Mr. Dan Ruimy, M.P.
Chair
Standing Committee on Industry,
   Science and Technology
131 Queen Street, 6th Floor
House of Commons
Ottawa, Ontario K1A 0A6

Dear Colleague:

Pursuant to Standing Order 109 of the House of Commons, we are pleased to respond, on behalf of the Government of Canada, to the recommendations made by the Standing Committee on Industry, Science and Technology in its report entitled *Broadband Connectivity in Rural Canada: Overcoming the Digital Divide*, which was tabled in the House of Commons on April 17, 2018.

The government extends its thanks to the members of the Standing Committee for their work in developing the report and preparing the recommendations. We recognize that this study took place over many months and involved a range of public stakeholder consultations and meetings, including those with private sector, not-for-profit, and government representatives. We are grateful to all who appeared before the Committee to express their points of view and to provide evidence and expert advice.

The Government of Canada recognizes the critical role that broadband connectivity plays in the digital economy and the importance of the Internet to economic growth, innovation, and social inclusion for Canadians in all regions of the country, including in rural and remote areas. For Canada to be a world leader in the digital economy, telecommunications networks must keep pace with changes in the knowledge-based economy. Canadian consumers and businesses need access to high-quality and affordable broadband networks for communicating with friends and family, selling goods and services online, expanding into new markets, and accessing government services such as health care and education.

Canada

This report demonstrates the Committee's dedication to finding ways to improve broadband access in rural and remote communities across Canada. The Government of Canada has carefully considered the report and its recommendations and is taking action to support the directions set out in the report. At the same time, the government will continue to explore ways in which its policies and programs can be further improved to continue to support the expansion of broadband services to all Canadians in the most effective manner possible.

The government will address the recommendations put forward by the Committee by grouping them under three themes: 1) The Government of Canada's broadband approach; 2) Broadband program delivery considerations; and 3) Complementary initiatives.

The Government of Canada's broadband approach (recommendations 1, 2, and 11)

The Government of Canada recognizes the importance of access to high-quality, robust, and affordable telecommunications services for Canadian consumers and businesses. Access to affordable broadband Internet, particularly in rural and remote regions, is essential to the participation of Canadians in the digital economy.

The government has a comprehensive approach to broadband connectivity that is positioned within the federal government's Innovation and Skills Plan announced in Budget 2017. The Innovation and Skills Plan is about putting Canada at the global forefront of innovation, driving economic growth, and creating high-quality jobs for Canadians. With respect to telecommunications, the government is focused on the three core objectives of quality, coverage, and price and is taking specific actions to make these objectives a reality. This means ensuring for Canadians that networks are fast and reliable enough to support the latest applications; making high-quality services available to Canadians where they live and work; and ensuring that services are affordably priced.

The Government of Canada's overall telecommunications policy approach has been to establish marketplace frameworks to foster competition and investment, effectively manage spectrum to encourage the availability of wireless services, and establish targeted funding programs for rural broadband expansion for areas that lack a private sector business case. In Canada, the private sector is the main driver of investment in telecommunications networks and invested $11.6 billion in 2016. This market-driven approach has served Canada well, with high-quality wireline and wireless networks available to the vast majority of Canadians. While progress is being made, however, certain rural and remote areas continue to have limited broadband access because of the challenging business case for private sector deployment in these areas. Where gaps persist, the federal government has put in place several targeted funding initiatives to help expand connectivity in underserved rural and remote areas.

In December 2016, Innovation, Science and Economic Development Canada (ISED) launched the Connect to Innovate (CTI) program, which is investing $500 million by 2021 to expand and improve broadband access in rural and remote areas, including the North. The CTI will support broadband infrastructure that benefits businesses as well as institutions and households. As of May 2018, the government has announced projects to connect over 800 rural and remote communities. The CTI builds on the ongoing progress of the Connecting Canadians program, which will expand high-speed Internet access to approximately 300,000 households in rural and remote areas across the country by 2019.

In Budget 2018, the Government of Canada proposed funding of $100 million over five years for the Strategic Innovation Fund, with a particular focus on supporting projects that relate to low Earth orbit (LEO) satellites and next-generation rural broadband. LEO satellites—situated closer to the surface of the Earth than traditional geostationary orbit satellites—can receive and transmit data with significantly improved response times. Canada is uniquely placed with space satellite industry leaders to develop, build, and operate LEO satellite technologies, creating jobs and market opportunities around the world.

These initiatives are complementary to actions being taken by the Canadian Radio-television and Telecommunications Commission (CRTC), an administrative tribunal responsible for the regulation of the telecommunications sector that operates at arm's length from government. Recommendations directed at the CRTC will be forwarded to the Commission for its consideration.

Under the *Telecommunications Act,* the CRTC has broad powers to regulate the provision of telecommunications services. Over the years, the CRTC has established and modified its regulatory frameworks to ensure that Canadians have access to the basic telecommunications services needed to participate in the digital economy and society. In 2011, the CRTC completed a review of its basic service framework and set an aspirational broadband target of 5 Megabits per second (Mbps) download and 1 Mbps upload.

In December 2016, the CRTC released its determinations following another comprehensive review of its basic telecommunications framework. In this decision, the Commission established broadband as a basic service, noting that broadband access had increased in importance to Canadians. The CRTC set a speed target of 50 Mbps download and 10 Mbps upload to homes and businesses, as well as access to the latest mobile wireless technologies where Canadians live and along major roads. To help meet these objectives, the CRTC created a new fund with up to $750 million to invest over five years.

As part of this decision, the Commission also asked the CRTC Interconnection Steering Committee to review and make recommendations on appropriate metrics for latency, jitter, and packet loss to define high-quality fixed broadband Internet access service to assess whether the broadband portion of the universal service objective is achieved.

In April 2017, the CRTC launched public consultations to determine implementation details concerning its new broadband fund, which closed in December 2017. The CRTC has indicated that it anticipates that it will render a decision on the program design parameters of the fund in 2018 and that the fund will become operational in 2019. The CRTC has indicated that it intends to review the fund in the third year of implementation to ensure that it is being managed efficiently and achieving its intended purpose.

Indigenous Services Canada (ISC) and Infrastructure Canada (INFC) also administer infrastructure programs that support community broadband development. For example, connectivity is eligible under INFC's $2-billion Rural and Northern Communities stream of the Investing in Canada Infrastructure Program. The Government of Canada's broadband actions are also supported by initiatives from other levels of government including provinces, territories, and municipalities. This has enabled the government to leverage available funding and local expertise, maximizing the impact for Canadians. Collectively, federal, provincial, and territorial initiatives are helping to ensure that Canadian consumers and businesses in all regions of the country are well-positioned to take advantage of the opportunities afforded by the digital age.

Finally, the government has a successful track record working collaboratively with key stakeholders, including the private sector, all levels of government, non-profit organizations, Indigenous organizations, as well as civil society. These efforts will continue as the government considers potential future broadband policy initiatives, such as issues related to repayable contributions when there is a demonstrated market failure, to provide a better incentive for investment and enable access in rural and remote areas so that all Canadians across the country can reap the benefits of high-quality broadband connectivity. The government believes that all stakeholders have a role to play to ensure that broadband services in Canada are ubiquitous and that barriers to adoption are removed.

Broadband program delivery considerations (recommendation 7, 8, 9, 10, and 12)

The government agrees that incentivizing and encouraging investments and partnerships is a critical success factor in the deployment of broadband services in rural and remote regions across the country. The government is committed to working collaboratively with both traditional and non-traditional network operators, including large and small service providers, non-profit organizations, Indigenous groups, and local levels of governments in the deployment of broadband networks.

The government shares the Committee's view that non-traditional and small network service providers can play an important role in the expansion of broadband services. ISED's successive broadband programs work in close partnership with small Internet service providers (ISPs) and non-traditional recipients, such as non-profits, who have proven to be very adept in responding to the broadband gaps and needs of rural and remote communities in Canada. The success of these types of providers is demonstrated by the results under the Connecting Canadians program: 41 of 51 recipients were either small businesses or non-profits with fewer than 100 employees. ISED is confident that these trends will continue under the most recent CTI program, for which projects are still being selected.

With each new broadband program, ISED looks to improve program delivery, including accessibility. For instance, building on lessons learned and best practices from previous programs, the CTI program clarified and expanded applicant eligibility criteria, encouraging non-traditional applicants such as municipalities, band councils, and non-profits to work in partnership with experienced ISPs who could build, operate, and/or maintain broadband networks to apply to the program. To ease the administrative burden, the program provided step-by-step instructions to accompany an interactive application form that included validation checks (ensuring that information is provided in the requested format), auto-population options, notification messages, and a summary box to ensure that templates were appropriately completed. Additionally, ISED officials provided applicants with increased support during the application process, answering questions within 24 to 72 hours in most cases. At the end of the call for proposals, ISED had successfully fielded responses to 880 emails and 480 phone calls. Due in part to efforts like these, ISED received nearly 900 applications requesting $4.4 billion in federal funding under the CTI program, representing nearly three times more applications than under the previous program.

The Government of Canada agrees with the Committee that rural and remote communities across Canada have varied broadband needs depending on local circumstances. This can include a lack of access to high-capacity backbone networks into communities to connect institutions like schools and hospitals and lack of the last-mile infrastructure necessary to support faster speeds to surrounding households and businesses within communities. ISED's CTI program included flexible eligibility criteria such that both backbone and last-mile projects could be funded, as well as network resiliency projects. This flexible approach has enabled the government to meet the disparate needs of local communities across the country and maximize leverage funding from project partners, including the private sector, provinces and territories, and other federal government departments. Indeed, several CTI projects announced to date include components that will address both last-mile and backbone needs in underserved rural and remote communities, bringing improved access to public institutions, businesses, and households.

The government shares the Committee's view that technological neutrality is a key principle in broadband funding initiatives. Changing technology and the growing demands of new applications and services has meant that service providers are using a variety of technologies in deploying broadband services to Canadians in rural and remote areas. This includes fibre technology to deliver faster speeds and greater capacity, advanced wireless networks such as fixed and mobile long-term evolution (LTE) networks, and next-generation satellite networks such as high-throughput satellites (HTS). Given Canada's large and challenging geography, the government recognizes that a range of technologies will play an important role in ensuring that Canadians across the country have access to the broadband services they need at affordable price points.

The Government of Canada recognizes the importance of maintaining and using accurate data to develop and support policy and program activities related to broadband connectivity. The government would like to take this opportunity to provide additional details explaining how it conducts broadband mapping and data collection.

ISED, in conjunction with the CRTC, maintains comprehensive and precise mapping data describing retail broadband Internet services and wholesale backbone infrastructure in Canada. This data has been assembled through feedback and consultation with key stakeholders, including ISPs, federal partners, industry associations, provinces, and others. Although data collection is a continuous process, specific consultations were also undertaken by ISED's Connecting Canadians Branch (CCB) through summer and fall 2016 in support of the launch of ISED's current CTI program.

ISED and the CRTC bring this detailed coverage information together with the most up-to-date demographics (household and population information from the Census of Canada) and geospatial analytics available. To add further precision and accuracy, particularly in rural areas, household placement follows Statistics Canada's road network map and incorporates provincial address data where available. Realizing the benefit of this data to our broadband stakeholders such as ISPs, provinces, territories, and municipalities, as well as those in other sectors, ISED released this product in 2017 to the open data portal. The current version can be found at https://open.canada.ca/data/en/dataset/b3a1d603-19ca-466c-ae95-b5185e56addf.

Despite outward appearances, ISED does not use the hexagon mapping structure for detailed analysis, program administration, or project selection. ISED believes the hexagon system allows for the creation of manageable, high-level visual maps while balancing the business confidentiality concerns of ISPs. The data collected and used internally by ISED and the CRTC is, in most cases, accurate to within a few hundred metres.

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Complementary initiatives (recommendations 3, 4, 5, and 6)

The Government of Canada is supportive of these recommendations. The government agrees with the Committee that there are a number of complementary policy initiatives that should be considered to ensure that Canadians across the country have access to and adopt broadband services.

The Government of Canada shares the Committee's view that affordability and digital literacy are important factors influencing broadband access and awareness of the benefits of the Internet. As the government undertakes targeted initiatives to expand the availability of broadband services across Canada, complementary programming to encourage digital inclusion and promote the benefits of online participation are also under way and are becoming increasingly important.

As the Committee notes, the Digital Literacy Exchange program, the low-cost Internet initiative, and the Computers for Schools program are important elements of the government's strategy to promote digital participation across Canada. These efforts are part of a larger suite of complementary skills, accessibility, and affordability programs that aim to bridge Canada's digital divide and encourage the inclusion of all Canadians in the digital economy. As these programs specifically focus on underrepresented groups, such as those living in rural and remote regions, they complement existing infrastructure projects and are an important part of the government's integrated response to improving broadband access Canada-wide.

Other important initiatives in this suite of digital programming include the Accessible Technology Program, which will co-fund the development of assistive technologies and help persons with disabilities participate in the digital economy; CanCode, which provides kindergarten to grade 12 students and their teachers with coding and digital skills training; and Digital Skills for Youth, which connects underemployed recent post-secondary graduates with small business and not-for-profit organizations to gain digital skills training and career-oriented work experience.

In addition to administering targeted funding initiatives to improve broadband access, adoption, and literacy, ISED is also responsible for spectrum policy and management. Radio frequency spectrum is a unique resource that makes all wireless communications possible and provides benefits for all parts of society, including users in both urban and rural and remote areas. Spectrum is used by Canadian consumers and businesses in all parts of the country in an increasing number of ways for a range of private, commercial, consumer, defence, national security, scientific, and public safety applications. The challenge of effectively managing spectrum is exacerbated by an increasing number of competing interests, rapidly evolving technology, and the high and growing demand for wireless broadband.

The Government of Canada has used spectrum management as one tool to help promote rural broadband connectivity, though spectrum management objectives are broader than rural broadband access. Radio frequency spectrum is divided into different bands that are used by a variety of communications services, including broadcasting, cellular, satellite, public safety, and two-way radio. There are a number of factors—such as rapidly evolving technology and applications, changing consumer demands, globalization, and an increased focus on public safety and security—that need to be taken into account in an effective spectrum management program.

In developing policies for spectrum allocation, ISED is guided by the objectives stated in section 7 of the *Telecommunications Act* and the overarching policy objective outlined in the Spectrum Policy Framework for Canada: to maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource. These objectives are the lens through which the spectrum program considers the connectivity of Canadians living in rural areas.

The Government of Canada recognizes that wireless technology can be used as one method of providing fixed broadband access to rural homes and businesses. ISED's approach to making spectrum available for this purpose includes providing low-cost licence-exempt spectrum or non-exclusive shared spectrum licences for fixed wireless access to allow all entities, including small providers, non-profit providers, and non-incumbent providers, access to spectrum for broadband deployment.

The government also recognizes that Canadians need access to high-quality affordable mobile services. Licensed spectrum supports a range of services in all parts of the country, including both urban and rural areas. Where demand for spectrum exceeds supply, ISED relies on market-based approaches such as spectrum auctions, allowing licensees to offer high-quality networks with extensive coverage to Canadians. ISED often uses competitive measures, such as set-asides or spectrum caps, to promote competition in the commercial mobile sector.

In certain instances, to ensure the deployment of wireless services in rural areas in a timely fashion, the government has attached deployment conditions to spectrum licences (e.g. rural roll-out obligations), which require that carriers deploy their wireless networks to a given percentage of their coverage footprint within a certain time period. The government has also undertaken efforts to facilitate secondary markets for spectrum authorizations to encourage more efficient use of spectrum.

In addition, in June 2017, the government announced a streamlined licensing framework to support the deployment of next-generation satellites, including LEO satellites. This action will allow more satellite-based providers to enter the market and extend high-speed Internet services to Canadians in rural and remote communities across the

country. Finally, through the Spectrum Outlook consultation, the government is developing its overall approach and planning for potential future spectrum releases in the 2018–2022 timeframe. This will help support telecommunications services and applications that are anticipated to require new or additional spectrum in the coming years for the benefit of all Canadians, including those in rural and remote areas.

The Government of Canada recognizes the importance of the efficient use of existing infrastructure such as poles, underground conduits, and rights-of-way (e.g. passive infrastructure) for network deployment. A substantial portion of the deployment costs is civil engineering. Efficient and timely access to these assets can dramatically reduce deployment costs, avoids unnecessary duplication, and allows for faster deployment. For example, stringing fibre optic cable along existing utility poles is typically much less costly than digging new conduit and burying it. In Canada, the ownership and regulatory oversight of passive infrastructure assets is shared among federal, provincial, and municipal levels of government. The Government of Canada recognizes that facilitating access through collaborative efforts by various stakeholders, including provincial and municipal governments, presents a significant opportunity to reduce broadband deployment costs. The Government of Canada is committed to continuing to encourage collaborative efforts to help reduce broadband deployment costs and help address potential barriers to investment.

With respect to the Government of Canada's infrastructure programs, the Investing in Canada plan, announced in Budget 2016 and expanded in Budget 2017, makes $180 billion available to support local, provincial, and territorial projects over 12 years. On April 19, 2018, the Government of Canada, through Infrastructure Canada, released *Investing in Canada: Canada's Long-Term Infrastructure Plan* as an update on the progress of Investing in Canada to date, which clearly outlines the three objectives, seven outcomes, five principles, and five investment streams that will guide infrastructure investments. The $2-billion rural and northern communities stream under the Investing in Canada infrastructure program respects the unique and wide-ranging infrastructure needs of rural and northern communities. To help close the connectivity gap, broadband is one of the eligible areas for investment under this stream. In addition, each province and territory will contribute to a national target that strives to increase the number of rural households that have access to the highest broadband speed range available in their jurisdiction. Provinces and territories are responsible for prioritizing projects and engaging with municipalities and Indigenous communities in this regard.

Conclusion

The Government of Canada would like to reiterate its thanks to the members of the Standing Committee for their hard work and dedication to the completion of this comprehensive study of rural broadband connectivity. The government has taken the

recommendations into consideration and will continue to work with key stakeholders, including the private sector, provinces and territories, Indigenous communities, not-for-profit organizations, and civil society in promoting access to high-quality, robust, and affordable broadband networks.

Please accept our best wishes.

Sincerely,

The Honourable Navdeep Bains, P.C., M.P.
Minister of Innovation, Science and
  Economic Development

The Honourable Amarjeet Sohi, P.C., M.P.
Minister of Infrastructure and Communities