

Consultation on Releasing Millimetre Wave  
Spectrum to Support 5G  
SLPB-001-17

Comments of  
Rogers Communications Canada Inc.  
September 15, 2017



## Executive Summary

- E1. Millimetre wave spectrum will be 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 Canada's largest wireless provider and the leader in the Machine to Machine market, we continue to invest heavily in advanced wireless networks and, as such, Rogers requires continued access to interference free, exclusively licensed spectrum in order to satisfy its customers' growing demand for mobile data services.
- E2. Rogers supports Innovation, Science and Economic Development Canada's consultation on releasing millimetre wave spectrum in the 28 GHz, 37-40 GHz and 64-71 GHz frequency bands to support the deployment of fixed and mobile services ahead of World Radiocommunication Conference 2019 and before 5th generation technology standards are finalized. The Department should look to maximize the use of millimetre wave spectrum for new services using a technologically-neutral approach while ensuring reasonable protection of incumbent services in order to enable greater spectrum utilization and allow Canadian consumers to benefit from wireless innovations. Increasing and enhancing spectrum availability is vital to supporting the advanced network speeds and capacity that Canadians have come to enjoy and demand.
- E3. The Department should employ a flexible use, exclusively licensed spectrum regime with the 28 GHz and 37-40 GHz bands that will allow operators to deploy fixed terrestrial or fixed or mobile wireless access services based on network needs and market demands. These will be among the first bands used for 5th generation services and operators will need to ensure access to interference-free spectrum as they deploy next-generation wireless technologies in unprecedented densities. The 64-71 GHz band should be unlicensed, which will allow for trialing next-generation spectrum management approaches while not interfering with the deployment or timely availability of next-generation services and world-class communications infrastructure across the country.
- E4. Rogers requires millimetre wave spectrum to compete with its primary competitors, Bell and TELUS. Since 2008, Bell and TELUS combine their spectrum after every auction, along with their local telecommunications wireline assets, allowing them to avoid capital costs and improve speeds. Rogers will not be in a position to match or surpass these advantages of Bell and TELUS without additional spectrum. Despite this clear and persistent pattern, the affiliated and associated entities rules and the rules prohibiting collusion continue to permit their independent bidding. Ongoing

coordination between bidders should be prevented so that all bidders are treated the same.

- E5. The Department should also ensure a level playing field for infrastructure access. 5th generation wireless technology will result in a large increase in network base stations and the amount of traffic they carry, all of which must be carried back to the carrier's core network. It is essential that the Department ensure that any Federal, Provincial or Municipal accesses, such as rights-of-way, that local telephone companies possess are similarly available to all types of carriers in order to increase competition for the benefit of all Canadian businesses and customers.

## 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-001-17: Consultation on Releasing Millimetre Wave Spectrum to Support 5G*<sup>1</sup> (the Consultation), published in the *Canada Gazette*, Part I, August 12, 2017.
2. The Department should look to maximize the use of millimetre wave (mmWave) spectrum to support the deployment of 5th generation (5G) wireless networks and systems. Increasing and enhancing spectrum availability, including low, mid, high, microwave, and mmWave bands, is vital to supporting the advanced network speeds and wireless broadband capacity that Canadians have come to enjoy and demand, and support the provision of next-generation wireless technologies. In order to achieve the Department's objective of positioning Canada at the leading edge of the digital economy, ISED should release mmWave spectrum to support 5G technologies ahead of the International Telecommunication Union's (ITU) World Radiocommunication Conference 2019 (WRC-19). mmWave spectrum should be made available as rapidly as possible using a technologically-neutral approach while ensuring reasonable protection of incumbent services in order to enable greater spectrum utilization and allow Canadian consumers to benefit from wireless innovations.
3. Effective spectrum policy frameworks will help Canadian network operators meet the increasing demand for data and innovative new services. 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 five-fold from 2015 to 2020, a

---

<sup>1</sup> ISED, *SLPB-001-17: Consultation on Releasing Millimetre Wave Spectrum to Support 5G (Consultation)*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11298.html>.

compound annual growth rate of 36%.<sup>2</sup> This trend is likely to significantly increase with the advent of 5G, as a result of new services and applications enabled by the ability of 5G to use and provide wireless bandwidth that was previously only available over wired facilities. Dramatic growth in demand for mobile data services will also be fuelled by Canadian consumers and businesses embracing the Internet of Things, with Cisco predicting a Machine-to-Machine compound annual growth rate of 77%.<sup>3</sup> A more flexible and effective use of mmWave spectrum will foster innovation, investment, and the evolution of wireless networks through the adoption of 5G technology and benefit Canadian consumers and businesses.

4. As a large wireless operator focused on the provision of advanced new broadband services, including capacity-hungry streaming video services such as Rogers NHL LIVE and being a leader in 4K programming and distribution, Rogers knows that operators require additional capacity to keep pace with Canadians' demand for data services. In order to address the dramatic growth in demand for mobile data services, Rogers has already made significant investments to deploy 4G Long Term Evolution (LTE) mobile broadband technology to approximately 95% of the Canadian population.<sup>4</sup> Rogers was the first to deploy LTE in Canada and continues to deliver innovative broadband services through the trialing and deployment of new technologies such as carrier aggregation of licensed spectrum bands, 256-QAM transmission, and Licence-Assisted Access LTE (LTE-LAA). Such innovation is vital on the march to 5G.
5. Yet, for network operators to continue providing Canadians with the most advanced and innovative connectivity technology solutions, spectrum policy must keep pace. Rogers has been a consistent proponent of the importance of generally making additional spectrum available to support innovation, while ensuring incumbent users are still protected. Developing a flexible use licensing model for fixed and mobile services in the 28 GHz and 37-40 GHz frequency bands, and allowing licence-exempt use of the 64-71 GHz frequency band, before 5G standards are finalized will allow new technology and innovations to evolve without overly prescriptive requirements, while meeting a variety of different needs and use-cases.
6. ISED can enable new 5G technologies in mmWave spectrum to help bring Canada to the forefront of digital development and adoption through the creation and strengthening of world-leading wireless infrastructure. While the mmWave bands identified for this Consultation are an important start, the Department should continue to work closely with stakeholders to ensure additional mmWave spectrum – as well as low, mid, high, and microwave band spectrum (both paired and unpaired)

---

<sup>2</sup> Cisco, *VNI Mobile Forecast Highlights, 2016-2021*.

[http://www.cisco.com/c/dam/assets/sol/sp/vni/forecast\\_highlights\\_mobile/index.html#~Country](http://www.cisco.com/c/dam/assets/sol/sp/vni/forecast_highlights_mobile/index.html#~Country)

<sup>3</sup> Ibid.

<sup>4</sup> Rogers, *Rogers Communications Reports First Quarter 2017 Results*, April 2017.

– is made available for operators to continue expanding 5G coverage and capabilities.

7. Because of the important role that 5G will play in the development of the Internet of Things and in driving innovation, efficiency, and productivity throughout the economy, the Department must ensure that the spectrum and licensing policies it adopts will provide fair and reasonable access to 5G spectrum for all wireless competitors. At the same time, the Department should ensure that all wireless competitors will be provided with fair and reasonable access to the public and private infrastructure that is essential to the successful deployment of small cell technology required to support 5G and the Internet of Things.
8. The remainder of Rogers' comments will respond to the specific issues raised in the Consultation.

4-1: Given the disruptive nature of 5G, will new business models and network applications develop that may require policy and regulatory consideration from ISED? Please describe potential new business models and network applications as well as their benefits to Canadians.

9. With the introduction of Third Generation Partnership Project (3GPP) 5G wireless technology, we are at the beginning of a new connectivity era. 5G will be far more than just a new radio access technology.<sup>5</sup> It will combine existing Radio Access Technologies (RATs) in both licensed and unlicensed bands, and it will add novel RATs optimized for specific bands and deployments, scenarios and use-cases. 5G will also implement new network architecture options based on Network Function Virtualization (NFV) and Software Defined Networking (SDN) technologies.
10. The biggest difference between 5G and legacy design requirements is the diversity of use-cases that 5G networks will support compared to today's networks, which were designed primarily to deliver high-speed mobile broadband. Although standards for 5G are still being defined, 5G will be about people and things that can be broadly split into three use-case categories. First, enhanced mobile broadband (eMBB) will provide peak data rates of greater than 10 Gbps with 100 Mbps as average throughput, resulting in 10,000 times more traffic carried on networks. Second, massive machine type communications (mMTC) will see 10-100 times more devices connected to the network, with some Machine-to-Machine (M2M/IoT) devices having 10-year battery lives. Third, ultra-reliable low latency

---

<sup>5</sup> See 3<sup>rd</sup> Generation Partnership Project: Technical Specification Group Radio Access Network; Study on Scenarios and Requirements for Next Generation Access Technologies; (Release 14): Technical Report 38.913 v.14.3.0 (June 2017).

communications (urLLC) that demands immediate, synchronized eye-to-hand feedback to remotely control robots and deliver the tactile internet with latency below one millisecond.<sup>6</sup>

11. As shown above, mobile data consumption is already growing rapidly, with North American data growth in particular driven by video. However, networks must evolve to satisfy varying requirements of diverse services and there are multitudes of use-cases that 5G technology will enable. In the healthcare sector, medical and e-health services will be enabled along with a diverse range of wearables. In the transportation sector, 5G will enable Connected Cars that will possess increasing self-driving capabilities as well as advanced logistics, robust mobility functions, and enhanced location services. For public services, sensor networks for Smart Cities and remote sensing will enhance the abilities of governments of all levels to deliver services to citizens. In entertainment, 5G will enable cloud gaming while also providing for simultaneous, multiple 4K video streams using a wireless connection. Several technologies enabled or enhanced by 5G connectivity, including the Internet of Things (IoT), tactile internet, virtual reality (VR), and augmented reality (AR), are expected to offer Canadian consumers and businesses advanced products and applications in many verticals.
12. However, innovation in digital technologies will require support from device makers, infrastructure providers, network operators, and, not least, spectrum regulators. The Department has an important role to ensure that Canada continues to be at the forefront of 5G system development by providing access to the spectrum bands discussed in this consultation prior to WRC-19.
13. In addition, the Department will need to consider regulatory and policy frameworks that support 5G development and deployment will not foreclose competition between national carriers. The affiliated and associated entities rules and the rules prohibiting collusion should be clarified and strengthened for all auction processes, including mmWave spectrum. The ongoing coordination between certain bidders should be prevented so that other bidders will not be placed at a disadvantage. Further, the Department should also ensure that any facilities and rights-of-way advantages that local telephone companies possess are made available to all other competitors in order to increase competition for the benefit of all Canadian businesses and customers. These areas are discussed in greater detail below, in response to question 9-3.

---

<sup>6</sup> Please refer to Recommendation ITU-R M.2083 for the definition of these terms and further information on the three main usage scenarios envisioned for IMT-2020 (5G)

5-1: ISED is seeking comments on developing a flexible use licensing model for fixed and mobile services in the 28 GHz and 37-40 GHz frequency bands, and allowing licence-exempt use of the 64-71 GHz frequency band ahead of WRC-19 and before 5G technology standards are finalized.

14. Rogers supports the Department's proposal to develop a flexible use licensing model in the 28 GHz and 34-40 GHz frequency bands and allowing licence-exempt use of the 64-71 GHz band ahead of WRC-19. As 5G wireless access technologies will operate in both fixed and mobile modes of operation, flexible use is the optimum model for these bands. Flexible licensing will allow network operators to evaluate market conditions and deploy the best-suited technology to meet demand.
15. Rogers believes there will be significant demand in Canada for the services provided by 5G fixed and mobile services, and the potential benefits to Canadians are substantial. In our view, Canada should not wait for WRC-19 to begin the 5G licensing process. We agree with the Department that taking action prior to WRC-19 will promote innovation and early adoption of 5G technology without overly prescriptive requirements.<sup>7</sup> Further, any studies that the Department believes could be undertaken for coexistence or other technical reasons should not unduly delay the Consultation decision or flexible use terrestrial deployments.
16. The standards development organization 3GPP is making rapid progress on 5G technology standards. We expect that the initial 5G standards will be part of Release 15 and should be completed in 2018. Release 15 will include support for licensed operation in the 28 GHz and 37-40 GHz bands. Standards to support license-exempt operation in the 64-71 GHz band will not be part of Release 15, though it will likely be standardized in a future Release.
17. In addition to these pioneer mmWave spectrum bands for 5G, the Department should continue to monitor and work closely with the international community to harmonize spectrum use as much as possible. This will achieve maximum economic benefits by driving economies of scale for global, or regional (in particular the U.S.), equipment ecosystems and reduce costs for Canadian consumers and businesses.

6-1: ISED is seeking comments on the changes proposed above to introduce flexible use licensing in the 28 GHz band, including consequential changes to the CTFA domestic 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*.

<sup>7</sup> ISED, *Consultation*, para 14.

18. Rogers recommends that the flexible use licensing in the 28 GHz band should allow integrated backhaul in addition to conventional fixed and mobile access usage.
19. Rogers is of the view that the lack of use of 25.25-26.5 GHz and 27.5-28.35 GHz for fixed service is, at least, in part due to current high license fee structure applicable to high-capacity microwave links. Rogers' view is that it may not be economically viable to have fixed service deployments as part of flexible use in the 27.5-28.35 GHz band if the current microwave link licence fee is used.
20. Rogers welcomes the Department's proposal to add C47C footnote to ensure viable deployment of flexible mobile and fixed services in 27.5-28.35 GHz. This would be in line with current 3GPP activities. 3GPP SA1 has already established service requirements for wireless self-backhauling in specifications document TS 22.261 (Service requirement for the 5G System). Also, 3GPP has initiated in March 2017 a study on "Integrated Access and Backhaul for NR", where NR stands for New Radio access for 5G.<sup>8</sup> The outcome of the study, planned for completion in June 2018, is expected to lead to the development of a specifications document supporting both mobile service (access) and fixed service (backhaul) in the same spectrum and location.
21. Rogers agrees with the proposed prohibition on the use of land-based earth stations in motion (ESIMs). We are concerned with potential interference from airborne ESIMs, and the Department should supply additional information on these devices prior to adoption of licensing conditions for this band.

6-2: ISED is seeking comments on the moratorium for new site-specific fixed service licences as described above.

22. Rogers supports the moratorium on new site-specific fixed service licences. As the Department states, given that there have been no licences issued under the current licensing framework for the 28 GHz band, a moratorium is unlikely to have any detrimental effect for spectrum utilization in this band in the short to medium term.<sup>9</sup>
23. However, the Department should still issue short-term developmental licenses in the band on a site-by-site basis. This will allow equipment manufacturers, operators, and other interested parties to trial and evaluate the spectrum and future deployment scenarios and costs. Allowing developmental licences during any moratorium will

<sup>8</sup> 3GPP, *RP-171880, Study on Integrated Access and Backhaul for NR*;  
<http://portal.3gpp.org/ngppapp/CreateTDoc.aspx?mode=view&contributionUid=RP-171880>.

<sup>9</sup> ISED, *Consultation*, para 27.

foster innovation, investment and the evolution of wireless networks through the adoption of 5G technology so that Canadian consumers and businesses benefit.

6-3: ISED is seeking comments on its proposal to adopt the band plan (as shown in figure 3 above) in the 28 GHz band.

24. Rogers proposes that Canada adopt a modified version of the 28 GHz band plan proposed by ISED in the Consultation's Figure 3.
25. Rogers supports the adoption of a 28 GHz frequency range that is aligned with the U.S. band plan proposed in Report & Order (R&O) 16-89.<sup>10</sup> Alignment with the U.S. frequency range will be beneficial, as it will give Canadian operators and consumers access to a large ecosystem of equipment suitable for operation in the 28 GHz band. Further, the U.S. Federal Communications Commission (FCC) stated in their R&O that there is broad support amongst nations and equipment manufacturers for mobile services in the 28 GHz band.<sup>11</sup>
26. The U.S. band plan is a legacy of the existing U.S. Local Multipoint Distribution Service (LMDS) band plan. The FCC originally planned to license the 28GHz band as a single, contiguous 850 MHz block, identical to the original LMDS A1 block that it replaces. During the FCC proposed rulemaking, parties including 5G Americas, AT&T, and T-Mobile called for smaller blocks to promote competition from multiple operators in 28 GHz band.<sup>12</sup> After industry consultation, the FCC decided to partition the band into two blocks of 425 MHz each.
27. Rogers believes that the FCC was constrained in their choices for a new 28 GHz band plan by a need to respect existing license rights of incumbent LMDS Channel A1 licensees.<sup>13</sup> However, as the Department notes itself, there have been no fixed service licences issued in Canada under the current licensing framework for the 28 GHz band. Therefore, Canada is not subject to the legacy constraints that influenced the FCC's decision on a new band plan and is free to select a band plan that supports a greater number of licence holders for this important 5G spectrum band. 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.

<sup>10</sup> FCC, *FCC 16-89: Report and Order and Further Notice of Proposed Rulemaking*; [https://apps.fcc.gov/edocs\\_public/attachmatch/FCC-16-89A1\\_Rcd.pdf](https://apps.fcc.gov/edocs_public/attachmatch/FCC-16-89A1_Rcd.pdf).

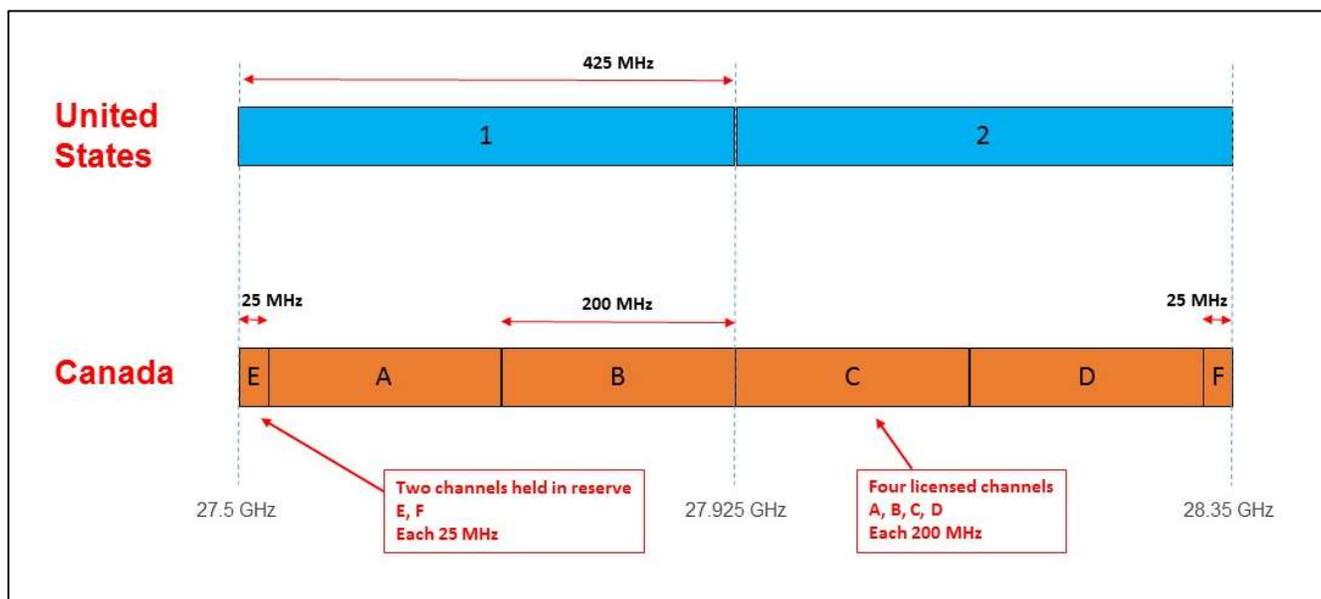
<sup>11</sup> *Ibid*, para 26-27.

<sup>12</sup> *Ibid*, para 71.

<sup>13</sup> *Ibid*, para 72.

28. Based on these important considerations, Rogers respectfully proposes an alternative band plan as shown below in Figure A. The proposed band plan sub-divides the band into multiple, smaller blocks that would allow greater competition, more innovation, more services, and greater overall benefits to Canadians.
29. Rogers' proposed alternative band plan would divide the 28 GHz band into 6 blocks: four licensed Time Division Duplex (TDD) channels, each 200 MHz, and two channels held in reserve, 25 MHz each. Creating 200 MHz channels within the 28 GHz band would allow for multiple bidders to secure spectrum and avoid monopolization of the band, while still allowing operators interested in wider channels to aggregate blocks. The licensing policy should also allow licences to be divisible and transferable to allow most efficient use of the spectrum.
30. This proposed band would align with 3GPP plans to support 5G channel bandwidths of 50, 100, 200, or 400 MHz. 3GPP standards will likely allow carrier aggregation of contiguous or non-contiguous carriers. While current 3GPP focus is on TDD mode of operation, Frequency Division Duplex (FDD) may be considered in the future.

**Figure A. Rogers' Proposed 28 GHz Band Plan**



31. Rogers is actively monitoring the development of 5G standards in 3GPP and Release 15, scheduled for completion in early 2018, will include the first 5G standards produced. There is a 3GPP requirement to develop standards that support the 28 GHz band frequency range as defined by the FCC in R&O 16-89 and we are confident that this will be supported in the Release 15 standard.
32. Rogers believes that our proposed Canadian band plan will be compatible with 3GPP standards.

6-4: A. ISED seeks comments on its proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the 28 GHz band when a pre-determined trigger threshold is exceeded.

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

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

33. Rogers supports ISED's proposal for soft partitioning in the band 27.5-28.35 GHz by adding the footnote C47C, where flexible deployment of fixed service systems and mobile service systems will be given priority over fixed-satellite service systems in the co-primary sharing of the band. Fixed-satellite service implementation (earth-to-space) will be limited to applications that will pose minimal constraints to deployment of flexible services.<sup>14</sup>

34. Rogers agrees that flexible use terrestrial stations could be potentially subject to interference from the emissions of fixed-satellite services (FSS) earth stations in this band. However, given the limited number of currently deployed FSS earth stations in the band and proposed band-sharing provisions for their future implementation, a relatively small number of interference cases are expected between the two services in the coordination process.

35. Rogers concurs with the Department that it is unlikely that harmful aggregated interference will be introduced from flexible use terrestrial services into earth space stations due to the operational characteristics of both new flexible use systems and satellite stations.

36. Rogers believes that it is important to establish a comprehensive site-by-site coordination process with a pre-determined trigger threshold, to ensure optimal coexistence of both co-primary services and fair access to the band for all interested operators. Rogers also notes that as deployment of flexible-use services in this band is expected to require a large quantity of small base stations, the process should more appropriately be referred as site-to-area coordination, where site refers to an FSS earth station and area refers to flexible-use terrestrial stations.

37. Rogers believes that a PFD threshold would be an appropriate coordination trigger that would minimize unnecessary detailed coordination.

---

<sup>14</sup> ISED, *Consultation*, para 25.

38. However, Rogers believes that it is premature at this time to conclusively determine any such PFD value, as 5G technology is still being developed. Any PFD value agreed to at this time would require further refinement in the future to reflect the development of 5G technology, once there is a better understanding of 5G operational parameters and tolerance to interference.
39. We recommend a preliminary study to be conducted through the Radio Advisory Board of Canada (RABC) to determine the appropriate PFD value and coordination requirements for policy development.
40. Rogers agrees that, whenever possible, use of site shielding should be implemented as it is proving to be effective in maximizing coexistence of services. Site shielding of FSS earth stations, especially those deployed close to urban areas, will reduce spilling of unwanted radiation and interference into flexible use terrestrial stations. As the FCC states in R&O 16-89, "Site-shielding of earth station antennas is a well-established technique" for protecting FSS earth stations from interference.<sup>15</sup>
41. In addition to site shielding of FSS earth stations, flexible use dynamic beam forming antennas is another technique available to facilitate co-channel coexistence of these services in the same area. Rogers recommends that stakeholders (flexible use license holders and FSS earth station operators) collaborate within the RABC, or some other forum, to develop the specific technical rules on sharing.

6-5: 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 28 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.

42. Rogers recommends placing restrictions on the geographic areas in which new FSS earth stations can be deployed in the 28 GHz band.
43. Rogers agrees with the Department's view that 5G deployment will primarily be in or near urban areas,<sup>16</sup> at least initially. Rogers proposes to restrict implementation of new FSS earth stations to locations that are outside major urban areas, in order to ensure that the two services can co-exist in the same band with minimal interference.

---

<sup>15</sup> FCC, *FCC 16-89*, Footnote 100.

<sup>16</sup> ISED, *Consultation*, para 35.

44. To minimize interference in the 28 GHz band between terrestrial flexible users and satellite operators, Rogers recommends that FSS earth stations be prohibited (not permitted) within large urban areas, defined as Census Metropolitan Areas (CMA) by Statistics Canada with core populations of 50,000+. FSS earth stations should be restricted (site shielding required) within medium size and smaller urban areas, defined as Census Agglomeration Areas (CA) by Statistics Canada with core populations of 10,000+. <sup>17</sup>
45. In those instances where it is necessary to implement a FSS earth station in or near a CMA or CA urban area (such as where a FSS operator already operates facilities), it should be a mandatory requirement for FSS operators to use site shielding around the FSS earth station, or other techniques that will achieve the same results, in order to not restrict deployment of flexible use terrestrial service.
46. Rogers proposes the following specific geographic restrictions for FSS earth stations in the 28 GHz band:
- i. FSS earth stations shall be prohibited from locations in or near large urban areas, defined as Census Metropolitan Areas by Statistics Canada;
  - ii. FSS earth stations shall be permitted near medium size and smaller urban areas, defined as Census Agglomeration Areas by Statistics Canada; FSS earth stations shall be located outside these areas and site shielding or other measures generally required;
  - iii. FSS earth stations should not be located in, or close to, areas where there is expected to be significant 5G mobile traffic, including event venues, major highways or roadways, mass transit systems, passenger railways, airports, or cruise ship terminals;
  - iv. There should be a limited number of FSS earth stations per region;
  - v. The FSS operator should be required to demonstrate in its license application that interference to flexible use terrestrial stations shall be below a predetermined threshold;
  - vi. If there is an existing 28 GHz Upper Microwave Flexible Use Service (UMFUS) license holder, the FSS operator shall coordinate with the license holder to prevent interference; and,
  - vii. For locations close to the Canada-United States border, ISED and FCC should actively manage the coordination.
47. Rogers notes that, as per Annex A, although some earth stations are presently located in urban areas, none are located in Canadian CMAs as defined by Statistics Canada. These existing earth stations could be grandfathered under existing rules but no earth station application submitted following the Consultation launch date (i.e. June 5, 2017) should be eligible for grandfathering.

---

<sup>17</sup> Statistics Canada, *Census metropolitan area (CMA) and census agglomeration (CA)*.

6-6: ISED is seeking comments on whether it should impose any limits on the aggregate emissions of the terrestrial services. If limits are proposed, ISED is inviting detailed proposals on why they should be implemented, and what the limits should be.

48. Rogers agrees with the Department's proposal to impose no limits on the aggregate power levels produced by terrestrial flexible use systems.<sup>18</sup> 5G systems will employ dynamic beamforming, downward tilting antennas, and other measures to ensure that radio energy is directed towards base stations and user equipment, and not skyward towards satellite receivers. As the Department itself recognizes, "The FCC decided not to establish any regulatory limits on the aggregate power levels produced by UMFUS operations" as the FCC does not believe that there will likely be coexistence issues between UMFUS systems and FSS systems.<sup>19</sup>

6-7: ISED proposes that all existing FSS earth stations and those in applications pending approval for operation would be permitted to continue to operate under the current conditions of licence as described above. Comments are sought on this proposal.

49. Rogers agrees that all existing FSS earth stations and those in application (submitted prior to the launch of the Consultation, i.e., prior to June 5, 2017) be permitted to continue to operate under current license conditions. Rogers recommends that nothing should prevent terrestrial flexible use licensees from developing a mutually agreed arrangement, including site shielding or relocation, allowing the terrestrial network operators to deploy their services in a geographic area where there is an existing grandfathered earth station.

7-1: ISED is seeking comments on the proposal to implement flexible use licensing in the frequency band 37-40 GHz, including the consequential changes to CTFA footnote C51, while continuing to allow for fixed-satellite service (space-to-Earth) in the band.

50. Rogers supports ISED's proposal on implementation of flexible use licensing in the frequency band 37.5-40 GHz. We also note it would then require modification to

---

<sup>18</sup> ISED, *Consultation*, para 38.

<sup>19</sup> *Ibid*, para 37.

SRSP-338.6 for fixed service reflecting the extended frequency range of 37.5-40 GHz as currently it covers only 38.6-40 GHz.

7-2: ISED is seeking comments on whether a moratorium on the issuance of new licences under the *New Licensing Framework for the 24, 28 and 38 GHz Bands and Decision on a Licence Renewal Process for the 24 and 38 GHz Bands* is required at this time.

51. Rogers supports ISED's selective approach for introducing a moratorium on new licence issuances in the 28 GHz and 38 GHz bands due to their current utilization differences. Rogers welcomes ISED's decision to continue issuing new licenses in the band 38.4-40 GHz and postpone a moratorium until a new policy for the band is completed and transition timelines for new services established.
52. Rogers has significant deployments of fixed systems in the 38 GHz band and will continue to consume this band on a site-specific, first-come-first-served (FCFS) basis for mobile backhaul applications and wireless broadband access within a short distance range, e.g. 1-3 km.
53. We recommend the Department consider opening a replacement band to substitute for the eventual loss of 38.4-40 GHz spectrum for fixed backhaul services. The 38 GHz band is widely used for short haul applications and has been first choice for dense urban deployments. There is currently no other spectrum allocated for fixed point-to-point services between 23 GHz band and the newly opened 70/80 GHz band. Ensuring there is enough spectrum for fixed wireless backhaul for the growing capacity demands of 4G LTE is critical to maintaining effective competition with the local telephone companies, who have extensive wireline backhaul facilities. Fixed wireless capacity will become even more crucial to meet the massive backhaul requirements for 5G connectivity and achieving the Department's goals for facilities-based competition.
54. In the *Decisions on Spectrum Utilization Policies and Technical Requirements Related to Backhaul* issued in December 2014, the frequency band 31.8-33.4 GHz was designated for fixed point-to-point radio systems.<sup>20</sup> In the same utilization policy, the spectrum 40.5-43.5 GHz was also identified as potentially suitable band for fixed point-to-point allocation and would be taken into consideration in future licensing and policy frameworks. The Department should move forward quickly with opening one

---

<sup>20</sup> ISED, *Decisions on Spectrum Utilization Policies and Technical Requirements Related to Backhaul*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10880.html>.

or both of these bands to compensate for the loss of dedicated fixed service in the 38 GHz band.

7-3: ISED is seeking comments on the proposal to adopt the band plan as shown in figure 7 for the frequency band 37-40 GHz.

55. Rogers supports the proposed 37-40 GHz band plan as it aligns with the U.S. band plan, as proposed in R&O 16-89. Alignment with the U.S. will be beneficial, as it will give Canadian operators and consumers access to a large ecosystem of equipment suitable for operation in the 37-40 GHz band. Further, the proposed band plan supports 200 MHz wide channels, which will support a wide range of 5G-based services while at the same time making a large number of licences available in the band and enabling competition amongst facilities-based providers.
56. Rogers believes that TDD will likely be the preferred duplexing method in this band. However, the Canadian 37-40 GHz band plan should allow for either FDD or TDD duplexing schemes similar to the rules adopted by the FCC in the U.S.<sup>21</sup>
57. Rogers supports the proposal to merge the existing 37 GHz and 39 GHz bands into a single, contiguous band. Certain 5G services may require substantial radio bandwidth and, by merging the two current bands into a single band, ISED will create the opportunity for operators to accumulate significant amounts of spectrum to enable such services. Rogers is confident that 3GPP will develop standards allowing carriers to be aggregated and take advantage of such a large, contiguous band plan.
58. Rogers further supports the Department's proposal to defer development of a band plan within the 37.0-37.6 GHz portion of the new band. The FCC is treating this portion of the band differently than the rest of the band, indicating that they prefer to work with industry stakeholders to develop a novel sharing framework.<sup>22</sup> Should Canada develop a band plan that is incompatible with the future U.S. arrangement, there would be a high potential for cross-border interference. Additionally, Canada might not be able to benefit from the economies-of-scale with the ecosystem developed for this part of the band or other benefits of the U.S. sharing framework.
59. 3GPP Release 15, scheduled for completion in early 2018, will be the first 5G standards produced. Rogers is actively monitoring the development of 5G standards in 3GPP and, as of this writing (August 2017), 3GPP has not yet agreed on a specific band plan for the 37-40 GHz band. We note that the current working

---

<sup>21</sup> ISED, *Consultation*, para 53.

<sup>22</sup> FCC, *FCC 16-89*, para 115.

agreement within 3GPP is to support the use of 200 MHz channels, which is consistent with Rogers' proposed band plan.

60. There is a 3GPP requirement to develop standards that support the 37-40 GHz band as defined by the FCC in R&O 16-89. We are confident that this will be supported in the Release 15 standard. Therefore, we believe that the Canadian band plan proposed by ISED will be compatible with 3GPP standards.

7-4: A. ISED seeks comments on the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the frequency band 37.5-40 GHz when a pre-determined trigger threshold is exceeded.

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

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

61. Rogers supports ISED's proposal for soft partitioning in 37.5-40 GHz by modification of footnote C51, where flexible deployment of fixed service systems and mobile service systems will be given priority over FSS systems in the co-primary sharing of the band. Similar to the 28 GHz band, FSS implementation will be limited to applications that pose minimal constraints to deployment of flexible use services.<sup>23</sup>

62. Unlike the 28 GHz band, the FSS earth stations receiving from satellite transmitters in the 38 GHz band are potentially subject to interference from flexible use services. Currently, there are no FSS services deployed in this band but it is noted that the fixed satellite industry has expressed some interest in this band.

63. Rogers supports the proposal to require site-by-site coordination between proposed flexible use terrestrial stations and FSS earth stations in the frequency band 37.5-40 GHz when a pre-determined trigger threshold is exceeded, to ensure optimal coexistence of both co-primary services and fair access to the band for all interested operators. Rogers also notes that, as deployment of flexible-use services in this band is expected to require a large quantity of small base stations, the process should more appropriately be referred as site-to-area coordination, consistent with what we have recommended in our comments above regarding the 28 GHz band.

---

<sup>23</sup> ISED, *Consultation*, para 48.

64. As with the 28 GHz band, Rogers believes that a PFD threshold would be an appropriate mechanism for triggering coordination in the 38 GHz band, which would minimize unnecessary detailed coordination.
65. Rogers believes that it is premature at this time to conclusively determine an appropriate PFD value, as 5G technology is still being developed. We recommend a study be conducted through the RABC to develop an initial PFD value and coordination requirements for policy development. These values should be further refined, as needed, to reflect ongoing developments of 5G technology and 5G operational parameters, as mentioned above in our 28 GHz comments.
66. Finally, Rogers supports the proposal to introduce certain specific technical rules, like site shielding of FSS earth stations, especially for those earth stations deployed near urban areas, where dense deployments of flexible use services are expected. As the FCC states in R&O 16-89, "satellite operators can substantially reduce the sizes of the exclusion zones that they require by constructing artificial site shields or by taking advantage of naturally occurring terrain features" in the 39 GHz band.<sup>24</sup> Implementing these techniques would attenuate amount of unwanted radiation received by victim FSS earth stations and will reduce the required exclusion zone around FSS stations.
67. Rogers recommends that stakeholders (flexible use license holders and FSS earth station operators) collaborate within the RABC, or some other forum, to develop specific technical rules on sharing.

7-5: 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 frequency band 37.5-40 GHz.

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?

68. Rogers recommends placing restrictions on the geographic areas in which new FSS earth stations can be deployed in the 37.5-40 GHz band.
69. Rogers agrees with the Department where it highlighted that the FCC recognized in its decision the importance of not restricting "the deployment of new UMFUS systems in core urban areas and around major infrastructure where implementation of flexible use systems would be most likely."<sup>25</sup> Rogers proposes to restrict

<sup>24</sup> FCC, *FCC 16-89*, para 92.

<sup>25</sup> ISED, *Consultation*, para 59.

implementation of new FSS earth stations to locations that are outside major urban areas, in order to ensure that the two services can co-exist in the same band with minimal interference.

70. To minimize interference in the 37.5-40 GHz band between terrestrial flexible users and satellite operators, Rogers recommends that FSS earth stations be prohibited (not permitted) within large urban areas, defined as CMAs by Statistics Canada with core populations of 50,000+. FSS earth stations should be restricted (site shielding required) within medium size and smaller urban areas, defined as CAs by Statistics Canada with core populations of 10,000+.<sup>26</sup>
71. In those instances where it is necessary to implement a FSS earth station in or near a CMA or CA urban area (such as where a FSS operator already operates facilities), site shielding could be used around the FSS earth station in order to optimize coexistence between FSS and flexible use terrestrial services.
72. Rogers proposes the following specific geographic restrictions for FSS earth stations in the 37.5-40 GHz band:
- i. FSS earth stations shall be prohibited from locations in or near large urban areas, defined as Census Metropolitan Areas by Statistics Canada;
  - ii. FSS earth stations shall be permitted near medium size and smaller urban areas, defined as Census Agglomeration Areas by Statistics Canada; FSS earth stations shall be located outside these areas and site shielding or other measures generally required;
  - iii. FSS earth stations should not be located in or close to areas where there is expected to be significant 5G mobile traffic, including event venues, major highways or roadways, mass transit systems, passenger railways, airports, or cruise ship terminals;
  - iv. There should be a limited number of FSS earth stations per region;
  - v. The FSS operator should be required to demonstrate in its license application that the earth station receiver's coverage area complies with stated geographic restrictions;
  - vi. If there is an existing 37.5-40 GHz UMFUS license holder, the FSS operator shall coordinate with the license holder to minimize interference; and,
  - vii. For locations close to the Canada-United States border, ISED and FCC should actively manage the coordination.

---

<sup>26</sup> Statistics Canada, *Census metropolitan area (CMA) and census agglomeration (CA)*, <http://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo009-eng.cfm>.

7-6: It is proposed that, should SRS and/or MSS systems be deployed, flexible use licensees in the band 37.6-40 GHz may be subject to technical provisions to facilitate co-existence. Comments are sought. ISED notes that any such technical provisions would be established through a future consultation process.

73. Rogers appreciates the importance of space research service (SRS) and mobile-satellite service (MSS) systems to the federal government, and that spectrum sharing may be required at some point in the future. Rogers acknowledges that flexible use licensees may be subject to technical provisions in the future, should the government choose to deploy these systems in this band.
74. Rogers is confident that technical provisions can be developed that would provide a balance between protecting SRS and MSS systems and allowing the operation of terrestrial 5G systems. Technical provisions could include establishment of coordination zones or exclusion zones, or other measures.
75. However, adoption of overly conservative technical provisions may reduce the value of licensed spectrum rights and diminish the investment incentives and certainty associated with those rights, leading to reduced innovation-led growth across all sectors of the Canadian economy. Rogers urges ISED to work with 5G mobile operators to ensure that they are able to fully utilize their spectrum holdings at all times in a manner that meets the needs of their customers.
76. The Department should adopt a grandfathering rule for flexible use licensees to prevent disruption of service to users. Specific technical provisions could potentially be developed within RABC or some other forum as part of a future consultation process.

7-7: ISED is seeking comments on:

- A. the options and implications for the treatment of incumbent licensees currently holding Tier 3 licences, the percentage that would apply to option 1 and supporting rationale.
- B. the options and implications for the treatment of incumbent licensees currently holding FCFS licences and supporting rationale.

77. The Department should provide incumbent licensees currently holding fixed service Tier 3 licences in the 38 GHz band with new flexible use licences, at a reduction of one-third of their total MHz holdings per service area. As ISED has proposed a block size of 200 MHz for the new flexible use band, the Department should issue new

licences rounded down to the nearest whole 200 MHz block. Tier 3 38 GHz licensees whose holdings in a single licence area would be reduced below 200 MHz should have their licences converted from Tier 3 service areas to site-based FCFS licences upon renewal. These newly issued FCFS 38 GHz licences should be subject to the same rules as incumbent FCFS 38 GHz licences described below.

78. A one-third reduction would treat 38 GHz Tier 3 licensees similar to the way 2500 MHz licence holders when the Department repurposed its use.<sup>27</sup> The *Framework for Spectrum Auctions in Canada* 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.<sup>28</sup> The shift of the 38 GHz band from simple fixed service usage to use as a pioneer 5G band will be a fundamental reallocation of the spectrum. Further, as the Department states in the Consultation, renewed 38 GHz auctioned licences were not provided with a high expectation of renewal after their renewed 10-year term.<sup>29</sup> For current licensees that require additional spectrum in the 38 GHz band, they should be able to participate in any future allocation process set by the Department.
79. Further, licensees should only be eligible to exchange their Tier 3 fixed service 38 GHz licences for new flexible use ones if they meet their spectrum implementation condition of licence. This condition of licence requires licensees to maintain a level of deployment equal to or greater than eight links per one million population (rounded up to a whole number) within the licensed service area on an ongoing basis.<sup>30</sup> Renewing licences only for licensees that meet their deployment requirement would prevent licensees receiving new flexible use licences from continuing to warehouse the spectrum.
80. As the largest current holder of 38 GHz FCFS licences in Canada, Rogers supports the approach to allow 38 GHz FCFS licensees to continue operating on a secondary basis to flexible use licences. As the Department states, providing full protection to incumbent licensees, including Rogers, could severely limit deployment of 5G in major urban areas, as 88% of grid cell and site-specific licences are operating in the six largest urban areas.<sup>31</sup> Incumbent FCFS 38 GHz licensees that wish to stay within the band would have the opportunity to secure new flexible use 38 GHz spectrum licences in the Department's future allocation process.

---

<sup>27</sup> ISED, *Decisions on a Band Plan for Broadband Radio Service (BRS) and Consultation on a Policy and Technical Framework to License Spectrum in the Band 2500-2690 MHz*; [https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapi/brs-2500e.pdf/\\$FILE/brs-2500e.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapi/brs-2500e.pdf/$FILE/brs-2500e.pdf).

<sup>28</sup> ISED, *Consultation*, para 17.

<sup>29</sup> ISED, *Consultation*, para 42.

<sup>30</sup> ISED, *M4 — BWA 24 and 38 GHz Auction Licences issued as a result of the renewal process of 2014*; <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11035.html>.

<sup>31</sup> ISED, *Consultation*, para 67.

81. However, Rogers recommends that outside of the six largest urban areas, a notification period of two years should apply. This would provide a more reasonable period for incumbent FCFS 38 GHz licensees to plan and execute their transition out of the band. This balances the ability for incumbent users to continue operating until 5G systems are deployed in their specific area and the reality that 5G services are most likely to be deployed first in the largest markets.

8-1: ISED is seeking comments on its proposal to designate the band 64-71 GHz for licence-exempt operations on a no-protection, no-interference basis.

82. Rogers supports ISED's proposal to designate the 64-71 GHz band for licence-exempt operation. This will create a single, contiguous 14 GHz band that should support a number of future 5G services and allow traditional facilities-based operators to offload traffic from networks operating in licensed spectrum. It will also provide a large amount of spectrum for innovation by non-traditional providers ensuring they have access to spectrum. Additionally, this action will align the band with the United States to ensure that Canadians can take advantage of an anticipated ecosystem of devices and economies of scale.

83. We note that 3GPP will not be standardizing any unlicensed form of 5G New Radio (NR) interface, nor any NR operating above 52.6 GHz in the initial 5G Release 15 standards. However, 3GPP has agreed at their March 2017 plenary meeting to study the use of 5G NR interface in unlicensed spectrum.<sup>32</sup> This study will include an evaluation of using NR in the 60 GHz range, which is consistent with the range proposed by ISED. The 3GPP study will be comprehensive and will include evaluations of using NR in both Licensed-Assisted Access mode and stand-alone mode. The study will evaluate the utility of using a "Listen-Before-Talk" capability to ensure that NR can co-exist with other technologies such as WiGig.

84. When this study is complete, Rogers is confident that 3GPP will standardize the use of NR in unlicensed spectrum in the 57-71 GHz band. Designating the 64-71 GHz band for licence-exempt operation is the appropriate course of action at this time.

---

<sup>32</sup> 3GPP, RP-170828, *Study on NR-based Access to Unlicensed Spectrum*;  
<http://portal.3gpp.org/ngppapp/CreateTDoc.aspx?mode=view&contributionUid=RP-170828>.

9-1: ISED is seeking comments on:

A. Whether flexible use access in these bands should be exclusively licenced or licence-exempt.

B. If a licencing approach is proposed, which types of licences (radio licences, spectrum licences with user-defined licence areas, spectrum licences with service areas for competitive licensing, or others) are expected to best lend themselves to licensing flexible use in the 28 GHz and 37-40 GHz frequency bands in order to support a variety of 5G technologies, applications and business cases?

C. Whether a licence-exempt dynamic access using data base should be implemented in all, or portions of the 28 GHz, 37-40 GHz, particularly in the band 37-37.6 GHz.

85. As pioneer bands for 5G connectivity, ISED should provide exclusive-licences for the 28 GHz and 37-40 GHz bands in order to minimize the potential for interference to the next generation of communications infrastructure that Canadian consumers and businesses will rely on. Exclusively licenced spectrum bands are key inputs in current networks and will create a more certain spectral environment. This will be crucial as operators roll out the 5G infrastructure and overcome any engineering challenges that would result from the unprecedented densities and usage of mmWave spectrum. These licences should be flexible for service providers to deploy different services including fixed or mobile wireless access or wireless backhaul or fronthaul, or even dynamically change between usage depending on network need and user demand.

86. Beyond facilitating the smooth deployment of new 5G technology, exclusively licenced spectrum will also facilitate coordination between new flexible use licensees, incumbent terrestrial fixed service, and fixed service satellite operators. Licence-exempt flexible use risks creating a chaotic spectral environment for incumbent FSS licensees, FCFS fixed users still operating on a secondary basis, and new flexible use operators, to the detriment of all – including all of their respective customers.

87. Further, the Department is already proposing in this consultation to designate 7 GHz of spectrum (64-71 GHz) as licence-exempt, compared to the proposal to open less than 4 GHz (27.5-28.35 GHz and 37-40 GHz) of exclusively licensed flexible use spectrum. Even in this default position, the Department will be making nearly double the amount of spectrum available for licence-exempt use. While operators will also be able to make use of this licence-exempt spectrum in their networks, exclusively licenced spectrum bands will continue to be a key input for ensuring service

providers can offer a high quality of service that allow Canadian companies to take advantage of the latest technologies to better compete globally.

88. The Department should issue service area spectrum licences through a competitive licensing process, as this would be best suited for licensing flexible use spectrum in the 28 GHz and 37-40 GHz frequency bands. With weaker propagation characteristics than high, mid or low band spectrum, the Department should license mmWave flexible user spectrum on a Tier 4 basis. Radio licences that would require an individual licence for each individual small cell or even at a grid cell level would be an enormous administrative and engineering burden for both the Department and network operators.
89. The Department should not pursue any dynamic access (nor opportunistic access) database system in the 28 GHz and 37-40 GHz bands. The main purpose of a dynamic access database is to protect incumbents that have variable usage conditions (location, time etc.). In this case, there are no such incumbents in the 28 GHz band and incumbent 37-40 GHz fixed service users will either be converted to exclusively licensed flexible use licence holders or (secondary users) will be displaced. There are additional costs and complexity associated with dynamic access using database (devices, database etc.) that do not appear to be justified.
90. Additionally, if the U.S. or another large region does not adopt any dynamic access database system, there would be no economies of scale for the technology. This would make it very costly for a “Made in Canada” solution with seemingly no strong policy reason to do so. As Canada does not have incumbent government users in the 37-37.6 GHz section of the band that require protection, there is no particular reason for Canada to adopt the usage of dynamic access in the band.

9-2: If an exclusive licensing approach is implemented, preliminary comments are sought on the benefits and risks related to longer licence terms for these frequency bands.

91. The Department should issue the 28 GHz and 37-40 GHz flexible use licences for a 20-year term and these licences should 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.
92. In the FSAC, 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.”<sup>33</sup> Moving to a 20-year term would harmonize the mmWave spectrum licences with recently auctioned 700 MHz, 2500 MHz, and AWS-3 licences, as well as the Cellular and PCS licences issued through a renewal process.

93. As 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).”<sup>34</sup> 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 the advanced and extensive infrastructure necessary to enable new services in mmWave bands, 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.

9-3: If an exclusive licensing approach is proposed, ISED is seeking preliminary comments on possible measures that could support competition in light of the current conditions in the Canadian wireless service market and anticipated development and deployment of 5G services if flexible use licensing is developed through a spectrum licensing model.

94. Rogers believes that the Department should carefully evaluate and take all the necessary steps to ensure any affiliated and associated entities rules promote a fair and efficient outcome in the both current and future auctions or any licensing processes. Rogers further believes that the Department must integrate its policies and auction rules regarding collusion and affiliated and associated entities within a single framework to ensure that unintended consequences do not benefit one or more bidders in auctions.

95. The challenges with the existing associated entity rules are clearly demonstrated by the Bell and TELUS relationship. While Bell and TELUS compete head-to-head for customers, they have a long-standing wireless network sharing arrangement that aligns their interest in terms of acquiring spectrum in auctions. They already have a joint 4G LTE network and economics and technology will ensure this arrangement is extended into 5G and mmWave spectrum bands. They therefore already have in-depth knowledge of their combined spectrum needs. Yet, under the rules of recent auctions they can bid separately and be subject to individual spectrum caps while

<sup>33</sup> ISED, *Consultation*, para 22.

<sup>34</sup> Canadian Chamber of Commerce, *Stuck in Traffic for 10,000 Years: Canadian Problems that Infrastructure Investment can Solve*; <http://www.chamber.ca/media/blog/170719-stuck-in-traffic-for-10000-years/>.

effectively combining their balance sheets for improved bidding power. Despite their common interest, the current rules provide Bell and TELUS with greater bidding abilities than individual competing carriers.

96. For the last decade, the Department has been focused on competition between national carriers and regional carriers but it must be careful not to neglect policies that maintain downstream competition between the national carriers. Rogers requires mmWave spectrum to remain competitive with its primary competitors, Bell and TELUS. The existing auction rules allow Bell and TELUS to plan and develop their joint network, including with spectrum to be auctioned. Therefore, the Department should take all steps necessary to ensure that the rules do not provide Bell and TELUS' with an unfair advantage for bidding on 5G spectrum, including the Consultation mmWave bands or the 600 MHz band.
97. As discussed above in response to question 6-3, the Department should create band plans in all frequency ranges, including mmWave spectrum, with sufficient blocks of spectrum available for multiple providers to compete in auctions. Band plans that divide frequency ranges into multiple, smaller blocks that can still be aggregated allows for greater competition, more innovation, more services, and greater overall benefits to Canadians while still permitting wide, contiguous channels. Such actions will help prevent Bell and TELUS from being able to leverage both of their balance sheets to prevent the only other national network operator (Rogers) or the regional providers from being able to acquire vital 5G spectrum.
98. The Department should also recognize that 5G competitiveness will extend beyond spectrum; although, access to new spectrum in low, mid, high, microwave, and mmWave bands will be crucial. In addition, access to (wireline) local connectivity is critical to 5G deployments. The other key to 5G deployments in urban areas is access to real estate (municipal and private sector) for new micro sites (poles, lamp posts, street furniture, etc.). The Department should ensure that any facilities and rights-of-way held by local telephone companies are made available to all other competitors in order to increase competition for the benefit of all Canadian businesses and customers.
99. In April 2017, the FCC launched wireless<sup>35</sup> and wireline<sup>36</sup> proceedings to examine the regulatory impediments to network infrastructure investment and deployment, and how such impediments might be removed or reduced in order to promote the rapid deployment of advanced broadband services. The wireless proceeding will examine the clarification of siting rules at local, state and federal levels, streamlining historic preservation, tribal and environmental reviews, and, enabling proposed sites

---

<sup>35</sup> FCC, FCC 17-79: *Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment*; <https://ecfsapi.fcc.gov/file/0421294395880/FCC-17-38A1.pdf>.

<sup>36</sup> FCC, FCC 17-84: *Accelerating Wireline Broadband Deployment by Removing Barriers to Infrastructure Investment*; <https://ecfsapi.fcc.gov/file/0421885402163/FCC-17-37A1.pdf>.

to move forward if local governments do not act within mandated timelines. For the wireline proceeding, the FCC is seeking comment on reducing timeframes for carriers to access utility poles and decreasing fees utilities charge for access to utility poles.

100. U.S. wireless carriers are supportive of the FCC proposals to reduce red tape and commenters have proposed additional strategies to remove barriers to the rapid deployment of networks. These issues are relevant to Canadian network deployment. Some of these include:

- i. Local government right-of-way management cannot be discriminatory;
- ii. Providers deploying wireless facilities cannot be singled out for more onerous regulations than other telecom providers;
- iii. Telecommunications and wireless carriers should not be treated any differently than hydro companies and other utilities when it comes to rates and access to municipal property; and,
- iv. Local governments cannot charge any more than their direct and actual costs.

101. Providing Canadian wireless carriers with better and more timely access to public and private infrastructure at economical rates is critical to 5G deployments and ISED should pursue similar policies in order to support competition and the provision of high quality and innovative wireless services to Canadians.

## **Conclusion**

102. Rogers supports the Department efforts to release mmWave spectrum in the 28 GHz, 37-40 GHz and 64-71 GHz frequency bands to support the deployment of 5G fixed and mobile services ahead of WRC-19. The Department should look to maximize the use of mmWave spectrum for new services to allow Canadian consumers to benefit from wireless innovations. Such measures would allow operators to deploy new and enhanced services to consumers and in their networks, provide an additional layer of protection for incumbent services, and allow Canada to maintain its international obligations. It would be a win-win-win situation for Canadian consumers and businesses, operators, and the federal government.

103. The Department should employ a flexible use, exclusively licensed spectrum regime with the 28 GHz and 37-40 GHz bands that will ensure access to interference-free spectrum for launching 5G services. The 64-71 GHz band, proposed for unlicensed use, will allow for trialing radical new spectrum management approaches. Continuing to enhance technical and policy spectrum frameworks in this way is vital to ensuring that network operators can satisfy Canadians' growing demand for connectivity services in Canada and would promote the telecommunications objectives and Innovation Agenda of the Department.

104. Finally, the Department should ensure that competition measures are in place to make sure that Rogers and regional providers have access to mmWave spectrum to remain competitive with the joint Bell and TELUS network. The affiliated and associated entities rules and the rules prohibiting collusion should be clarified and strengthened. The ongoing coordination between certain bidders should be prevented. The Department should approach its 5G policy holistically, considering spectrum policy in conjunction with potential rights-of-way advantages by local telephone companies in deploying 5G services in their respective wireline territories.

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