

Innovation, Science and Economic Development Canada

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Consultation on the Spectrum Outlook 2018 to 2022

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Submitted by: Michael B. McNally

Q4 – Recognizing the trend of increasing commercial mobile traffic, what operational measures (e.g. densification, small cells or advanced traffic management) are being taken to respond to, and support, increasing traffic? To what extent are these measures effective?

1. One further consideration within the overall demand for commercial mobile traffic that ISED should consider is expansion of Radio Systems Policy 019 (RP-019). In *the 700 MHz Policy and Technical Framework*, Industry Canada committed to reviewing and possibly expanding RP-019.¹ It is not clear that such a review took place internally to the department – and no public consultation was held. ISED should consider expanding RP-019, and consider other policies to ensure effective usage of spectrum.
2. Ensuring effective usage of spectrum is particularly important given the recent empirical finding from Taylor, Middleton and Fernando that:

The paired spectrum approach is, in short, an ineffectual use of the key foundation of our modern mobile infrastructure. If there is truly a capacity crunch in mobile broadband, instead of throwing more spectrum at the problem, one of the first initiatives should be to implement a standard that does not underuse half the assigned frequencies.²

Given the findings from Taylor et al., effective spectrum usage should form a central component of policy framework for considering the outlook for spectrum demand.

Q10 – ISED is seeking comments on the above demand assessment for FSS/BSS for the period 2018-2022. Is there additional information on demand, which is not covered above, that should be considered with regards to the below bands?

1. C-band
 2. Ku-band
 3. Ka-band
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3. Paragraph 85 of the consultation document notes the contribution of 4K TV to demand for FSS and BSS satellite services. With regard to considering demand for 4K TVs, ISED should conduct further study to determine if such TV's will truly drive demand for satellite based broadband services. One study estimates that U.S. household penetration of 4K TVs will only reach 34% by 2019,³ with another study noting that penetration in

¹ Industry Canada. 2012. *Policy and Technical Framework: Mobile Broadband Services (MBS) – 700 MHz Band: Broadband Radio Service (BRS) – 2500 MHz Band*. SMSE-002-12. [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/700MHz-e.pdf/\\$file/700MHz-e.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/700MHz-e.pdf/$file/700MHz-e.pdf) p. 32.

² Taylor, Gregory, Catherine Middleton, and Xavier Fernando. 2017. "A Question of Scarcity: Spectrum and Canada's Urban Core." *Journal of Information Policy*, 7: 120-163. p. 156.

³ Jukic, Stephan. 2015. "According to the latest findings from HIS, 4K TV penetration will hit 35% as of 2019." *4k.com*. 10 Dec. 2015. <http://4k.com/news/according-to-the-latest-findings-from-ihs-4k-tv-penetration-will-hit-35-as-of-2019-11434/>

Canada in early 2016 is limited to only 15% in urban communities.⁴ While these studies are dated, ISED should collect further data on demand and penetration of 4K TVs for consumers who rely on FSS and BSS satellite services.

Q14 – Backhaul service in Canada is delivered using a variety of solutions, including fibre optics, microwave radio and satellites. What changes, if any, are anticipated to the mix of backhaul solutions employed?

4. Several trends will impact backhaul solutions in Canada over the next five years. As noted in paragraph 100 of the consultation document, there will be increased need for backhaul for 5G networks. 5G networks can be developed through two primary strategies: spectrum integration and network densification.⁵ ISED should study whether mandating fibre backhaul as a condition of 5G licenses is an effective means to not only facilitate cell site densification, but also ensure the growth of fibre infrastructure. Furthermore regulating 5G backhaul infrastructure sharing may be an effective means of addressing costs related to densification.⁶
5. In addition to issues of cell site densification, potential for fibre backhaul will be increased as current and future fibre transport deployments are realized including the Dempster Highway fibre line, the Mackenzie Valley fibre line and projects funded through ISED's Connect to Innovate program and potentially the CRTC's new broadband funding mechanism.
6. More importantly, the dynamic relations between wireless and wireline networks and the ultimate necessity of fibre transport infrastructure suggests a greater need of policy and regulatory coordination in Canada. Given the existing bifurcation of telecom policy and regulatory functions between ISED and the CRTC, a national strategy may be an effective means to facilitate more coordinated and effective deployment of broadband infrastructure and allow for the most effective use of spectrum to benefit Canadians economically and socially.

Q15 – What and how will technology developments and/or usage trends aid in relieving traffic pressures and addressing spectrum demand for backhaul services? When are these technologies expected to become available?

7. In addition to technological developments and usage trends, ISED should consider the development of an integrated broadband strategy (in conjunction with the CRTC) to incent fibre deployment for backhaul purposes and freeing up spectrum for other purposes.

⁴ Groch, Emily. 2016. "Canada leads the way in the emerging 4K TV marketplace." *Mintel*. 27 Jan. 2016. <http://www.mintel.com/blog/technology-market-news/canada-leads-the-way-in-the-emerging-4k-tv-marketplace>

⁵ Oughton, Edward J., and Zoraida Frias. 2017. "The cost, coverage and rollout implications of 5G infrastructure in Britain." *Telecommunications Policy* (In Press), 1-17: <https://www.sciencedirect.com/science/article/pii/S0308596117302781> p. 4.

⁶ Brake, Doug. 2016. "5G and Next Generation Wireless: Implications for Policy and Competition." *Information Technology and Innovation Foundation*. <http://www2.itif.org/2016-5g-next-generation.pdf> p. 11.

Q22 – Are there specific frequency ranges/spectrum bands that should be made available for specific applications?

8. As indicated in paragraphs 109, and 137 to 142 of the consultation document ISED is expressing interest in converting the 3500 MHz band from Fixed Wireless Access (FWA) to mobile use. In 2014 Industry Canada decided that the department would not establish geographically differentiated spectrum utilization policies on a Tier 4 level.⁷ As indicated in the consultation, some Tier 4 service areas, such as the 4-146 Fort McMurray service area, contained both a larger urban centre and a significant amount of rural and remote territory.
9. While the consultation paper makes clear the need for transition the 3500 MHz band to mobile use, ISED should carefully re-consider geographically differentiated spectrum utilization policies on a more granular geographic level. The need to more carefully consider urban versus rural and remote considerations for spectrum demand should invite a review of the *Spectrum Policy Framework for Canada* which is overdue for consultation and review.⁸ The existing policy framework could be strengthened by more carefully consider urban and rural spectrum needs and changes in the spectrum and broadband ecosystem over the past 11 years.

⁷ Industry Canada. 2014. *Decisions Regarding Policy Changes in the 3500 MHz Band (3475-3650 MHz) and a New Licensing Process*. DGSO-007-14. [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/dgso007-14-3500decision-e.pdf/\\$file/dgso007-14-3500decision-e.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/dgso007-14-3500decision-e.pdf/$file/dgso007-14-3500decision-e.pdf) p. 5.

⁸ Industry Canada. 2007. *Spectrum Policy Framework for Canada*. DGTP-001-07. [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/spf2007e.pdf/\\$FILE/spf2007e.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/spf2007e.pdf/$FILE/spf2007e.pdf)