

5 July 2018

Innovation, Science and Economic Development Canada (ISED)
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**Re: Gazette Notice SLPB-005-18 – Addendum to the ISED Consultation on
Releasing Millimetre Wave Spectrum to Support 5G– Cogeco Comments**

In accordance with the procedures set out in the above-noted consultation, please find attached the 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.

**Innovation, Science and Economic Development Canada
Spectrum Management and telecommunication**

**Addendum to the Consultation on Releasing
Millimetre Wave Spectrum to Support 5G**

**Canada Gazette: June 6, 2018,
Gazette Notice SLPB-005-18**

**Comments of
Cogeco Communications Inc.**

5 July 2018

Introduction

1. Cogeco Communications Inc. (“Cogeco”) is pleased to submit these comments on the proposal to release millimeter wave (“mmWave”) spectrum in the 26 GHz frequency band to support the deployment of 5G wireless networks and services, in accordance with the procedures set out by Innovation, Science and Economic Development Canada (ISED) in *Addendum to the Consultation on Releasing Millimetre Wave Spectrum to Support 5G*, SLPB-005-18, published 5 June 2018 (the “Addendum”).
2. Cogeco is a diversified communications company headquartered in Montreal, Quebec, that provides video, Internet and telephony services through its affiliate Cogeco Connexion Inc. to residential and business customers as well as offering third party Internet access and transport services to Internet service providers on a wholesale basis in Ontario and Quebec.
3. Cogeco also provides an entire suite of information technology services to its business customers through Cogeco Peer 1 (Canada) Inc. Included among the services provided by this entity are collocation, network connectivity, hosting and cloud services, all of which are supported by 17 data centres, an extensive fibre network in Montreal and Toronto, as well as points-of-presence in North America and Europe.
4. As a competitive communications service provider that has invested heavily in infrastructure in Canada over many years and one that is making significant investments in mobile spectrum, Cogeco has strongly supported and continues to support the development of a regulatory framework whose objectives are both to encourage investment in facilities and to promote competition among facilities-based carriers. Achieving these two objectives will be critical to ensuring that Canadian consumers benefit from greater choice, lower prices, and innovative and high-quality communications services.
5. Cogeco also supports policies which maximise the use of scarce spectrum resources in all regions of Canada. Such a regulatory framework and corresponding policies enable ISED to achieve the over-arching policy objective of 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.

6. In this submission, Cogeco addresses selected questions posed by ISED in the Addendum. Where Cogeco does not address a specific question, this should not be construed as agreeing or disagreeing with the proposal, as lack of interest in the subject matter, or as taking a position on the specific issue. Cogeco will be interested in analyzing the submissions of other interested parties and reserves the right to comment in the reply phase.

Question A1: ISED is seeking comments on the development of a flexible use licensing model for fixed and mobile services in the 26 GHz band (in addition to the bands currently under consultation through the mmWave Consultation), taking into account the timing of WRC-19, 5G technology standards development, international ecosystems and harmonization of spectrum use with other countries.

7. Cogeco is pleased that ISED has published the Addendum to consider releasing the 26.5 – 27.5 GHz frequency range (the “26 GHz band”). This band, like the 27.5 – 28.35 GHz frequency range (the “28 GHz band”), has the potential to become a key global band for 5G services, and Cogeco has previously recommended that ISED release it.¹

8. In its comments in the mmWave Consultation (par. 46 – 47), Cogeco stated:

46. Cogeco supports policies which support innovation, the testing of new technologies and applications, and participation by a wide range of new operators using mmWave frequencies for 5G.

47. This, of course, would require ISED to adopt policies which maximize the flexibility of use of the mmWave frequency bands. Cogeco recommends, therefore, that both the 28 GHz and 37-40 GHz frequency bands be made available under flexible use policies permitting both fixed and mobile uses.

¹ Cogeco Comments on *Consultation on Releasing Millimeter Wave Spectrum to Support 5G*, SLPB-001-17 (“mmWave Consultation”), 15 September 2017, paragraphs 23 and 36.

9. Consistent with those comments, Cogeco agrees with ISED's proposal to develop a flexible use licensing model for fixed and mobile services in the 26 GHz band. If this band is combined with the adjacent 28 GHz band being considered by ISED in the mmWave Consultation, a total of 1.85 GHz of contiguous spectrum would be made available for fixed and mobile services, which would greatly facilitate the deployment of 5G services in Canada, representing an important step in keeping Canadians at the forefront of technological advances.

10. Because the 26 GHz and 28 GHz bands will be used for similar services, Cogeco is of the view that both should be released under similar terms and at the same time, as this would allow enough operators in Canada to gain a foothold in the market as early as possible. Cogeco anticipates that the 26 GHz band will become a key band for 5G services in Europe (see, for example, the draft ECC decision for the 24.25 – 27.5 GHz band,² and comments recently made by Ofcom³) and other countries around the world. A good equipment ecosystem should therefore develop quickly after it is formally identified as a global band for 5G at WRC-19.

Question A2: ISED is seeking comments on the changes proposed above to introduce flexible use licensing in the 26 GHz band, including the ensuing changes to the CTFA Canadian footnotes and the policy on this band contained in SP 3-30 GHz, [Revisions to Spectrum Utilization Policies in the 3-30 GHz Frequency Range and Further Consultation](#).

11. Cogeco agrees with the proposed changes to the CTFA Canadian footnotes and to the policy on the 26 GHz band contained in SP 3-30 GHz, *Revisions to Spectrum Utilization Policies in the 3-30 GHz Frequency Range and Further Consultation*.

² *Harmonised technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 24.25-27.5 GHz*, Draft Decision (18)FF of the Electronic Communications Committee (ECC) of the European Conference of Postal and Telecommunications Administration (CEPT).
[https://www.cept.org/files/9522/Draft%20ECC%20Decision%20\(18\)FF%20PF.docx](https://www.cept.org/files/9522/Draft%20ECC%20Decision%20(18)FF%20PF.docx)

³ "We have previously made clear that we support the harmonisation of the 26 GHz band (24.25 – 27.5 GHz) for IMT at WRC-19, on a global basis. We believe that this is the highest priority mmWave band for 5G and identification at WRC-19." Ofcom, Consultation on UK preparations for the World Radiocommunication Conference 2019 (WRC-19), 7 June 2018, paragraph 4.3.
https://www.ofcom.org.uk/__data/assets/pdf_file/0017/114524/consultation-wrc-19.pdf

Question A3: ISED is seeking comments on the importance of harmonizing the Canadian band plan with the United States in the 26 GHz and 28 GHz bands, recognizing that the 26 GHz band is not available for 5G services in the United States at this time.

12. Cogeco recognizes the advantages of aligning the band plan in Canada with that of the United States. Cogeco also expects that the 28 GHz band will be deployed in the United States for 5G before the 26 GHz band, which means an equipment ecosystem will likely develop there for that band first.

13. However, Cogeco has also noted in its comments in the mmWave Consultation (par. 38):

... a band that only consists of two blocks cannot be licensed to more than two operators. Cogeco considers that ISED should ensure the band plan accommodates all operators, in particular alternative wireless service providers who may wish to offer innovative networks, applications and business plans.

14. Other operators echoed this concern in their own comments in the mmWave Consultation.⁴ 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, and submits that harmonization with the US in the 26 GHz and 28 GHz bands should not extend to the size of the blocks to be made available (see our answer to Question A4 below).

Question A4: ISED is seeking comments on the minimum block size that should be made available for the 26.5–28.35 GHz band. Is it necessary that the frequency blocks be multiples of the 3GPP channel bandwidths (50 MHz, 100 MHz, 200 MHz and 400 MHz)?

15. As ISED notes at paragraph 18 of the Addendum, the 3rd Generation Partnership Project (“3GPP”) has identified two band classes which include the 26 GHz band. Equipment made for these band classes will operate with channel

⁴ These include Shaw Communications Inc., TeraGo Networks Inc., Rogers Communications Canada Inc. and Microsoft Corporation. See Cogeco’s 10 November 2017 Reply Comments in the mmWave Consultation, paragraphs 7 to 11.

bandwidths of 50, 100, 200 and 400 MHz. If Canadian operators are to take full advantage of the equipment ecosystem that is expected to evolve, the spectrum assignments should align with these channel bandwidths. As we also note above, the US approach to the 28 GHz band (two blocks of 425 MHz) would limit the number of service providers who could operate in that band and, therefore, severely restrict the degree of competition and innovation that would otherwise have been expected.

16. For this same reason, Cogeco does not favour a band plan based on 400 MHz block sizes for either band, or for both bands should they be combined. The 26 GHz band could accommodate only two 400 MHz blocks and one 200 MHz block, while the combined 26 GHz and 28 GHz bands could accommodate no more than four 400 MHz blocks and one 250 MHz block. Cogeco is of the view that this approach would unnecessarily restrict competition in these bands. Rather, the choice of band plan and block size should be designed to promote competition.

17. Cogeco recommends that ISED adopt band plans for the 26 GHz and the 28 GHz bands with block sizes of no more than 200 MHz, and ideally no more than 100 MHz. In our view, a block size of 100 MHz would provide operators with the flexibility to obtain the specific amount of spectrum they require for the service they intend to offer (for example by aggregating blocks where required) and would also accommodate a reasonable number of competitors.

Question A5:

A. ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services in the 26.5–27.5 GHz band to ensure coexistence with ISS.

B. If limits are proposed, ISED is inviting detailed proposals on what the limits should be, and why they should be implemented.

18. ISED notes that in the Addendum the preliminary results of the ITU's analysis of the impact of 5G systems on the inter-satellite service ("ISS") indicate that harmful interference to space stations due to aggregate emissions from 5G is not likely, and therefore ISED proposes not to impose limits on the aggregate power levels produced by flexible use systems.

19. Cogeco agrees with ISED's proposed approach. As interference does not appear to be a concern, emission limits are not required and 5G operators should have the flexibility to take full advantage of new technologies in their network deployments in the 26.5-27.5 band.

Question A6:

A. ISED is seeking comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and EESS/SRS earth stations in the 26.5–27.0 GHz band when a pre-determined trigger threshold is exceeded.

B. If the proposed site-by-site coordination is supported, what coordination trigger and value would be the most appropriate (e.g. power flux density or distance threshold)?

C. ISED is also inviting proposals for specific additional technical rules for flexible use terrestrial stations and EESS /SRS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations.

20. ISED notes that as pointed out in the Addendum (par. 22) to date no Earth exploration satellite service ("EESS") or space research service ("SRS") earth stations have been deployed, overall deployments are expected to be limited in number, and the proposed Canadian footnote CXX to the CFTA would limit such stations to those that will pose minimal constraints upon the deployment of fixed and mobile service systems.

21. Cogeco is therefore of the view that the EERS and SRS services will not make significant use of the 26.5-27.0 GHz frequency band in the next few years. Conversely, terrestrial networks – 5G networks in particular – will continue to grow in importance and cover increasingly larger areas of the country. In its Comments in the Spectrum Outlook Consultation, Cogeco submitted that "... *growth in spectrum demand for satellite uses may be important but should be considered secondary to the growth in demand for spectrum for mobile applications*" (par. 50).

22. Cogeco considers this principle also ought to apply to the 26.5-27.0 GHz band. The deployment of EESS or SRS earth stations should not be permitted to restrict the deployment of terrestrial networks in this band.

23. Because the coverage of mmWave sites is very small, resulting in larger number of sites within a given deployment area than other frequency ranges, Cogeco submits that site-by-site coordination would likely introduce undue overhead costs for both operators and ISED. Cogeco recommends that coordination and management of interference should take place between an earth station site and an area (i.e., not individual sites) where flexible-use terrestrial stations are deployed.

24. Cogeco supports the use of power flux density (“PFD”) as the trigger for coordination. The specific value of the PFD threshold, however, requires further study and Cogeco supports a study by the Radio Advisory Board of Canada (“RABC”) to identify that threshold.

25. Potential interference between proposed flexible-use terrestrial stations and an EESS/SRS earth station could be managed by mandating the use of site shielding for that EESS/SRS earth station.

Question A7:

A. ISED is seeking comments on whether there should be restrictions on the geographic areas in which new EESS and SRS earth stations can be deployed in the 26.5–27.0 GHz band.

B. If geographic restrictions on EESS and SRS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted.

26. Please refer to our answer to question A6. The deployment of EESS or SRS earth stations should not be permitted to restrict the deployment of terrestrial networks in the 26.5-27.0 GHz frequency band.

27. In light of the fact that there are expected to be few EESS or SRS earth stations and that millimeter wave networks will be mostly deployed in population centers, Cogeco recommends that ISED only license EESS/SRS earth stations at sites which are outside of urban population centers. For these purposes, an “urban population

centre” would be a community defined by Statistics Canada with a core population exceeding 10,000. While EERS and SRS earth stations could be permitted within population centres of 2,000 to 10,000 persons, Cogeco recommends that additional restrictions, such as site shielding, be imposed on them.

28. Geographical restrictions such as these will minimize potential interference between flexible-use terrestrial stations and EESS/SRS earth stations, and will ensure more Canadians will have access to 5G services.

Question A8:

A. ISED is seeking comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the 27.0–28.35 GHz band when a pre-determined trigger threshold is exceeded.

B. If the proposed site-by-site coordination is supported, what coordination trigger and value would be the most appropriate (e.g. power flux density or distance threshold)?

C. ISED is also inviting proposals for specific technical rules for proposed flexible use terrestrial stations and FSS earth stations (e.g. site shielding) that could facilitate more efficient sharing between terrestrial and earth stations.

29. Please see our answer to question A6. Cogeco considers that a similar approach could be applied in the 27.0-28.35 GHz band for coordination between proposed flexible-use terrestrial stations and FSS earth stations.

30. Because of the expected growth in importance of terrestrial networks and of 5G networks in particular, the deployment of FSS earth stations should not be permitted to restrict the deployment of terrestrial networks in the 27.0-28.35 GHz frequency band. In the case of existing FSS earth stations, these stations should apply measures such as site shielding to minimize potential interference with terrestrial stations.

Question A9:

A. ISED is seeking comments on whether there should be restrictions on the geographic areas in which new FSS earth stations can be deployed in the 27.0–28.35 GHz band.

B. If geographic restrictions on FSS earth stations are proposed, ISED is inviting detailed proposals on how they could be implemented, and what areas should be targeted.

31. Please see our answer to question A7. Cogeco considers that a similar approach could be applied in the 27.0-28.35 GHz band for the placement of FSS earth stations.

32. Because of the expected growth in importance of terrestrial networks and of 5G networks in particular, new FSS earth stations should not be permitted within urban population centres in order not to restrict the deployment of terrestrial networks in the 27.0-28.35 GHz frequency band. Any existing FSS earth stations within urban population centres, and new FSS earth stations within population centres of 2,000 to 10,000 persons, should apply measures such as site shielding to minimize potential interference with terrestrial stations.

Question A10:

A. ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services in the 27.0–28.35 GHz band to ensure coexistence with FSS space stations.

B. If limits are proposed, ISED is inviting detailed proposals on why they should be implemented, and what the limits should be.

33. Cogeco does not have a specific view on this matter and looks forward to analyzing the comments of other respondents.

Question A11:

A. Further to section 9 of the mmWave Consultation, are there any new considerations or suggested approaches regarding the licensing of flexible use mmWave spectrum, given the addition of the 26 GHz band?

B. ISED is also seeking comments on licensing considerations in the 26 GHz and 28 GHz bands that would encourage innovative use cases while also supporting competition for existing mobile network services.

34. Cogeco does not have new views on these matters and looks forward to analyzing the comments of other respondents.

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