

10 November 2017

Innovation, Science and Economic Development Canada (ISED)
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**Re: Gazette Notice No. SLPB-007-17 — Extension to the reply comment
period: Consultation on Releasing Millimetre Wave Spectrum to Support
5G – Cogeco Reply Comments**

In accordance with the procedures set out in the above-noted consultation, please find attached the reply comments of Cogeco Communications Inc. (“Cogeco”).

Cogeco thanks ISED for the opportunity to submit comments in this proceeding and remain available to answer any questions you may have regarding this submission.

Yours very truly,

Michel Messier
Senior Director, Regulatory Affairs, Telecommunications

c.c.: Nathalie Dorval, VP Regulatory Affairs and Copyright, Cogeco Inc.
Luc Noiseux, Chief Technology and Strategy Officer, Cogeco Inc.
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**Innovation, Science and Economic Development Canada
Spectrum Management and telecommunication
Consultation on
Releasing Millimetre Wave Spectrum
to Support 5G**

***Canada Gazette, Part I, June 17, 2017,
Notice No. SLPB-001-17 and
Gazette Notice SLPB-007-17, October 6, 2017***

**Reply Comments of
Cogeco Communications Inc.**

10 November 2017

Introduction

1. Cogeco Communications Inc. (“Cogeco”) respectfully submits reply comments with respect to Innovation, Science and Economic Development Canada (ISED)’s *Consultation on Releasing Millimetre Wave Spectrum to Support 5G*, Canada Gazette, Part I, SLPB-001-17, dated 5 June 2017, modified in Gazette Notice SLPB-007-17, dated 6 October 2017 (the “Consultation Document”).
2. In its comments of 15 September 2017 in response to the Consultation Document, Cogeco urges ISED to adopt policies with respect to millimetre wave (“mmWave”) spectrum which encourage entry and facilitate the success of new facilities-based carriers in wireless markets. 5G will give operators greater flexibility in designing services and will enable new mobile applications for vertical markets. Deploying the necessary networks, however, will require substantial investment, and ISED must ensure its policies provide operators the commercial and technical flexibility to unlock the necessary investment. This is key to ensuring Canada leads in the development of 5G.
3. Cogeco also encourages ISED to develop coherent strategies for the release of spectrum for 5G networks and services generally, particularly as 5G networks are expected to use several frequency ranges in order to ensure ubiquitous coverage and sufficient bandwidth. This includes the licensing of 600 MHz spectrum, as low-band spectrum is critical to the roll-out of 5G across Canada, as well as other bands being considered by the ITU, such as the 26 GHz band (24.25-27.5 GHz), and by the FCC, such as the 24 GHz band. While ISED’s approach of aligning with developments in the U.S. is generally appropriate, Cogeco notes it is also critical that ISED carefully consider spectrum developments in Europe and Asia if Canada is to benefit from the global 5G ecosystem.
4. Cogeco notes other commenters in this consultation take similar positions. For example, Samsung and TeraGo recommend that ISED consider releasing the

26 GHz band “as a next step” (Samsung, p. 6) and “in the near future” (TeraGo, par. 15) and Shaw (par. 17) and TeraGo (par. 15) recommend consideration of the 24 GHz band for 5G. Cogeco agrees with TELUS that “ubiquitous 5G will not arrive until 3.5 GHz spectrum is liberated and reassigned” (TELUS, par. 13). All of these bands are necessary to the deployment of 5G and achieving ISED’s objectives will be facilitated by policies which take all of these into account. The FCC is already looking at other mmWave bands in addition to the four bands (28, 37, 39 and 60 GHz) addressed in their Spectrum Frontiers decision,¹ and is considering a number of ‘mid-band’ spectrum bands for 5G services, including the “C-band” at 4 and 6 GHz² and the 3.5 GHz band.³ Cogeco recommends ISED consider all of these opportunities.

5. Cogeco is pleased to provide below its comments in relation to responses to specific questions filed by other interested parties, particularly with respect to key positions outlined in its original comments:

- a. Band plans should be designed to accommodate new operators;
- b. Pro-competitive measures are required;
- c. Licensed service areas should be defined to enable timelier, more targeted and more productive use of available spectrum; and
- d. Additional spectrum should be made available on a licence-exempt basis.

¹ FCC, *Report and Order and Further Notice of Proposed Rulemaking*, FCC 16-89, 14 July 2016 (“Spectrum Frontiers decision”).

² FCC, *Notice of Inquiry*, FCC 17-104, 3 August 2017.

³ See for example, FCC, *Report and Second Further Notice of Proposed Rulemaking*, FCC 15-47, 21 April 2015 (the CBRS decision) and FCC, “Promoting Investment in the 3550-3700 MHz Band,” *Draft Report and Order and Further Notice of Proposed Rulemaking*, FCC-CIRC1710-04, 3 October 2017.

6. Failure to address any specific issue raised or position adopted by another party should not be considered by ISED or any other person as Cogeco's agreement with that issue or position.

Band Plan Design (Questions 6-3, 7-3 and 8-1)

7. Cogeco urges ISED to ensure the design of its band plans facilitates competition and supports new operators so that ISED will achieve its stated objectives:

- *to foster innovation and investment and the evolution of wireless network through the adoption of 5G technology to support sustained competition, so that consumers and business benefit from greater choice; and*
- *to facilitate deployment and timely availability of services across the country, including rural areas.*

8. This issue is of particular concern with respect to the proposed band plan for the 28 GHz band, which would be aligned with the US band plan and consist of only two blocks of 425 MHz. Under this proposal, at most two operators could be licensed to use the 28 GHz band in any given area. If the two licensees were associated through a network sharing agreement, there would in effect be a single entity licensed to use the entire band. Rogers, for example, notes:

The risk of adopting the U.S. band plan is that a single operator, or two associated operators, will be able to monopolize this key 5G band. This outcome would be wholly unacceptable and would jeopardize the successful development of competitive 5G services in Canada. (par. 27)

9. Cogeco agrees that this outcome would be unacceptable. Similar views are shared by Shaw (par. 43-44) and TeraGo (par. 21-22), and by Microsoft who submits that: "*ISED needs to balance the objective of harmonizing the Canadian band plan for 28 GHz with the U.S. band plan for 28 GHz, with the objective of fostering*

domestic competition in 5G services" (page 3). The fact that the market for mobile wireless services in Canada is already characterized by limited competition is well documented, and it is critical that the very structure of ISED's band plans not serve to reinforce this situation of very limited competition.

10. Rogers and TeraGo propose alternative band plans consisting of blocks of 200 MHz (Rogers notes there would also be two other smaller blocks of 25 MHz each), while Shaw proposes dividing the 28 GHz band into four blocks of 212.5 MHz each. Cogeco recommends ISED give serious consideration to the Rogers and TeraGo proposals rather than to the Shaw proposal. As noted by Rogers (par. 30) and by Bell (par. 29), discussions in 3GPP suggest supported channel sizes would include 50, 100, 200 or 400 MHz, and Shaw's proposed channels of 212.5 MHz would not align with these.

11. Cogeco also notes that licensing the 28 GHz band in blocks of 200 MHz would be consistent with the block size proposed for the 37-40 GHz band. Applying the same block size to both bands would ensure competitors licensed to use spectrum in one band are not unduly advantaged over competitors licensed to use spectrum in the other. Further, Cogeco notes Microsoft's statement that "*A '5G' data rate can be achieved using less than 425 MHz of spectrum*" (page 3). In other words, ISED can achieve the objective of sustained competition without compromising the new technologies, novel applications and creative business cases which 5G will facilitate.

Pro-Competitive Measures (Question 9-3)

12. In its 15 September 2017 comments, Cogeco notes:

New operators and new ideas will be the key source of innovation and investment which will position Canada prominently on the global map, provide benefits to the Canadian economy and Canadian consumers, and which will

allow ISED to achieve its objectives. They must be encouraged and given an environment in which they can flourish. (par. 35)

13. Accordingly, Cogeco recommends that ISED establish set-asides in the licensed portions of the 28 GHz and 37-40 GHz bands when designing the licensing frameworks for those bands (par. 30 and 58).

14. This issue is also raised by a number of other commenters. Predictably, the incumbent mobile network operators (“MNOs”) (Bell, SaskTel, and TELUS) oppose the introduction of pro-competitive measures while small operators and their associations strongly recommend them (Xplornet, BCBA).

15. Bell suggests that set-asides would prevent Canada from realizing “*the full potential of new 5G network technologies*” by limiting the size of spectrum allocations (par. 86) and would prevent “*the efficient allocation of spectrum*” (par. 90). SaskTel argues that its market is already highly competitive and that the new mmWave spectrum should be “*acquired and utilized by the established wireless operator best suited to efficiently deploy it*” (par. 92). TELUS argues that the “*5G mmWave network business opportunity is completely green field and all interested parties are starting from scratch in terms of flexible use mmWave spectrum in Canada*” (par. 87).

16. Xplornet notes that measures such as spectrum caps and set-asides are required “*to ensure that the larger carriers do not purchase all of the spectrum and that high auction prices do not preclude smaller players and new entrants from purchasing adequate quantities of the spectrum to support their competitive entry and growth*” (page 11). The BCBA notes that “*the use of set-asides for non-incumbent carriers enables the development of new competition in broadband markets, bringing more choice to Canadian consumers*” (par. 62) and that “*spectrum aggregation limits further ensure a healthy, competitive marketplace*” (par. 63).

17. Cogeco strongly disagrees with statements by Bell, SaskTel and TELUS that the market for mobile wireless services in Canada is highly competitive. Cogeco and others describe in detail in this consultation and other recent consultations the evidence to the contrary.

18. Further, as noted above and contrary to Bell's position, the potential of 5G can be achieved without mmWave spectrum being concentrated in the hands of a few operators (see Microsoft, page 3). Nor is it the case that, as submitted by TELUS, all interested parties are starting from the same position with respect to the roll-out of 5G networks and services. The national incumbent MNOs already hold significant swathes of the mobile wireless spectrum that ISED has made available and, therefore, have a significant head-start in the development of heterogeneous 5G networks.

19. Cogeco submits that the approach recommended by these three MNOs (Bell, SaskTel and TELUS) would ensure the mmWave spectrum ISED is proposing to release would end up in the hands of the incumbent MNOs, and not in the hands of the small players and new operators who will be the source of the disruption, innovation and competition that will enable ISED to achieve its objectives. ISED should therefore not adopt their position and should instead consider implementing pro-competitive measures such as set-asides when designing the licensing framework for mmWave spectrum.

Licensed Service Areas (Question 9-1 B)

20. As noted in its first round of comments, Cogeco is recommending that, where ISED licenses mmWave with services areas for competitive licensing, ISED do so using smaller areas based on grid cells. This would align licence areas with intended service areas, maximizing the number of new operators and optimizing the use of

the spectrum. Even Tier 4 service areas could be too large for the purposes of mmWave spectrum.

21. Cogeco notes that, despite the range of positions adopted by the interested parties, there appears to be a consensus that mmWave spectrum for 5G should not be licensed on a site-by-site basis (even if the terrestrial service sites should be made known to facilitate coordination with FSS, as recommended by a number of satellite operators). Cogeco agrees with commenters such as the Radio Advisory Board of Canada that site-by-site licensing would be too burdensome given the high density of site deployment that will be required (par. 70) and that mmWave spectrum should be licensed on the basis of service areas.

22. Cogeco notes commenters such as the Broadband Satellite Operator Coalition, Intel, and Xplornet submitted that the appropriate service area size would be Tier 4. Cogeco agrees that Tier 4 service areas would be more appropriate than any of the larger tier sizes (Tier 1, 2 or 3). However, 5G will be a disruptive force, introducing a broad range of innovative applications and new business plans. A one-size-fits-all approach will not necessarily work well with all of these, and ISED should adopt policies which are flexible enough to accommodate the innovative approaches it wants to foster. Rather, licensees should be able to select the service area that best fits with their applications and business plans, and this is achievable only by licensing spectrum on a grid cell basis. Alternatively, groupings of grid cells could be used to subdivide some Tier 4 areas in order to provide a maximum of flexibility to service providers to develop and support a variety of technologies, applications and business cases.

23. Nor do the characteristics of the mmWave spectrum require the use of large service areas. Cogeco specifically disagrees with Bell's view that service areas ought to "*be of significant size to in order to minimise boundary coordination requirements*" (par. 81). This is not the case and, as noted above, large service

areas would not facilitate innovation and investment. Licensing large service areas would, however, enable national incumbent MNOs to buy up great tracts of spectrum while keeping out innovative competitors who are unable to bid on licence areas that are too large for their customer base and business plans.

24. Two of the commenters, BCBA and SaskTel, each propose a hybrid approach where mmWave spectrum would be licensed using Tier 4 service areas in “urban areas” and grid cells outside of those areas. Cogeco notes that there are significant differences between the two proposals (for example, BCBA would pre-define “urban areas” while SaskTel would hold a two-stage licensing process), however, Cogeco considers that each is highly complex and neither appropriate nor necessary. Applying the same grid cell approach to all areas would achieve ISED’s objectives without introducing undue complexity into the licensing process.

Licence-Exempt Spectrum (Questions 8-1 and 9-1 A)

25. As described in its previous filing, Cogeco generally supports the proposal to make the 64-17 GHz band available on a licence-exempt basis (par. 41). Cogeco recommends that a part of the 28 GHz and of the 37-40 GHz bands also be made available on a licence-exempt basis (par. 47), as this would promote further innovation in those bands.

26. All but one of those who commented support ISED’s approach with respect to the 64-71 GHz band. Nokia is alone in submitting that the “*amounts of licensed spectrum and unlicensed spectrum should be more balanced*” (page 7) than proposed by ISED. Cogeco respectfully disagrees. Licence-exempt spectrum facilitates innovation and can lead to new applications, technologies and business plans. ISED should encourage this by making more mmWave available on a licence-exempt basis.

27. While Cogeco encourages ISED to consider making more spectrum generally available on a licence-exempt basis, Cogeco notes one band in particular that could be made available on this basis, the 37.0-37.6 GHz band. While the FCC is still reviewing its approach to that band, ISED does not necessarily need to adopt the same approach as the FCC in this case, as Canada does not face the same historical circumstances as the US with respect to that band. Cogeco notes that the WiFi Alliance urges ISED to make this band available for licence-exempt operations to the extent the FCC does so as well (par. 3.2) and that Microsoft also recommends licence-exempt users access that band (page 6), albeit using dynamic access using a data base. While Cogeco does not support the use of dynamic access using a database at this time, Cogeco agrees with Microsoft that allowing licence-exempt use of this band means “*Canadian innovators will have [the] opportunity to explore different opportunities*” (page 6).

28. Cogeco also recommends that, in the event ISED makes the 28 GHz band available in four 200 MHz blocks, ISED should consider making the two remaining blocks of 25 MHz available on a licence-exempt basis. As with the 37.0-37.6 GHz and 64-71 GHz bands, this approach will facilitate the rapid exploration of innovative applications, enabling the development of new technologies and business plans that meet customers’ rapidly changing needs. This will help position Canada at the forefront in the global digital economy.

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