

Consultation on a Licence Renewal Process
for Advanced Wireless Services
and other Spectrum
SLPB-002-17

Comments of
Rogers Communications Canada Inc.
July 25, 2017



Executive Summary

- E1. Spectrum is a critical input for satisfying the growth in demand for mobile broadband services in Canada. Canadians are among the heaviest users of mobile data services globally and their demand for mobile data services will continue to increase dramatically. As a service provider that continues to invest heavily in advanced wireless networks and is the Canadian leader in the deployment of the Internet of Things, Rogers requires continued access to interference free spectrum in order to satisfy its customers' growing demand for mobile data services.
- E2. Rogers supports Innovation, Science and Economic Development Canada's proposal to renew AWS-1, G Block and I Block spectrum licences that have met their conditions of licence. The Department should renew the AWS-1 and G-Block licences for 20-year terms to standardize with other mobile bands and to provide greater certainty for service providers to continue to make the large investments required for network maintenance and growth.
- E3. As was done with the PCS and Cellular bands licence renewals, the Department should remove deployment obligations for licence areas that meet the original licence's coverage requirements. However, if the Department believes they must further incent deployment, they should harmonize deployment requirements on a Tier 3 basis at the same coverage percentages as the AWS-3 auction. This will ensure that the newer entrant operators continue to build out their networks to suburban and rural areas and contribute to the facilities-based competition that benefits all Canadians. It will also minimize interference risks to established networks that coordinating mid-band spectrum on a Tier 4 level could bring.
- E4. Finally, the Department should take a very cautious approach when exploring opportunistic sharing. Exclusive-licensed mobile bands, such as the AWS-1 spectrum, power extensively deployed networks already providing world-class connectivity to Canadians and should remain exclusive access. The Department should explore sharing in bands with open spectrum designations, lightly licensed mobile bands or bands with users in restricted geographic areas. This will ensure that the investment and reliability of the advanced mobile communication networks that Canadians have come to enjoy and demand are not impaired, while also allowing for innovative spectrum management in bands not previously used primarily for mobile services.

Introduction

1. Rogers Communications Canada Inc. (Rogers) is pleased to provide Innovation, Science and Economic Development Canada (ISED or the Department) with the following comments in response to *SLPB-002-17: Consultation on a Licence Renewal Process for Advanced Wireless Services and other Spectrum*¹ (the Consultation), published in the *Canada Gazette*, Part I, June 24, 2017.
2. Effective spectrum licensing regimes help Canadian network operators meet the constant, increasing demand for data. Canadians use their mobile devices far more than users in most other countries. Canada's mobile data traffic grew 41% in 2016, and is expected to grow 5-fold from 2016 to 2021, a compound annual growth rate of 36%.² The dramatic growth in demand for mobile data services will be fuelled in part as Canadian consumers and businesses embrace the Internet of Things, with Cisco predicting a Machine-to-Machine compound annual growth rate of 77%.³
3. As a large wireless operator focused on the provision of advanced new broadband services, including capacity-hungry video services such as NHL GameCentre LIVE and 4K programming, Rogers knows that operators require sufficient, interference-free spectrum to keep pace with Canadians' demand for mobile services. In order to address the dramatic growth in demand for mobile data services, we have already made very significant investments to deploy Long Term Evolution (LTE) mobile broadband technology to approximately 95% of the Canadian population.⁴ Rogers also continues to deliver innovative wireless services, such as being the first provider in Canada to offer Voice over Long Term Evolution (VoLTE). This technology is the next evolution in wireless calling, giving customers with a VoLTE-compatible phone clear, natural sounding voice and video calls.
4. Yet, for facilities-based operators like Rogers to continue providing Canadians with the most advanced and innovative connectivity solutions, they must maintain access to interference-free, licensed spectrum that is the essential input for their networks. Canadian wireless network operators made capital investments totalling \$2.90 billion in 2015, an increase of 7.4% from 2014.⁵ Renewal of AWS-1 spectrum licences for 20-year terms will provide the regulatory certainty that network operators need to

¹ ISED, *SLPB-002-17: Consultation on a Licence Renewal Process for Advanced Wireless Services and other Spectrum* (Consultation); <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11273.html>.

² Cisco, *VNI Mobile Forecast Highlights, 2016-2021*;

http://www.cisco.com/c/dam/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country.

³ Ibid.

⁴ Rogers, *Rogers Communications Reports First Quarter 2017 Results*, April 2017.

⁵ Nordicity, *Benefits of the Wireless Telecommunications Industry, 2015*; <https://www.cwta.ca/wp-content/uploads/2016/08/2016-Report-on-Wireless-Industry.pdf>.

continue the significant investments that are required to maintain and grow network infrastructure that enables Canadians to fully participate in the digital economy.

5. The current spectrum licence renewal proceeding also provides the Department with an ideal opportunity to revisit policy and licensing provisions developed in the context of the emergence of the Canadian wireless industry and that are no longer relevant or necessary. The time has come to remove the condition of licence regarding research and development, which no other country imposes on its licensed wireless carriers.
6. The Consultation states that a separate consultation will be launched to determine the spectrum licence fees that will apply to the spectrum licences issued through this renewal process. However, it is important for the Department to note that spectrum licence fees, like all costs, are ultimately passed on to consumers. Therefore, high spectrum licence fees will raise the prices for wireless services in Canada. The Canadian Chamber of Commerce has found, “For Canada to capitalize on the opportunities provided by [5th Generation wireless technology], the federal government should ensure there is enough mobile radio spectrum available to telecommunications providers and that the cost of that spectrum is in line with the cost in similar jurisdictions.”⁶
7. However, Canada’s mobile spectrum licence fee rate is among the highest of such rates among developed countries and is significantly higher than the rate charged in the United States. Considering the billions of dollars already paid by licensees in spectrum auction payments, as well as the wireless industry’s substantial contribution to the Canadian economy – more than \$24.75 billion to GDP in 2015⁷ – it is clear that the Department is already receiving more than a fair return for the use of the spectrum resource. The Department should lower spectrum licence fees to a level that is closer to the Department’s actual administrative costs of managing the spectrum. This action would eliminate a significant financial drag on the wireless industry and would result in more affordable services and greater investment in advanced wireless networks and services.
8. The remainder of Rogers’ comments will respond to the specific issues raised in the Consultation Paper.

⁶ Canadian Chamber of Commerce, *Stuck in Traffic for 10,000 Years: Canadian Problems that Infrastructure Investment can Solve*; www.chamber.ca/media/blog/170719-stuck-in-traffic-for-10000-years.

⁷ Nordicity, *Benefits of the Wireless Telecommunications Industry*, 2015.

- A. ISED invites comments on the assessment of the AWS-1, G Block and I Block equipment ecosystems.

AWS-1 Ecosystem

9. The AWS-1 equipment ecosystem is extraordinarily robust. It currently supports both 3rd Generation (3G) and 4th Generation (4G) wireless systems. The Third Generation Partnership Project (3GPP), an international body that oversees development of mobile standards, is currently in the process of developing standards for 5th Generation (5G) wireless technology and the AWS-1 band is a strong candidate for standardization in the first phase (3GPP Release 15). There is a wide selection of 3G and 4G infrastructure and mobile devices available that operate in the AWS-1 band. There are also a large and growing number of Carrier Aggregation combinations, which support higher throughput and speeds that include the AWS-1 band.
10. Of particular note, AWS-1 was the spectrum band initially used for 4G LTE systems in Canada using 3GPP Band 4 devices. Not only did Rogers launch Canada's first LTE network with AWS-1 spectrum but the band was also used by the other national operators and even an AWS-1 'new entrant' to launch their LTE services. AWS-1 is an LTE roaming band for ITU Region 2 (Americas) and it is therefore particularly important for Canadian mobile customers traveling to the United States or throughout North and South America.

G Block Ecosystem

11. The G Block ecosystem is modest but growing. The original PCS band was standardized by 3GPP as Band 2. When 3GPP extended the band to include the G Block, the extended band was standardized as Band 25. According to the GSM Suppliers Association, in April 2017, there were 1802 Band 2 LTE devices available, compared to 358 Band 25 LTE devices. There is a wide selection of LTE infrastructure that operates in Band 2 and 25. There are a large number of LTE Carrier Aggregation combinations that include Band 2, though only a few combinations that include Band 25. Currently, there are no proposals in 3GPP to standardize 5G in either Band 2 or Band 25.

I Block Ecosystem

12. The outlook for the I Block ecosystem is bleak. The industry has not been able to find a way to develop this band into a commercially successful band for many years. In the United States, the license is held by a satellite operator, which has proposed a number of band combinations to the Federal Communications Commission. Each of these proposals has had shortcomings that prevent deployment. The band has

never been standardized by 3GPP or any other standards development organization. There are no mobile devices available that operate in this band.

B. ISED invites comments on the proposal to renew AWS-1, G Block and I Block licences that have met their conditions of licence.

13. Rogers fully supports the Department's proposal to renew the AWS-1, G Block and I Block licences. Canadians in all regions currently have access to world-class mobile voice and broadband data services, with the wireless measurement company Open Signal stating that Canadian national operators' network speeds "surpass the majority of the world's operators."⁸ AWS-1, G Block and I Block spectrum licences should be renewed so that this will continue to be the case.
14. The *Framework for Spectrum Auctions in Canada* (FSAC) provides licensees with a high expectation of renewal unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required or an overriding policy need arises.⁹ The Department also states in the Consultation that their objectives for the renewal of the licences are to: foster innovation and investment; support sustained competition so that consumers and businesses benefit from greater choice; and, facilitate deployment and timely availability of services across the country, including rural areas.¹⁰
15. Our customers were among the first in the world to experience LTE wireless connectivity with the launch of Canada's first LTE network in 2011, which used AWS-1 spectrum.¹¹ Rogers was also the first provider in Canada to launch LTE-Advanced technology, combining AWS-1 and 700MHz spectrum, to provide consumers with an outstanding network experience while maximizing the efficient use of our licensed spectrum.¹² Not only is our network fast but it is also extensive, with our LTE network alone covering 95% of Canadians across all provinces. Further, the AWS-1 spectrum enabled a fourth competitor in all regions and represents new sustained competition that benefits consumer choice. The Consultation spectrum licences are already being used to successfully meet the Department's renewal objectives.

⁸ Open Signal, *State of Mobile Networks: Canada (January 2017)*;
<https://opensignal.com/reports/2017/01/canada/state-of-the-mobile-network>.

⁹ Consultation, para 17.

¹⁰ Consultation, para 5.

¹¹ Rogers, *Rogers lights up Canada's first LTE network today*, July 2011.

¹² Rogers, *Rogers launches LTE-Advanced: New technology that delivers even faster speeds to mobiles and tablets*, October 2014.

16. While Rogers continually extends its own coverage footprint into more rural and remote regions of the country, Rogers has also better utilized its spectrum and helped extend coverage into unserved areas by enabling small regional carriers. As the Consultation states, “commercial arrangements with third parties for the use of the spectrum can be an effective way for licensees to increase deployment in their licence area.”¹³ Rogers has held numerous discussions with interested parties over the years seeking the necessary spectrum to deploy networks and deliver wireless services to rural communities, culminating in multiple arrangements. These agreements have resulted in the provision of wireless services using Rogers’s licensed spectrum in communities that could not otherwise have been economically served. This includes subordinating spectrum to community-based carriers serving remote Indigenous communities. Rogers remains open to entering into similar arrangements with our AWS-1 spectrum licences to extend coverage further.

C. ISED invites comments on the likely timeframe for availability of equipment capable of providing access to licensed spectrum on an opportunistic basis.

17. The Department should take a very cautious approach when exploring opportunistic sharing so as not to negatively affect the advanced mobile networks that already provide connectivity to digital technologies and services that is a defining feature of the digital economy. Exclusive-licensed mobile bands, such as the AWS-1 spectrum, are key inputs into the wireless networks that allow Canadian companies to take advantage of the latest technologies to better compete globally. ISED should maintain the exclusive nature of these licences in order to minimize the potential for interference to the mobile communications infrastructure that Canadian consumers and businesses rely on.

18. Encumbering exclusive-use bands with opportunistic sharing requirements will ultimately damage the use and value of future spectrum licences. Licensees have spent over \$14 billion at spectrum auctions since 2001 on acquiring exclusive licences.¹⁴ If existing exclusive licences could become subject to opportunistic sharing in the future, spectrum valuations and bidding in future auctions, including the upcoming 600MHz spectrum auction, will be significantly diminished. Furthermore, any mandatory opportunistic sharing imposed on exclusive-licensed bands would warrant a sizable reduction in annual spectrum fees that licensees pay. It would also require some mechanism to ensure that “opportunistic spectrum takers”

¹³ Consultation, para 19.

¹⁴ ISED, *Spectrum Auctions*; http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf01714.html. Note: \$14B is nominal and does not account for inflation.

paid some measure of market value for their spectrum usage. Opportunistic sharing therefore has several economic impacts and issues that must be considered.

19. Additionally, opportunistic sharing within exclusive-licensed bands appears inconsistent with a coverage requirement condition of licence, due to the uncertainty it would create in the economics of any particular service area, or portion thereof. In remote and rural areas that are currently uneconomical for licensees, subordination and other options provide ways to make spectrum available that do not create the interference and other risks to exclusive licence holders inherent with opportunistic sharing. In urban areas, where capacity demands are greatest and the spectrum crunch most acute, there would be limited actual opportunities for sharing.
20. The economics of opportunistic sharing are most likely to affect the newest carriers, and thus challenge the Department's continued focus on facilities-based investment and coverage to increase competition. The Consultation spectrum has enabled the entrance of sustained competition in all regions from a fourth facilities-based carrier. As these carriers look to build out their networks and start deploying newer LTE technologies, opportunistic sharing could jeopardize their business cases and slow facilities-based investment.
21. Further, opportunistic sharing itself has several technical issues that must be resolved before it can be implemented. There are currently two primary approaches to opportunistic sharing, Cognitive Radio and Licensed Shared Access. Cognitive Radio, in which the mobile device looks for and is able to use any vacant radio channel, has substantial technical, regulatory, and business challenges to overcome before it becomes a reality. It has also yet to be evaluated by 3GPP. Licensed Shared Access is further along but still remains years away from commercial deployment.
22. If the Department is committed to exploring opportunistic sharing, it should be limited to future bands with open spectrum designations, lightly licensed mobile bands or bands with limited users in restricted geographic areas that will be protected from interference. This will allow the Department to trial new spectrum management technologies and policies in bands that do not pose large risks to incumbent licensees and the extensively deployed communications infrastructure already providing advanced connectivity to Canadians.

<p>D. ISED invites comments on the proposal to renew AWS-1 and G Block licences that have complied with their conditions of licence for a new term of 20 years and I Block licences that have complied with their conditions of licence for a new term of 10 years.</p>

23. Rogers supports the Department's proposal to renew the AWS-1 and G Block licences for a 20-year term and that these licences should continue to have a high expectation of renewal. This approach provides licensees with a greater degree of certainty with respect to the ongoing viability of their operations, for network planning purposes, and in order to secure additional funding for their substantial ongoing investments.
24. In the FSAC, published in 2011 three years after the AWS-1 auction, ISED adopted a flexible approach in determining licence terms, allowing for licence terms of up to 20 years. As the Department states, "this decision was based on the recognition that licence terms in excess of 10 years would create greater incentive to invest in the telecommunications industry and for the industry itself to further invest in the development of network infrastructure, technologies and innovation."¹⁵ Moving to a 20-year term would harmonize the AWS-1 licences with more recently auctioned 700 MHz, 2500 MHz, and AWS-3 licences, as well as the Cellular and PCS licences issued through a renewal process.
25. As stated above, AWS-1 licences form the backbone of Rogers' LTE network deployments and the spectrum is used in a growing number of Band 4 Carrier Aggregation combinations to provide our customers with increasingly faster speeds and improved network experiences. It is also a key LTE roaming band throughout the Americas. A 20-year renewal licence term of the AWS-1 licences will provide the ability to utilize the tremendous investments we have made in the latest 4G network technology.
26. Extensively deployed today, AWS-1 spectrum will also play a role in the networks of tomorrow as a strong candidate for the first phase of 3GPP 5G standardization. The Canadian Chamber of Commerce states, "Many advanced economies are looking at 5G as an opportunity to drive increased productivity. Although the private sector is leading the development of the technologies needed to deliver 5G, governments will play a key role through the provision of wireless spectrum (the airwaves wireless signals travel on)."¹⁶ A 20-year renewal licence term will more effectively allow Canadian operators the ability to build business cases for the large capital investments needed to deploy advanced new services in the band, including 5G services. As equipment and even standards for 5G are still under development, a longer planning and investment horizon will benefit Canadians both today and into the future.

¹⁵ Consultation, para 22.

¹⁶ Canadian Chamber of Commerce, *Stuck in Traffic for 10,000 Years: Canadian Problems that Infrastructure Investment can Solve*.

E. ISED invites comments on the proposal to apply deployment levels at the Tier 4 population coverage level, within eight years of the new licence term, as described above and provided in annex C, to the AWS-1 and G Block licences issued through the renewal process.

27. The deployment requirements established in the original licence conditions have successfully achieved ISED's objective to provide advanced wireless services across the country. Currently some 97% of Canadians, in both urban and rural parts of the country, have access to wireless services. Increasing the requirements will not result in any significant expansion of this footprint. As ISED noted itself in the *Renewal Process for Cellular and Personal Communications Services (PCS) Spectrum Licences*, "Imposing further deployment conditions where the initial condition has already been met is not considered to be justified at this point in time and may create investment uncertainty."¹⁷ The Department acknowledged that while some areas of the country did not yet have PCS and Cellular services available, in general, licensees deploy when a viable and sustainable business case can be made and that subsidies and subordination mechanisms were available to facilitate access to unserved and underserved areas.
28. The success of the current deployment targets is evident in the current Consultation, where the Department itself states, "For many licences, the deployment levels exceed the minimum requirements." This is true with Rogers, where we currently meet or exceed deployment requirements for our AWS-1 licences across all provinces and continue to increase coverage. For these reasons, there is no need for the Department to impose new deployment requirements for renewed AWS-1 licences.
29. However, should the Department elect to impose deployment requirements for renewed licences, it should move forward with the option of eight-year deployment requirements for Tier 3 service areas within each Tier 2 licence area. This option would harmonize deployment requirements at the same coverage percentages and tier level as the recently auctioned AWS-3 spectrum, which possesses the same propagation characteristics as AWS-1.
30. Moving forward with the Tier 3 deployment requirements will ensure that the newer entrant operators will continue to build out their networks to suburban and rural areas and contribute to the facilities-based competition that benefits all Canadians. None of the "AWS-1 new entrants" are wireless-only operators but are, in fact, all owned by established, well-capitalized companies that all possess extensive wireline

¹⁷ ISED, *Renewal Process for Cellular and Personal Communications Services (PCS) Spectrum Licences*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10003.html>.

networks in their respective operating regions. Incenting the AWS-1 entrants to expand their networks will intensify the facilities-based competition between themselves, Rogers, and the joint Bell-Telus network and maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource.

31. Tier 3 based deployment requirements will also minimize interference risks to established networks that coordinating mid-band mobile spectrum on a Tier 4 level could bring. Rogers has extensive first hand experience dealing with fixed wireless interference challenges between its joint venture Inukshuk Wireless Partnership's network and small, regional operators in the 3.5GHz band. Moving to a Tier 4 licensing regime for a mobile band with spectrum that has even stronger propagation characteristics would increase both the number and severity of service area interference risks for a spectrum band that Canadians heavily rely on.
32. The Department should instead maintain a Tier 2 or Tier 3 licencing framework and consider Tier 3 deployment requirements for mobile spectrum bands. As noted above, Rogers has already entered into voluntary spectrum arrangements and we will continue to evaluate opportunities as they arise in order to expand coverage for our customers. Voluntary commercial arrangements enable greater cooperation between different operators and limit the risk of interference. Additionally, parties interested in serving unserved areas also have the option of acquiring spectrum licences in the secondary market and by participating in spectrum auctions, such as the upcoming residual spectrum licences auction the Department is planning for early 2018.¹⁸
33. Competition is driving Canadian carriers to build out their networks continuously to provide greater coverage wherever it is economic and there is market-demand. To help provide coverage in areas that are uneconomical for fully market-based solutions, both the Department and the CRTC have recently launched or announced programs that will provide funding for new broadband infrastructure to bring high-speed Internet to rural and remote communities in Canada. These programs will help fund broadband facilities that can be used by operators to extend advanced mobile connectivity and will further support rural and remote communities.

F. ISED invites comments on whether or not the proposed Tier 4 deployment option should apply to I Block licences issued through the renewal process.

¹⁸ ISED, *Consultation on a Licensing Framework for Residual Spectrum Licences in the 700 MHz, 2500 MHz, 2300 MHz, PCS and 1670-1675 MHz Bands*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11287.html>.

34. As the Department themselves stated, there is a lack of an equipment ecosystem for the I Block at this time.¹⁹ While an ecosystem may develop in the future, Rogers is unaware of any standards body actively pursuing viable proposals. With no mobile devices currently available to operate in the I Block, it would not make sense to move forward with a more aggressive deployment option. The Department should maintain the current deployment obligations with I Block licences until a viable ecosystem is available. Once a standardized solution is widely available, the Department can then consult on whether to harmonize I Block deployment requirements with other spectrum licences issued through this renewal process.

G. ISED invites other proposals for deployment requirements for the AWS-1, G Block and I Block licences issued through the renewal process.

35. As stated above, the Department should remove deployment requirements for the AWS-1, G Block and I Block licences that meet all of their conditions of licence, including the deployment requirements from the *Licensing Framework for the Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range*.²⁰ This was the decision taken by the Department during the Cellular and PCS renewal process and both of these bands have seen coverage continue to expand, whether directly by the primary licensee or through commercial arrangements with third-party operators.

36. However, if the Department elects to change the deployment requirements from the original licensing framework for the AWS-1, PCS G Block, and I Block licences, they should harmonize the AWS-1 and PCS-G Block licences with the AWS-3 Tier 3 coverage requirements.

H. ISED invites comments on the proposed conditions of licence for the AWS-1, G Block and I Block licences issued through the renewal process as set out in annex A.

Lawful Intercept

37. With respect to lawful interception, it is important to note that mobile spectrum licensees, such as Rogers, have a long history of cooperation with law enforcement

¹⁹ ISED, *Consultation*, para 33.

²⁰ ISED, *Licensing Framework for the Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08856.html>.

and security agencies, subject to appropriate legal processes and judicial oversight. Moreover, Rogers' significant investment in the technology, resources and expertise that are required to support lawful interception activities is a substantial benefit that accrues directly to the Canadian public.

38. However, Rogers strongly believes that any lawful interception obligations, imposed as a condition of licence or pursuant to legislation, should be limited to capabilities that are provided for in industry standards and incorporated in commercially available equipment. Licensees should not be required to fund intercept capabilities that are not provided for in industry standards and commercially available equipment.
39. Technology vendors will be more likely to build equipment based on industry standards because this will generally be more economic than building unique or proprietary solutions for which there will be relatively limited demand. Defining lawful intercept requirements based on industry standards will result in greater availability of technology, better on-going support, and lower cost than non-standardized requirements.
40. We believe that the Department should clarify the proposed wording of the condition of licence such that the lawful interception capabilities that must be maintained will be limited to those capabilities that are provided for in industry standards and incorporated in commercially available equipment.

Research and Development

41. The research and development ("R&D") condition of licence has served its purpose and should be phased out. As the Department has noted elsewhere, this condition of licence was initially established to stimulate R&D in the telecommunications sector when the first mobile spectrum licences were issued in the mid-1980s.²¹ Since then, billions of dollars have been invested in R&D and the mobile industry in Canada is well established. This condition has therefore achieved its objective and is no longer required.
42. Rogers agrees with the *Telecommunications Policy Review Panel Final Report* and the *OECD Telecommunications Regulatory Institutional Structures and Responsibilities* report, which cautioned against the mix of regulation and industrial development strategy.²² The Department has other alternatives for encouraging R&D in Canada. We would also note that the U.S., U.K. and Australia do not impose an R&D condition of licence and Rogers is not aware of any other jurisdiction that imposes such a condition of licence. Market forces will ensure that wireless

²¹ ISED, *Consultation on Revisions to the Framework for Spectrum Auctions in Canada*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf09371.html#DGRB00109.06.1>.

²² Ibid.

equipment manufacturers and licensees will continue to invest heavily in R&D to enhance their competitive position.

43. Rogers thanks the Department for the opportunity to share its views and participate in this process.