February 15, 2018

Director, Spectrum Regulatory Best Practices
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Via Email – ic.spectrumauctions-encheresduspectre.ic@canada.ca

Re: Canada Gazette, Part 1, October 21, 2017 - Notice SLPB-006-17 - Consultation on the Spectrum Outlook 2018 to 2022

The Canadian Wireless Telecommunications Association (CWTA) is pleased to respond to the above referenced Notice.

Scope of the CWTA Response

1. CWTA members participated in the development of the response filed by The Radio Advisory Board of Canada (RABC). As such, CWTA will limit its response herein to those questions it is best suited to answer.

2. CWTA has determined that it is best suited to answer Questions 1, 2, 4, 5 and 13.

Answers to Select Questions

Q1 – What future changes, if any, should ISED examine with regard to the existing licensing regime to better plan for innovative new technologies and applications and allow for benefits that new technology can offer, such as improved spectrum efficiency?

3. Canada's facilities-based mobile wireless service providers have invested billions of dollars into creating some of the fastest and widest-reaching mobile wireless networks in the world. As part of this ongoing investment, mobile wireless service providers and equipment vendors are continually exploring new technologies and applications that have the potential to allow for better and more efficient use of licensed spectrum. While these technologies enable increased peak data rates, higher spectral efficiency and other performance improvements, they alone cannot keep up with the increasing demand for wireless services and data. Only with additional spectrum allocations to wireless services can mobile wireless operators meet the forecasted demand.

4. In addition, while there are various spectrum management techniques, such as dynamic spectrum management and use of white space, that are being experimented with as a way to make more efficient use of spectrum, these techniques are not ready for commercial deployment. As such, it is premature to consider these methods as the basis for changes to the existing spectrum licensing regime. Any licensing regime changes should only be considered when the adoption of these new methods is technically feasible and without adverse impact on the quality of service provided to Canadians. At such time, a standalone proceeding where the implications of any licensing regime changes being considered by the Department can be considered in a comprehensive manner is required.

Q2 –Do you agree with the above assessment on demand for commercial mobile services in the next few years? Is there additional information on demand, which is not covered above, that should be considered? If so, please explain in detail.

5. CWTA agrees with the Department's assessment that Canadians' demand for wireless data will continue to grow. Canadians are increasingly relying on wireless services in their day-to-day lives and are using more data than ever. 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 release of more exclusively licensed spectrum for wireless services.

6. In addition to the figures referenced in the Consultation document we note the following additional statistics as evidence of the increasing demand for wireless services in Canada:

- The CRTC's *Communications Monitoring Report 2017* (CMR 2017) shows that the trend of Canadian households subscribed exclusively to mobile wireless services continues to rise, with the percentage rising from 23.7% the previous year to 27.5%.
- Leading all other regions, North American monthly mobile data traffic per smartphone is expected to reach 48GB by the end of 2023 (including wireless and wi-fi).[1]
- Ericsson predicts that total global mobile traffic will rise at a compound annual growth rate (CAGR) of 42%.[2]
- There will be about 1.8 billion IoT devices with cellular connections in 2023, an increase of over 300% from around 0.5 billion at the end of 2017.[3]

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?

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[1] Ericsson Mobility Report 2017
[2] *Ibid.*
[3] *Ibid.*

7. To meet Canadians' increasing demand for the best wireless services, Canada's facilities-based wireless operators – the national and regional service providers that pay for, build, upgrade and maintain Canada's wireless networks – continue to invest in expanding and improving their network infrastructure. Not counting the costs of acquiring access to spectrum, investments increased from $2.1 billion to $2.3 billion, an increase of 8.7% from 2015 to 2016.[4]

8. These investments include upgrading LTE networks to LTE-Advanced networks.[5] LTE-Advanced uses a variety of new functionalities to provide faster and more reliable service and higher spectral efficiency.[6]

9. Investments also include spending on network densification, including the use of small cell technology. Small cells can help fill in coverage gaps, particularly in urban settings where buildings and other structures can interfere with signals. In using small cells, wireless network operators can make efficient use of high-frequency spectrum, which carries more data at higher speeds but has more difficulty penetrating thick walls. Small cell deployment figures to be an important element in the deployment of the new 5G networks. As such, the Department should consider developing a national policy framework of best practices that local governments can adopt to speed consideration of siting applications, including small cells, and the ultimate availability of 5G.

10. While new technology can help facilities-based carriers meet Canadians' demand for wireless services, not all new technologies are cost-efficient to deploy. Nor will carrier investment alone be able to keep pace with the forecasted demand for wireless services. Substantial quantities of additional exclusively licensed spectrum for wireless services must be made available in a timely manner in order for Canadas' facilities-based mobile wireless service providers to keep pace with consumer demand.

Q5 – Do you agree with the above assessment of demand for licence-exempt spectrum in the next few years? Is there additional information regarding demand, which is not covered above, that should be considered? If so, please explain in detail.

11. CWTA agrees with the Department's assessment that the demand for licence-exempt spectrum will increase in the next few years. As cited in the Consultation document, offloading of mobile traffic, the forecasted increase in the number of Internet of Things devices, and the demand for faster and greater capacity of Wi-Fi devices will put pressure on the existing licence-exempt spectrum. For example, the Wi-Fi Alliance has concluded that the existing capacity of spectrum in the currently available 5GHz band will be

[4] CRTC, Communications Monitoring Report 2017
[5] LTE-advanced networks are now available to approximately 83% of Canadians (versus 98.5% for LTE networks) – as per CRTC, Communications Monitoring Report 2017.
[6] http://www.3gpp.org/technologies/keywords-acronyms/97-lte-advanced

exceeded by 2020 and that between 500MHz and 1GHz of additional spectrum in various world regions may be required to meet Wi-Fi demand by 2020.[7]

Q13 –Do you agree with the above assessment on demand for backhaul in the next five years? Is there additional information on demand, which is not covered above, that should be considered? If so, please explain in detail.

12. CWTA agrees with the Department's assessment that the demand for backhaul spectrum will increase and that there is a need for new backhaul spectrum to be made available in the next five years. However, availability of spectrum is not the only factor impacting backhaul capacity. Issues with the backhaul regulatory framework, many of which have been identified by licensees and acknowledged by ISED in previous consultations and decisions (i.e., SMSE-022-14), will, unless rectified, continue to impair the use of backhaul spectrum and have an even greater impact when 5G networks are deployed.

Summary

13. CWTA agrees that demand for wireless services will continue to grow at a fast rate. This growth will result in capacity issues that cannot be solved solely my investment in new technologies and spectrum management techniques. Additional spectrum is needed, in a timely manner, to keep up with Canadians' appetite for mobile wireless services.

- End of Submission-

[7] See https://www.wi-fi.org/news-events/newsroom/additional-unlicensed-spectrum-needed-to-deliver-future-wi-fi-connectivity