difficult to connect to the cellular network, or that service was not completely reliable. That is because today’s networks are limited in the number of connections they can support within a defined area. For IoT to reach its full potential, the connection density of our wireless networks will have to increase drastically.

5G networks will be designed to support large numbers of connected physical devices, even in confined spaces. The 5G benchmark for connection density is 1 million devices per square kilometre, compared to around 2,000 devices per square kilometre for 4G. This will help enable the use of sensors and other devices to collect and share data with other devices or machines, and use that data in conjunction with other technological advances like artificial intelligence, to make better and more timely decisions and to use data to increase efficiencies, make new discoveries, and improve our quality of life.

(d) Rural Connectivity

It is important that the benefits of the digital and data-driven economy be available to all Canadians, regardless of where they live. The benefits of 5G include the potential to help close the gap between rural and urban internet access. Given that the economics of deploying wired broadband internet (e.g. fibre or cable) to some rural areas are unfavourable, rural Canadians do not always enjoy the same broadband availability or performance as Canadians living in more populated urban centres.

As discussed in the Accenture report, it is estimated that 5G-based Fixed Wireless Access (FWA) can be deployed at a lower cost while delivering wired broadband-like performance. This has the potential to increase broadband penetration rates, with the resulting increases in productivity and digital literacy adding \$billions to Canada’s GDP and creating an additional 100,000 additional jobs.

Paving a Successful Path to 5G and Canada’s Digital and Data Economy

Despite Canada’s history of leadership in wireless infrastructure, the digital and data transformation presents challenges that must be properly addressed by government and policymakers if Canada is to maintain its leadership position, and also be able to fully benefit from the digital and data era.

(a) Spectrum Allocation

As Canadians increasingly rely on wireless communications to consume more and more data, the availability and allocation of radio frequencies, or spectrum, for wireless communications is vital to Canada’s success in the digital and data-driven economy. New use cases that will be enabled by 5G, such as enhanced/ultra-fast mobile broadband, massive machine type communications, and ultra-reliable/low latency communications will drive ever increasing demand for wireless services and

capacity. This increased demand for data and faster transmission requires the timely release of more exclusively licensed low, mid, and high-band spectrum for wireless services.

While the Government of Canada has recognized this need in its Spectrum Outlook 2018 to 2022 and has announced preliminary timing for several key spectrum auctions, there remains the risk that Canada will fall behind other countries, many of whom have accelerated plans to make key spectrum bands available for 5G deployment. This means that the earliest 5G-powered innovations, such as 5G smartphones, and related investments and productivity gains, may not be available to Canadians when they are launched in other countries. To ensure that Canadians are not left behind it is important that Canada keep pace with other leading countries in the allocation and availability of spectrum for wireless communications.

(b) Modernizing Infrastructure Deployment Rules and Fees

5G networks will assist Canadians in their daily lives, deliver significant economic benefits, and help municipalities provide better government services. Yet many of the existing rules, regulations, and fees governing the deployment of wireless infrastructure were established to address the siting of 200-foot tall cell towers.

5G will require a greater density of small cells using much smaller equipment. This will require more precise cell positioning and a larger number of siting approvals. To ensure that the benefits of 5G are fully realized, policymakers at all levels of government must modernize the deployment process to ensure:

- (i) Fair and reasonable access to government-owned land and buildings, including utility poles and streetlights;
- (ii) The streamlining of administrative processes, including shorter timelines, appropriate exemptions, and the use of objective standards; and
- (iii) Reasonable and non-discriminatory fees for the use of public infrastructure.

(c) Encouraging Investment in 5G Wireless Infrastructure

As outlined above, Canadians world-class wireless networks will be crucial to Canada's ability to lead in the digital and data-driven economy, and to enable the type of innovation that will lead to a better quality of life, economic growth, and more well-paying middle-class jobs. However, maintaining, expanding, and improving Canada's world-class wireless infrastructure requires massive and continual investment. Canada's facilities-based wireless service providers have invested approximately \$48 billion in wireless infrastructure between the years 1985 and 2017, and in recent years have been spending on average more than \$2.5 billion a year. In addition, they have paid over \$14.1 billion to the Government of Canada in spectrum auction fees, and annual spectrum license fees in excess of \$185 million each year.

As the global wireless industry begins to deploy 5G wireless networks, ensuring Canada's leadership position in wireless infrastructure is maintained will require massive new investments in infrastructure and additional radio spectrum. According to Accenture⁶, 5G deployment in Canada will require \$26B in

⁶ *Ibid*

investment over a seven-year period, not including the costs associated with the acquisition of spectrum and annual spectrum license fees. Only through investment by facilities-based carriers will Canada be able to keep pace with development of the next-generations of networks, including 5G. Therefore, it is imperative that the Government of Canada establish a regulatory environment that encourages private sector investment in Canada's wireless network infrastructure. To do so we recommend the following:

(i) Facilities-based Competition

Despite the success that facilities-based competition has had in stimulating private sector investment in Canada's wireless networks and unleashing wireless innovation in Canada, some advocate that the Government of Canada should require facilities-based carriers, the carriers that have taken the business risks inherent in investing billions of dollars to build Canada's wireless infrastructure, to give those who have taken no such risks or made similar investments, such as resellers and mobile virtual network operators (MVNO), access to the facilities-based carriers' wireless networks at wholesale rates. It is clear that such a measure would undermine Canada's efforts to lead in the digital and data-driven economy.

As found by the Canadian Radio-Telecommunications Commission in numerous decisions⁷, such a mandate would stifle investment in wireless network infrastructure. The resulting decline in investment would risk losing Canada's leadership role in wireless infrastructure, worsen the urban/rural digital divide and jeopardize Canada's opportunity to be a world leader in the development and deployment of 5G technology and services. It would also hamper Canadians' and nearly every industry sector's ability to utilize the latest mobile innovations to increase productivity, grow the economy, and create well-paying middle-class jobs. Therefore, it is imperative that the Government of Canada continue to recognize facilities-based competition as the best way to ensure the necessary investments are made to maintain Canada's leadership position in wireless network infrastructure.

(ii) Accelerated Capital Cost Allowance for Telecommunications Equipment

Under Canada's Income Tax Regulations there are currently several classes of depreciable assets that relate to telecom network equipment, each with different Capital Cost Allowance rates:

- Class 8: radiocommunication equipment;
- Class 42: fiber optics; and
- Class 46: data network infrastructure equipment and systems software.

All three classes highlight activities that are integral parts of wireless infrastructure investments. To further enable ongoing and future investment in the expansion and enhancement of Canada's wireless network infrastructure, including the deployment of 5G network infrastructure, CWTA recommends that Budget 2019 increase the CCA from current rates to 100% for all three classes, a policy which has successfully been implemented in the U.S.⁸ This acceleration of the CCA rate would permit facilities-based carriers to recover new investments more quickly. It would also enable more rapid and more significant investments in network expansions and upgrades, including 5G network deployment. At a minimum, CWTA recommends that Budget 2019 introduces a 50% CCA rate for all telecom-related classes of depreciable assets.

⁷ Most recently in Telecom Decision CRTC 2018-97 - <https://crtc.gc.ca/eng/archive/2018/2018-97.htm>

⁸ <https://taxnews.ey.com/news/2018-0063-tax-cuts-and-jobs-act-will-affect-telecommunications-industry>

Such a change to the income tax system will return significant benefits to Canadians and the Canadian economy. In a December 2015 report, The Conference Board of Canada projected that increasing the CCA rate for Class 46 (currently set at 30%) to 50% would increase telecommunications investment by more than 5% or \$122 million per year in the near term⁹. If the CCA rate is increased permanently to 50%, the increased investment would total as much as \$225 million per year¹⁰. Furthermore, this would lead to a \$163 million increase in GDP and an additional 1,660 jobs created¹¹. Beyond the direct impacts, additional investment in telecommunications infrastructure could further improve productivity, enable businesses in all regions of the country to compete on a national and global level, and connect all Canadians with constantly improving wireless capabilities. We expect that these economic benefits would be even greater should these CCA rate be increased to 100%.

It is also worth mentioning that the House of Commons Finance Committee made a similar recommendation in its December 2016 report (*That the government of Canada review and alter capital cost allowance rates to reflect changes in technology and the useful life of assets.*¹²).

(iii) Increased R&D Tax Credits to Sustain Capital Investments

Recent changes to the Scientific Research and Experimental Development program reduced the overall SR&ED tax credit rate from 20% to 15% and eliminated the deduction for capital expenditures. The SR&ED tax credit reductions were somewhat offset by an increased emphasis on direct funding for R&D activities. Direct subsidies or loans, however, are less predictable and impose a higher administrative burden compared to refundable tax credits, which are neutral, accessible and attractive to innovative companies.

Wireless technology innovation and R&D is evolving rapidly as companies develop the 5G network technologies that will keep Canada's digital economy at the global forefront. Canada can capture much of this innovation if it provides a competitive environment for facilitating telecommunications innovation and investment. CWTA therefore submits that the Government review the SR&ED program with the goal of reinstating some of the competitive tax credits, including those for capital expenditures.

2. TRUST AND PRIVACY: FINDING THE RIGHT BALANCE BETWEEN PROTECTING PRIVACY AND SUPPORTING INNOVATION

CWTA supports the current Canadian legal framework for balancing the protection of privacy with the legitimate and responsible use of data, including some personal information, for innovative purposes that will help improve Canadians quality of life, spur economic growth, and create jobs. While it is important to periodically review Canada's framework to ensure that it properly addresses technological and societal change, we think that the framework is still sound and does not require a major overhaul. If and when problems with Canada's privacy framework are identified, they should be honestly stated and

⁹ From Landline to Mobile Broadband, Conference Board of Canada, p.4

¹⁰ Ibid

¹¹ Ibid

¹² Creating the Conditions for Economic Growth: tool for people, businesses and communities, Report of the Standing Committee on Finance, p.38

evidence-based, and any additional measures proposed to address gaps in the framework should be supported by a cost-benefit analysis. Importantly, any proposed changes to Canada's privacy laws, including the *Personal Information Protection Electronic Documents Act*, or PIPEDA, should be the subject of a separate and focused public consultation so that proposed changes can be properly considered by all stakeholders.

A Canadian approach to Privacy

When Canada's *Personal Information Protection Electronic Documents Act*, or PIPEDA, was developed nearly 20 years ago, it was hailed as a remarkable achievement built through consultation amongst consumer, business and government representatives, and encompassing the ten commonly accepted fair information principles that reflect the concepts of openness and transparency, knowledge and consent, and sensitivity and harm. Equally important it was drafted in technology neutral language that was as broad as possible to stand the test of time.

The technical advances and innovations that have occurred since PIPEDA's inception have introduced new ways for individuals to interact with other individuals, businesses and government, and in some cases the amount and type of personal information that they share with others. Notwithstanding these advances, PIPEDA and the privacy principles on which it is based have withstood the test of time, and continue to provide a sound framework that balances the right to privacy with the need for organizations to collect, use and disclose personal information for reasonable purposes and with informed consent.

Despite this, some argue that the PIPEDA model no longer meets the needs of a digital and data-driven economy and requires a significant overhaul. In doing so, they point to more recent privacy regulations enacted in other countries, or argue that the principle of consent has outlived its useful purpose.

We disagree. PIPEDA has stood the test of time because it is based on strong principles that support both privacy and innovation. Rather than looking for ways to significantly overhaul or replace PIPEDA, Canada should be looking at how the principles of PIPEDA can be applied to innovative products and services, data analytics and other new uses of personal data.

This is the approach that has been taken since the introduction of PIPEDA. As technology and the collection and use of personal information has evolved, so too have the concepts of transparency, informed consent and what individuals consider to reasonable. This has resulted in investigations, findings and guidelines issued by the Privacy Commissioner that have introduced new ways and methods for organizations to ensure transparency and informed consent when collecting personal information. Privacy By Design guidelines, transparency reports, and the new consent guidelines are concrete examples of how PIPEDA and tools created to support it have successfully met the challenges of an evolving world of information sharing.

Other Elements of Trust

It would also be shortsighted to think that regulation is the best way to foster trust. The European Union Agency for Network and Information Security (ENISA), now the EU Cybersecurity Agency, identified trust as a function of (1) the user's knowledge of online privacy, (2) the technology design, (3) the practices of

the providers, and (4) the institutions governing the system.¹³ Yet, as many observers have noted¹⁴, when the EU developed its new General Data Protection Regulation it focused almost exclusively on the last two elements: regulatory compliance and enforcement. In doing so, the EU “clearly puts the thumb on the scale in favor of regulation over innovation”¹⁵.

Too heavy a reliance on regulation can have unintended consequences, including the stifling of innovation and impairing Canada’s ability to benefit from the digital and data-driven economy. For example, unnecessary regulation will increase barriers to entry for small and medium-sized enterprises, which in turn slows economic growth. Excessive regulation can also result in finite resources being shifted to compliance and away from innovative research and development. It can also be a disincentive for investment in Canada and result in innovative products and services not being made available to Canadians.

Rather than focusing solely on regulation, Canada should consider the other elements to building trust. For example, attention should be paid to increasing Canadians’ digital literacy and knowledge of ways in which they can protect and control the sharing of their personal information. Armed with such knowledge, Canadians will be better equipped and more likely to engage in the digital and data economy.

Similarly, an emphasis on the development of systems that are designed such that they minimize or eliminate the sharing of personal information is a preferable and more cost-effective approach than increasing regulation. In fact, encouraging Canadian businesses and organizations to experiment with privacy enhancing technologies and systems, such as identity authentication, anonymization of personal information, and other limited disclosure techniques would, in combination with a stable and balanced regulatory environment, make Canada an attractive location for companies and other organizations to develop innovative uses of data and digital technologies that can help improve the quality of living, grow the Canadian economy and create jobs

Finally, it is important to understand that for CWTA members building trust is a key element of their business practices and corporate ethos. To a large extent, their reputations and success are based on establishing a trusting relationship with their customers. It is why they invest significant resources into their privacy-related processes and cybersecurity. Their experience in an ever-changing digital and data-driven industry illustrates how the principles of PIPEDA can withstand and adapt to changes in technology and the use of data.

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¹³ As referenced in “Understanding the GDPR and its Unintended Consequences”, Strand Consult, strandreports.com

¹⁴ Ibid., see also “How the GDPR compares to best practices for privacy, accountability and trust”, Roslyn Layton and Simone Celant, <https://bit.ly/2Q5fmm2>

¹⁵ See Stand Consult at p14.