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Consultation on the Technical and Policy Framework for 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band,
Notice No. SLPB-002-20

Comments

of

SHAW COMMUNICATIONS INC.

October 26, 2020

I. INTRODUCTION AND EXECUTIVE SUMMARY

1. The following constitutes the initial comments of Shaw Communications Inc. ("Shaw"), on behalf of itself and of Freedom Mobile Inc. ("Freedom"), to Innovation, Science and Economic Development Canada (the "Department" or "ISED") in connection with the proceeding initiated by the *Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band,* No. SLPB-002-20 (the "Consultation" with such document the "Consultation Document").

Canada's 5G Future

2. The COVID-19 pandemic has underscored the importance of high-quality and reliable telecommunication services to the economic and social well-being of Canadians. As the Department has observed, during this time, Canadians have relied even more on their wireless services to stay connected;[1] this follows several consecutive years of exponential growth in wireless usage. With 5G at our doorstep, wireless connectivity is poised to play an even bigger role in the lives of Canadians.

3. The success of 5G in Canada will depend on a wireless industry that is competitive. Competition will drive innovation and affordability, maximizing the transformative potential of 5G for *all* Canadians, including consumers and businesses in rural and remote communities. Although Shaw and other regional disruptors in the wireless industry have made significant competitive gains in recent years, we cannot assume that this will necessarily continue in the 5G era. Rather, 5G represents a critical juncture at which the Big 3 can halt the competitive momentum of the regional competitors and re-entrench their historical domination of the market. In fact, the Big 3 already have a head start on 5G because of their significant and diverse spectrum holdings, while wireless disruptors like Shaw only just acquired necessary low-band coverage spectrum, including 600 MHz holdings that were subject to lengthy transitions making it unusable until long after they were acquired. Additionally, Shaw and other regional competitors face significant deficits of mid-band spectrum – the workhorse for 5G – as compared to the Big 3, who received some key mid-band holdings for free. The 3800 MHz band therefore represents a critical opportunity to correct enduring spectrum imbalances and secure a competitive 5G future for Canada.

[1] Consultation Document, paragraph 3.

4. The Department appears to share Shaw's vision for 5G in Canada. In the Consultation Document, the Department articulates a vision of a wireless market that is sustainably competitive, driven by network investment, and available to all.[2] More specifically, it seeks to (i) foster investment and the evolution of wireless networks by enabling high-quality 5G networks; (ii) support sustained competition in wireless so that all consumers and businesses benefit from greater choice and competitive prices; and, (iii) facilitate deployment and timely availability of services across the country, including in rural, remote and Northern regions.[3]

5. Despite entering the wireless market only a few short years ago (with our acquisition of WIND), Shaw is driving each of these objectives:

   (a) ***Investing in high-quality networks:*** Although our wireless business is not yet profitable, since 2016, Shaw has invested approximately $3.5 billion in spectrum and new wireless infrastructure that provides the foundation in our fight for sustainable competition. Recent regulatory developments have suggested a misguided shift away from facilities-based competition,[4] which has forced us to reconsider our investment ambitions,[5] notwithstanding our desire to continue to invest for the benefit of Canadians.

   (b) ***Driving competition, choice and lower prices:*** We are driving unprecedented progress toward sustainable competition. As the Big 3 have acknowledged,[6] our efforts have created an entirely new competitive dynamic that has cascaded through the markets we serve and beyond, featuring widely available unlimited plans, more choice across all price ranges, lower prices, reduced overage charges and a better customer experience.

   (c) ***Expanding to non-urban areas:*** We are expanding our network to deliver the benefits of competition to more Canadians in areas outside major urban centres.

[2] Consultation Document, paragraph 4.
[3] Consultation Document, paragraph 13.
[4] See for example the "preliminary view" articulated in Telecom Notice of Consultation 2019-57, Review of Mobile Wireless Services, February 28, 2019, hereinafter "TNC 2019-57," paragraph 39, which provides the CRTC's preliminary view that the perceived benefits of mandating resale MVNO access would outweigh the harms to investment.
[5] See Shaw's undertaking response filed in TNC 2019-57 detailing our pulling back investment in response to the regulatory landscape (Shaw(CRTC Exhibit 4)18Feb20-14, filed March 10, 2020).
[6] See for example Bell's comments at the hearing initiated by TNC 2019-57 - Transcript, Hearing February 19, 2020, Volume 2, Lines 1910 – 1911. As Bell acknowledged, our disruptive impact has forced the Big 3 to respond and contributed to the widespread adoption of unlimited plans.

For example, in 2019 alone, we expanded to more than 20 new communities, extending our reach to cover 1.4 million additional Canadians in rural areas.

6. As Canada's Competition Bureau recently stated, facilities-based wireless disruptors are having a "significant effect" on disciplining the Big 3 and they offer the "most promising path" forward to dismantling the Big 3's dominance.[7] This progress has been facilitated by the Department's pro-competitive wireless policies.

7. Although we have made progress, there is more work to be done. If we are to succeed in continuing to drive the objectives outlined above, we must continue to invest and build out our network so that we can truly compete on scale and network quality with the Big 3, and deliver the benefits of strong competition in 5G to Canadians across the country. This will not be easy, particularly in light of our single biggest barrier – spectrum inequity. The Big 3 continue to enjoy a significant spectrum advantage, making it challenging for wireless disruptors to gain scale, which in turn limits our impact and the number of Canadians that can benefit from our more diverse and affordable offerings.

8. Policy making that encourages competitive investment will be critical to cementing sustainable competition in 5G and beyond. The single most important policy action that the Department can adopt to achieve its vision is to ensure that facilities-based wireless disruptors are able to acquire critical mid-band spectrum.

9. The release of 3800 MHz spectrum is the last significant opportunity for the Department to level the competitive playing field with respect to mid-band spectrum, as it is the last anticipated major spectrum release on the horizon for sub-6 GHz spectrum. As the Department has stated,[8] the issue of pro-competitive measures will be directly considered in a further process. At this stage, it is crucial that the Department adopt band and transition plans that facilitate a significant set-aside in that future licensing process.

The Department should reject Telesat's clearing proposal

10. The Department should reject Telesat's accelerated clearing proposal. The proposal – in particular the suggestion that 200 MHz of Telesat's FSS spectrum be converted to flexible use and that Telesat sell this spectrum on the secondary market – is

[7] TNC 2019-57, Competition Bureau, Further Comments dated November 22, 2019, paragraph 6. <https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04510.html>
[8] Consultation Document, paragraph 184.

inappropriate, unprecedented, and not in the best interest of Canadians. It would give Telesat responsibilities that are at the core of the Department's mandate, position Telesat as the arbiter of Canada's digital future, and run counter to the Department's objectives for this important spectrum band.

11. The reasons to reject the proposal were summed up best by the FCC in its rejection of the substantially similar proposal of the C-Band Alliance, of which Telesat was a part, in its March 2020 *Report and Order* regarding the reallocation of the band in the U.S.:

> We find that, relative to the C-Band Alliance proposal, the use of a public auction will provide a greater benefit to potential bidders, ensure Commission oversight and protect the interests of displaced incumbent C-band users, promote a rapid transition, and be more firmly grounded in established legal authority.[9]

12. The proposal seeks to fast-track – without due process – integral elements of the Department's standard reallocation and licensing processes, including consideration of pro-competitive measures, deployment requirements and other conditions of licence, auction design, and anti-collusion rules, among others. A thorough consideration of these issues in a proper public consultation is critical to ensure the integrity of the entire rule-making process. In particular, it is entirely inappropriate for the Department to make any determinations relating to pro-competitive measures prior to the establishment of a band plan – these determinations must be made as part of a subsequent consultation, as the Consultation Document states.[10]

13. The Department has an excellent track record and reputation globally for establishing and executing spectrum auction processes. It does so in furtherance of its mandate and responsibility to ensure that this critical resource is managed in the best interest of Canadians. Telesat's assertion that it is the only party that "has the ability to successfully lead and execute this transition"[11] is incorrect. The Department, which has decades of experience as Canada's regulator of spectrum and a strong team of subject-matter experts, is best-placed to lead this process.

14. Shaw acknowledges that Telesat's ambitious LEO project has the potential to play a major role in bridging Canada's digital divide, a critical policy objective whose importance has been amplified with the COVID-19 pandemic. As a network builder,

[9] FCC, *Report and Order and Order of Proposed Modification*, Released March 3, 2020, hereinafter the "FCC Report and Order", paragraph 37. <https://docs.fcc.gov/public/attachments/FCC-20-22A1.pdf>
[10] Consultation Document, paragraph 184.
[11] Telesat, *Fast Tracking Affordable, Canada-wide 5G and Universal Connectivity with 3800 MHz Spectrum*, June 5, 2020, hereinafter the "Clearing Proposal", paragraph 40.

we understand well the challenges of building a business case to bring connectivity to unserved and underserved rural and remote communities. These projects often rely on government funding to proceed. Indeed, we understand that Telesat has already secured $85 million in funding from the Federal Government for LEO, as well as a commitment for an additional $600 million over the next decade to support its delivery of broadband.[12] We are supportive of using public funding to help make broadband available to Canadians living in unserved or underserved rural and remote areas. We would encourage Telesat to investigate other sources of funding, including subsidies from all orders of government, if needed. Shaw would also support the reimbursement of Telesat's reasonable C-band transition costs, in excess of those already covered by the FCC, out of any auction proceeds or other source of government funding.

15. However, Telesat's clearing proposal is not an appropriate mechanism for Telesat to fund its LEO project. The proposal would unnecessarily and fundamentally alter standard reallocation and licensing processes and take Canada out of step with international band-plans, all in a manner that will hurt, not help, competitive deployment of 5G in Canada. Shaw therefore does not support Telesat's proposal.

Treatment of Existing Users in the Band

16. The treatment of existing users in the 3800 MHz band will have implications for the entire flexible use band plan and the policy options for licensing. In keeping with its established practice, the Department has outlined proposals for the transition and protection of incumbent users with a view to minimizing service disruption to the greatest extent possible. Shaw supports this important aspect of the reallocation process.

17. With respect to the options laid out for the treatment of users in the 3650-3700 MHz band, we note that both options entail the release of a reasonable amount of spectrum and should facilitate the adoption of appropriate pro-competitive measures. While the Department has indicated a preference to relocate WBS users in the band (Option 2) rather than enable WBS users to remain (Option 1), some of the assumptions that have driven the Department to prefer Option 2 are not completely accurate. In particular, Option 2 would take Canada out of step with the U.S., which may be sub-optimal from a device ecosystem perspective. Moreover, there could be an opportunity to achieve some of the purported benefits of Option 2 without the need for displacement and the

[12] The Globe and Mail, *Internet Everywhere, but at a cost: The race for the low-Earth satellite market,* September 21, 2020. <https://www.theglobeandmail.com/business/article-internet-everywhere-but-at-a-cost-the-race-for-the-low-earth/>

resulting complexities and delays, including by adopting new technical rules and a new licensing and sharing approach in the existing band.

18. With respect to incumbent users in the 3700-4200 MHz band, Shaw supports the proposal to consolidate these users to the upper portion of the band, as this would align with the approach taken by the FCC. Moreover, Shaw is also not opposed to the Department allowing continued use in areas that truly depend on C-band satellite for essential telecommunications services. However, we suggest narrowing the proposed definition of "satellite dependent" to more accurately reflect areas that rely only on satellite. In addition to considering the population and remoteness of the relevant area, the Department should consider the availability of terrestrial services.

II. THE PROPOSED "ACCELERATED CLEARING APPROACH" IS NOT IN THE BEST INTEREST OF CANADIANS

19. The Consultation Document seeks comments on an "accelerated clearing approach" proposed by Telesat (the "Clearing Proposal"). Under the Clearing Proposal, Telesat would be allowed to convert its existing fixed satellite space station licences to flexible use for sale on the secondary market. Telesat would be granted a Tier 1 flexible use licence in the 3700-3900 MHz band and would "take responsibility" to clear this 200 MHz by 2021. An additional 200 MHz (3900-4100 MHz) would be released by 2025.

20. The Department has the responsibility to maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource and to manage it in the best interest of Canadians.[13] As technology and spectrum usage evolve, ISED's role is to release and reallocate spectrum to maximize the public benefit and efficiency of this finite resource.[14] While each spectrum reallocation has many stakeholders with diverse interests, the public interest must be paramount.

21. The Clearing Proposal, by contrast, is in the best interest of Telesat, not Canadians. The Clearing Proposal would give Telesat the responsibilities that are at the core of the Department's mandate, positioning Telesat as the arbiter of Canada's digital future. This is ISED's role and responsibility, not Telesat's. The Clearing Proposal would undermine the integrity of the spectrum release process. It is also at odds with the objectives outlined in the Consultation Document. As discussed below, Shaw is not

[13] ISED, *SPFC – Spectrum Policy Framework for Canada,* June 2007, Section 4.3. <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08776.html#s3>
[14] See for example ISED, *Spectrum Outlook 2018-2022,* June 6, 2018, hereinafter the "Spectrum Outlook", paragraphs 7, 16 and 17. < https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11403.html>

opposed to Telesat being reimbursed, out of any auction proceeds or other government funds, for any reasonably incurred and substantiated relocation costs. However, the Department must reject the Clearing Proposal.

The Telesat proposal represents an improper delegation of important public policy functions to a private corporation

22. As Canada's spectrum regulator, the Department has decades of experience with, and well-established processes for, the reallocation and release of spectrum. Its processes have been carefully designed to achieve policy objectives consistent with the public interest by ensuring their integrity, transparency and efficiency. Thus, Telesat's statement that "only Telesat […] has the ability to successfully lead and execute this transition"[15] is incorrect.

23. The Clearing Proposal contemplates the inappropriate delegation by ISED to Telesat, a private corporation, of several important public policy functions, including the award of radio frequency spectrum, a valuable, finite public resource. In its rejection of a similar proposal in the U.S., the FCC stated:

> [T]he…proposal would place the licensee selection process for an entire and of newly configured spectrum into private hands by vesting private entities with the exclusive ability to allocate new terrestrial rights to valuable C-band spectrum through privately negotiated sales that would not be subject to any of the procedural protections or public interest requirements that Commission-led auctions are designed to promote. Such an approach lacks the transparency and procompetitive features of a public auction and would provide bidders with less certainty about fair and equal access to new flexible-use licenses. In contrast to a private sale conducted by private entities whose primary incentive would be to maximize profits, a Commission-led auction will be driven by broader public interests, including robust participation by a diverse group of bidders, competitive pricing, and transparent allocation of this valuable public resource.[16]

24. The Clearing Proposal would also entrust Telesat with the responsibility for clearing the entire band (including the operations of other users) on its proposed timeline. However, it is unclear whether Telesat has the support of any of the other incumbent FSS users, and whether and to what extent those users would receive any compensation for their relocation expenses. The FCC also raised concerns with this delegation of administrative decision-making and oversight, noting the following:

[15] Clearing Proposal, paragraph 40.
[16] FCC Report and Order, paragraph 37.

> The C-Band Alliance's proposal would give certain incumbent space station operators substantial discretion to decide whether and to what extent all affected C-band users should be accommodated in the transition and compensated for their relocation costs. This responsibility is directly at odds with space station operators' fiduciary duties to their shareholders to maximize the retained profits from the private sale.[17]

There is no legal or policy basis for adoption of the Telesat proposal

25. Telesat does not provide any defensible legal or policy rationale for its proposal. In particular, as detailed below, its assertions that it needs this significant windfall in order to avoid loss of critical service, and that the Clearing Proposal would further the policy objectives outlined therein, are inaccurate.

26. Telesat states that, other than its Clearing Proposal, there is "simply no other practical way to release any portion of the 3800 MHz spectrum for terrestrial use without widespread loss of critical services."[18] There is good reason to doubt this unsubstantiated claim. First, ISED records indicate that Telesat currently holds licences to operate three satellites using C-band spectrum: Anik F2, Anik F3 and Anik G1. Consistent with the anticipated end of life for the Anik F2 and F3 satellites, two of Telesat's three C-band licences are set to expire in 2023/4,[19] more or less corresponding with the transition date proposed by the Department. Therefore, it appears that only its G1 satellite, with a licence expiry of 2032 will be meaningfully impacted by the proposed reallocation of spectrum for flexible use.

27. Second, there is evidence from multiple other proceedings that C-band demand is declining.[20] Telesat has provided no evidence to refute this notion, nor any evidence of its inability to maintain existing service levels using less spectrum. While Telesat contends that its LEO project is necessary to maintain continuity of service, there is no logical causal link between LEO and the proposed reduction in C-band spectrum.

28. In fact, on its face, the Clearing Proposal is more disruptive to existing C-band services than ISED's proposed approach, which entails reallocating less spectrum on a less aggressive timeline and preserving operations in this band in areas that are satellite dependent. Shaw is supportive of the Department's efforts in this and other reallocation processes to provide for the transition and protection of incumbent users in a way that

[17] FCC Report and Order, paragraph 38.
[18] Clearing Proposal, paragraph 40.
[19] Consultation Document, paragraph 44.
[20] Spectrum Outlook, paragraph 62. Additionally, a significant amount of C-band capacity is unused – CRTC, *Satellite Inquiry Report,* October 2014, hereinafter the "CRTC Report", paragraph 63. <https://crtc.gc.ca/eng/publications/reports/rp150409/rp150409.htm>

minimizes service disruption to the greatest extent possible and provides certainty to both existing and new users of the spectrum. In general, the proposals in the Consultation Document appear to strike an appropriate balance between achieving the goals of freeing up critical spectrum for terrestrial 5G use and maintaining necessary FSS services.

29. To be clear, Shaw is not opposed to Telesat being reimbursed, out of the proceeds from any auction or other government funding, for any reasonably incurred transition costs substantiated with evidence. With respect to evidence of transition costs, the Clearing Proposal refers to estimates on the FCC record, which are far greater than the transition costs in Canada due to the sheer number of major satellite providers that had to vacate the spectrum. Telesat should provide its own evidence of its estimated costs specific to the Canadian relocation process (i.e., which will not already be covered by the FCC compensation scheme).

30. However, there is no causal link between the proposed reallocation of C-band spectrum and the LEO project that justifies the extraordinary windfall and disruption to licensing processes that Telesat proposes. Telesat's commercial LEO upgrade to support mission critical FSS in Canada's north may advance our collective goal of bridging Canada's digital divide, but Telesat should seek any additional funding necessary for that initiative through different means, such as additional government subsidy funding. (Telesat has already secured $85 million in funding from the Federal Government for LEO, as well as a commitment for an additional $600 million over the next decade to support the delivery of broadband.)[21] Because of the negative implications for competitive 5G deployments, upending the 3800 MHz reallocation and auction processes is an inappropriate mechanism for securing additional funding.

31. There are a number of reasons to doubt Telesat's unsubstantiated assertions that the Clearing Proposal would expedite innovation, investment, and the adoption of 5G in Canada.[22] In the U.S., only 120 MHz (3700-3820 MHz) will be made available by December 2021, and only in 46 of the top 50 service areas. Nationwide deployment across the entire range, including the remaining 180 MHz (3820-4000 MHz), will not be available until December 2023. Interference issues at the border would likely complicate the early deployment of mobile for 5G in the 3700-3900 MHz range. Moreover, even if a sale process is conducted with extraordinary speed, the subsequent transfers and subordinations will still be subject to ISED's review process, which,

[21] *Supra*, note 12.
[22] Clearing Proposal, paragraph 2.

depending on the number of applications involved, may be very lengthy and complex. This also assumes that Telesat will have the full support of all other existing FSS users for its proposal. In Shaw's view, the Department's proposal, which will actually free up more spectrum for flexible use at once, is more certain to facilitate rapid 5G deployment.

32. Furthermore, Telesat's Clearing Proposal would jeopardize competitive investment in 5G networks by fundamentally altering how this spectrum is reallocated and awarded in an environment already characterized by extreme regulatory uncertainty. Because of their market dominance, such an unprecedented shift in policy is unlikely to impact the Big 3. On the other hand, vulnerable wireless disruptors like Shaw would bear the brunt of the increased uncertainty.

33. The benefit of clearing additional spectrum in the 4000-4100 MHz range is also unclear. Since utilizing the 4000-4100 MHz range for mobile is the exception, not the general rule, among regulators globally, at this time there is a low probability of a viable mobile ecosystem in Canada for 4000-4100 MHz. Opening up this frequency range would also take Canada out of step with the U.S. band plan, creating interference issues with U.S. satellite operations at the border and, potentially, for Canadian receive stations of American and foreign satellite feeds. It could also create interference issues with aeronautical services in the 4200-4400 MHz band.

34. For the foregoing reasons, there is no compelling policy justification to adopt the Clearing Proposal. Likewise, there is no legal justification. FSS licences are issued on a "first-come, first-served" basis following an extensive application process. Licensees pay annual fees of $120/MHz. The applicable CPC is very clear that FSS licences may be revoked where there is a change to frequency allocation or spectrum use policy following a public consultation.[23] Thus, Telesat has no legal "right" to the perpetual use of this spectrum. Furthermore, Telesat's proposal is completely unprecedented from a legal perspective. The 3500 MHz, 2500 MHz, and AWS-4 precedents referred to by Telesat are distinguishable because they concerned the award of new mobile or flexible use licences to incumbent licensees to support their continued provision of service (at least ostensibly). Telesat has no intention of using the flexible use licences it seeks. In its rejection of the substantially similar proposal of the C-Band Alliance, the FCC seized on this inconsistency:

[23] ISED, *CPC-2-6-02 – Licensing of Space Stations*, Section 5.7. <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01385.html#s4.5>

> The Commission would be granting incumbent space station operators new flexible-use rights solely for the purpose of allowing the incumbents to sell those rights on the secondary market, without actually requiring them to meet any buildout requirements or initiate terrestrial service. Indeed, given the full band, full arc nature of FSS licenses, incumbent space station operators could not provide terrestrial mobile services without causing interference to existing C-band satellite services. [24]

The Department must proceed with its standard reallocation and licensing procedures

35. The Department's standard practice for the release of spectrum is to first conduct a reallocation consultation to determine issues relating to treatment of existing users and to establish a band plan. Once the band plan and reallocation framework are established, the Department consults further on issues specific to the future spectrum release, including:

    (a) Specifics relating to pro-competitive measures having regard to the already-determined amount of spectrum available and the band plan including block sizes;

    (b) Conditions of licence, including deployment (which hinges on the determination of licensing areas), which is critical for ensuring the licensees utilize the spectrum in a manner that is consistent with the Department's expectations;

    (c) Auction design, which is critical for ensuring an efficient and fair award process;

    (d) Anti-collusion and prohibited communications rules, which are intended to ensure the integrity of the licensing process;

    (e) Expectations for a rigorous application process in which applicants, including those seeking to be eligible for set-aside spectrum, are vetted to ensure that they have a track record of putting spectrum to use for the benefit of Canadians.[25]

36. In short, there are still several important policy determinations that will need to be made following the current consultation, and Shaw and other stakeholders have a legitimate expectation that these policy issues will receive their due attention in a separate public consultation.

[24] FCC Report and Order, paragraph 40.
[25] Consultation Document, paragraph 184.

37. Telesat insists that in order to avoid "unnecessary delays", the Department must make determinations on the critical issue of pro-competitive measures at this juncture.[26] As described in Section III, the issue of pro-competitive measures will be critical to achieve the Department's objectives for the 3800 MHz band. Treating this issue as an "unnecessary delay" ignores the importance of pro-competitive measures to Canadians and Canada's digital future. The Department cannot consult fully on this issue at this stage as the band plan is not yet established.

38. Telesat also claims that the Clearing Proposal would be "inherently competitive" as it would allow for more competitors to each have access to sufficient mid-band spectrum.[27] This ignores the reality that, absent prudently-crafted pro-competitive measures, the Big 3 will foreclose new competitors from gaining access to this crucial spectrum. Telesat suggests that, if deemed necessary, 50 MHz could be offered to a class of eligible bidders at a reserve price to be "defined by Telesat".[28] Telesat goes on to state that any pro-competitive measures must not "substantially undermine Telesat's ability to recoup enough value through the secondary market to underwrite the extensive investments required for a successful transition."[29] These statements reveal that under the Clearing Proposal, the public interest in competition in 5G will be secondary to maximizing Telesat's revenues, underscoring the need for ISED to retain complete control of its spectrum policy functions.

39. The process described in the Clearing Proposal would also be highly inefficient. Telesat proposes that it would receive a Tier 1 flexible use licence and that the Department would be tasked with reviewing and approving an unknown number of subsequent private transactions on the secondary market. Telesat describes the ability to review secondary market transactions as a "ready mechanism" for ISED to implement the Clearing Proposal.[30] The Department typically utilizes this mechanism to approve transactions for existing licences for which there is already a licensing framework setting out conditions of licence that include detailed deployment conditions and, often, specific restrictions on transfer. To use this mechanism to enable the release of a significant amount of spectrum for what would effectively be an entirely new, *transitional* use across the entire country would be inefficient and an inappropriate use of the Department's transaction review mechanism. The sole purpose of that exercise is for Telesat to *sell* the licence, not to put it to use for the benefit of Canadians. This is

[26] Clearing Proposal, paragraph 44.
[27] Clearing Proposal, paragraph 43.
[28] Clearing Proposal, paragraph 46.
[29] Clearing Proposal, paragraph 44.
[30] Clearing Proposal, paragraph 43.

a very odd objective to ask the Department to implement, since its policies are designed to discourage speculative trading in spectrum.

III. THE LICENSING FRAMEWORK MUST INCLUDE PRO-COMPETITIVE MEASURES

40. Shaw has proven its commitment and potential to deliver significant benefits to Canadians by investing in and building our own network, driving unprecedented progress toward sustainable competition, and expanding our reach to areas outside major urban centres. However, our spectrum disadvantage limits our ability to gain scale and protects the Big 3's market dominance. Absent pro-competitive measures in the eventual licensing framework for the 3800 MHz band, the Big 3 will continue to act on their incentive and ability to foreclose new competitors from gaining access to spectrum and shut us out of 5G and future generational shifts. As noted above, 5G represents a "make it or break it" moment for competition in the wireless industry.

41. Below we describe the critical importance of ensuring that this band is set up to facilitate the adoption of pro-competitive measures. The Consultation Document states that pro-competitive measures will be considered as part of a future framework consultation once the band plan is established,[31] yet in the context of the Telesat Proposal, the Department seeks specific comments on the use of pro-competitive measures in the 3800 MHz band. As described in Section II, Shaw strongly opposes the sequencing introduced by the Telesat proposal, which asks ISED to make a determination on pro-competitive measures at this stage, prior to the band plan being established, in order to enable its impractical and potentially harmful Clearing Proposal. We similarly object to the Department's questions about the use of pro-competitive measures at this stage in the reallocation process, which ask us to provide our views on licensing policy prior to having a clear understanding of how much spectrum will be made available, where, and under what technical parameters.

42. Accordingly, our comments on pro-competitive measures are without prejudice to our views in the subsequent licensing framework consultation, at which time we will provide more detailed submissions. Notwithstanding our strong opposition, should the Department accept the Clearing Proposal, it is imperative that it does so on the condition that a significant set-aside is implemented for the secondary market sale

[31] Consultation Document, paragraph 184.

process. To be clear, such a set-aside would not be sufficient to offset the harmful impacts of the Clearing Proposal on competition and the public interest.

Canadians are benefitting from unprecedented competitive pressure from Shaw and other regional disruptors, but this competition is vulnerable

43. The Department's objective of ensuring that all Canadians have access to the latest wireless services, at competitive prices, is within reach. We are finally breaking free from the static environment dominated by the Big 3 for decades. Prices are falling: the CRTC's most recent *Communications Monitoring Report* shows that prices are decreasing across all market segments and the average monthly price for a mobile service with unlimited voice, text messaging and 5 GB of data fell by as much as 35% in 2018, from $78.36 in 2016 to $51.05.[32]

44. Customers are also getting more for less: in a recent series of reports, PriceWaterhouseCoopers found that Canada's new unlimited plans represent a significant increase in value and that by the end of 2020, the price paid per GB of data by Canadians is estimated to decline by 50% compared to 2018 levels and by 38% compared to 2019 levels.[33]

45. These hallmarks of competition are evidence of the impact that facilities-based wireless disruptors are having in the market. In the few short years since entering the wireless market, Shaw has demonstrated our ability to discipline the Big 3 and upend the market with our innovative service offerings. The Competition Bureau has found that where facilities-based wireless disruptors have gained market share of between 5.5% and 20%, the Big 3's prices are generally in the range of 35% to 40% lower than in areas where wireless disruptors are not present or have not achieved the requisite scale.[34]

46. Consistent with the Department's objectives for rural competition, we have also undertaken huge efforts to expand our competitive presence to more Canadians. We recently launched in more than 20 new cities, towns and remote communities across

[32] CRTC, Communications Monitoring Report 2019 (Ottawa: 2019), see page 60 and Figure 2.2 at page 63 ("CMR 2019"). <https://crtc.gc.ca/pubs/cmr2019-en.pdf >
[33] PWC, *Understanding affordability of consumer mobile wireless services in Canada*, December 2019. <https://www.pwc.com/ca/en/communications/publications/691586-understanding-wireless-affordability-in-canada.pdf>. See also PWC, *Impact of Unlimited Data Plans on Affordability*, January 2020. <https://www.pwc.com/ca/en/communications/publications/691586-impact-of-unlimited-data-plans-on-affordability.pdf>
[34] TNC 2019-57, Competition Bureau, Further Comments dated November 22, 2019, paragraphs 5 and 37-40. <https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04510.html>

British Columbia, Alberta and Ontario, bringing the benefits of real competition and choice to more than 1.4 million additional Canadians (see Figure 1 below). Delivering on our brand promise, we are bringing consumers choice and freedom from the virtually identical, constrained and expensive offers of the Big 3 that have for decades been the norm.

Figure 1: New Freedom Markets Added in 2019 (Not Exhaustive)[35]

47. Underpinning all of these developments is competitive network investment. Since entering the wireless market, Shaw has invested over $3.5 billion (representing approximately 25% of our market capitalization) to establish itself as a serious and lasting competitive presence, with its own network. Our spectrum and network investments have transformed our 3G network into a competitive, 5G-ready LTE-Advanced network.

48. In spite of the progress we have made, competition is nascent and our position is vulnerable. We are investing billions into our own network while our wireless division is not yet profitable and while facing significant uncertainty in the regulatory environment. Our investments have been enabled by the regulators' focus on promoting facilities-based competition, but this once-clear focus is now blurry.[36] The Department has an opportunity in this proceeding and the subsequent licensing framework consultation to reaffirm its support for facilities-based investment and competition by

[35] We note that this map does not pinpoint certain smaller, more rural areas that we expanded to including Vernon, BC; Penticton, BC; Campbell River, BC; Parksville, BC; Trenton, ON; Sooke, BC; North Saanich, BC; and Lindsay, ON.
[36] *Supra*, note 4.

addressing the single biggest barrier to competitive investment in the wireless market – the persistent imbalances between Big 3 and new competitor spectrum holdings.

Spectrum imbalances are a barrier to sustainable competition in 5G

49. As described above, Shaw is fulfilling the Department's objectives – we are investing for Canadians, driving competitive progress, and expanding to rural areas. But our spectrum disadvantage limits our potential in each of these areas: the business case for continued network investment is challenging when our competitors have a seemingly insurmountable advantage (particularly in such an uncertain regulatory environment); our competitive potential and ability to gain scale is limited if the Big 3 have stronger network performance; and it is challenging to expand when we cannot gain sufficient scale in our core markets to drive expansion.

50. While the evidence summarized above clearly shows that disruptors like Shaw are driving unprecedented progress toward sustainable competition, the Big 3 continue to enjoy market dominance. Their dominant market share (measured by both subscribers and revenue) corresponds to their spectrum dominance, as it has for decades. These incumbents – Bell, Rogers and Telus – continue to capture nearly 90% of Canadian mobile wireless subscribers.[37] As part of the CRTC's Wireless Review proceeding, the Competition Bureau confirmed that market power concerns persist in the wireless industry.[38] These concerns are especially troubling given that 5G is here, providing an opportunity for foreclosure of competition in the next generation of wireless services if the regulatory environment is not primed to support facilities-based disruptors.

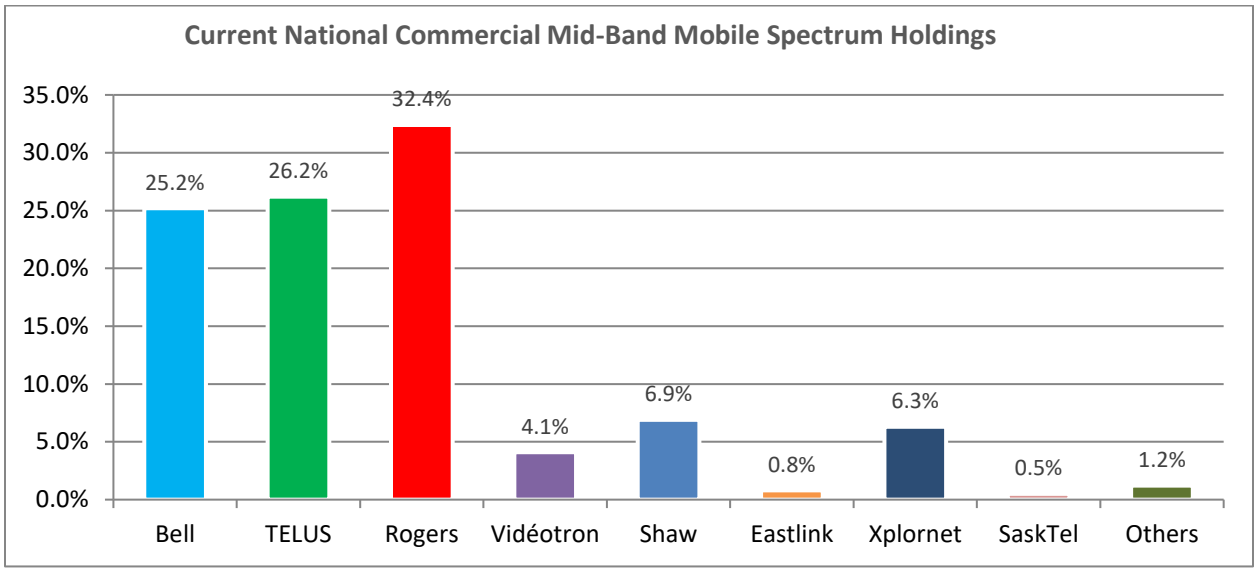
51. With respect to mid-band spectrum, which will be the spectrum workhorse for 5G, the Big 3 have dominated the holdings landscape for decades, owing in large part to benefitting from gifted spectrum. For example, the Big 3 were gifted 10 MHz of mid-band PCS spectrum each.[39] New entrants Microcell and Clearnet, which were acquired by Rogers and TELUS, respectively, were gifted 30 MHz of PCS spectrum each.[40] The

[37] TNC 2019-57, Competition Bureau, Further Comments dated November 22, 2019, paragraph 26. <https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04510.html>
[38] *Ibid*, Section IV.
[39] Industry Canada, *Archived – PCS at 2 GHz Licensees,* December 18, 1995. <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01784.html>
[40] Industry Canada, *Consultation on the Renewal of Cellular and Personal Communications Services (PCS) Spectrum Licences,* March 2009, Section 2.2; Competition Bureau, *Archived – Acquisition of Microcell Telecommunications Inc. by Rogers Wireless Communications Inc.,* April 2005. <https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/00257.html>, and Industry Canada,

incumbents also acquired virtually all of the PCS spectrum that was auctioned in 2001.[41]

52. As a result, mid-band spectrum is significantly concentrated in the hands of the incumbents. The Big 3 hold 84% of mid-band spectrum, as illustrated below:

Figure 2: National Mid-Band[42] Spectrum Holdings (Weighted MHz/Pop)



53. The incumbents' already-significant advantage in mid-band spectrum holdings was exacerbated by the Department's *Decision on Revisions to the 3500 MHz Band.*[43] The decision allowed incumbent fixed wireless access licensees, which include the Big 3, to convert a sizable amount of their existing fixed spectrum holdings in each service area (up to 60 MHz) to significantly more valuable flexible use spectrum licences. Moreover, this advantage could be further compounded if any flexible spectrum licences issued to non-incumbent operators are allowed to be sold to incumbents who are able and willing to pay anti-competitive foreclosure prices.

Archived – A Brief History of Cellular and PCS Licensing, October 2004. <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08251.html>

[41] *Ibid.*

[42] Includes BRS, WCS, PCS, AWS-1 and AWS-3 spectrum holdings as well as reclaimed spectrum in the 3500 MHz process.

[43] ISED, *Decision on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Decisions on Changes to the 3800 MHz Band,* June 2019. < https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11437.html>

3800 MHz is the last anticipated mid-band spectrum release, heightening the foreclosure risk

54. The Big 3 are economically incented to maintain their dominance of the market, and therefore have used, and will continue to use, whatever measures are available to them to foreclose access – especially by new competitors like Shaw, who have demonstrated their competitive potential. The foreclosure risk exists for any spectrum release, as well as in secondary market sales. However, the stakes are particularly high with respect to the 3800 MHz band.

55. It is widely accepted that, like 3500 MHz spectrum, 3800 MHz spectrum is critical for 5G. Mid-band spectrum has a number of unique characteristics that make it the spectrum workhorse for 5G, including: (i) versatility to allow for deployments of larger cells, as well as macro, small cell and indoor applications; (ii) consistent signal performance and connectivity, which significantly improves the connectivity experience; and, (iii) simple antenna design and ease of integration into future 5G devices. In order to deliver on the speed and large traffic-carrying promises required to compete effectively in 5G, competitors will require access to wide swaths of mid-band spectrum.

56. The 3800 MHz band is the last major release of spectrum on the horizon for sub-6 GHz spectrum. Therefore, this is the last opportunity to level the playing field for mid-band spectrum for 5G. The foreclosure risk is also heightened given the increasing threat that new competitors like Shaw pose to the Big 3's joint dominance.

57. It is therefore imperative for the Department to ensure that the band plan and technical rules are set-up to facilitate a significant set-aside in the subsequent licensing process. The failure to set aside spectrum for exclusive bidding by new competitors will result in existing spectrum concentration barriers persisting in the 5G era, entrenching the dominance of the incumbents at a critical turning point for the industry and limiting the potential that 5G holds for the Canadian economy and consumers.

IV. TREATMENT OF WBS USERS IN THE 3650-3700 MHZ BAND

58. The Consultation Document sets out two options for the treatment of existing WBS users: (i) allow them to remain in the 3650-3700 MHz band, but subject to new technical rules to facilitate sharing and coexistence with adjacent band users; or, (ii) displace WBS users to the 3900-3980 MHz range and introduce a new shared licensing process and technical rules for the band.

59. Both options entail the release of a reasonable amount of spectrum and both options should facilitate the adoption of appropriate pro-competitive measures. We note that the Department has indicated its preference for Option 2. In Shaw's view, some of the assumptions that have driven the Department to favour Option 2 may not be accurate.

60. For example, in describing its rationale for preferring Option 2, the Department states that it would provide long-term stability throughout the full 3450-3980 MHz range by allowing for "more efficient use of the spectrum" by "supporting access to a standardized equipment ecosystem across the band."[44] However, because it would take Canada out of step with the U.S. band plan, Option 2 may be sub-optimal from an equipment ecosystem perspective and could also create interference issues at the border.

61. Additionally, while the idea of a full swath of spectrum for flexible use between 3450-3900 MHz may seem optimal for 5G, the benefits of contiguity between the 3500 MHz and 3800 MHz bands may be difficult to realize in practice. This is because current radio technology cannot cover the entire range – two radios would be required, regardless of contiguity. Further, only one licensee in each service area would have the ability to leverage the contiguity between 3500 MHz and 3800 MHz bands.

62. The Department also states that Option 2 would support the achievement of the 50/10 Mbps speed target in rural and remote areas. We note that spectrum in the 3650-3700 MHz portion of the band will not be the only spectrum available to rural providers to help meet that target. The 3500 MHz band, which includes onerous deployment conditions outside of urban centers, will contribute greatly to the improvement of broadband coverage and speed in rural and remote areas.

63. Shaw is concerned that Option 2 could lead to delays and significant costs associated with the need for a transition that would be avoided if WBS remained in its current frequency range. As the Consultation Document acknowledges, existing WBS users would have to invest in new equipment to utilize this band.[45]

64. We note that there is an opportunity to achieve some of the purported benefits of Option 2 without displacing the WBS users. New technical rules could be adopted to help alleviate congestion concerns. Interference and coordination challenges could be solved

[44] Consultation Document, paragraph 90.
[45] Consultation Document, paragraph 89.

by the introduction of a new licensing mechanism for the band to replace the all-come, all-served approach.

65. In other words, a third option for ISED to consider would be a hybrid approach entailing maintaining the existing frequency range for WBS but adopting new technical rules and a new licensing and sharing approach. This approach would align the Canadian and U.S. band plans for the entire 3700 MHz-3980 MHz range, allowing users to leverage the full equipment ecosystem, avoiding a lengthy and complex transition process, and potentially freeing up additional spectrum for flexible use.

66. Lastly, in light of the Department's proposal to establish a flexible use allocation from 3650-3980 MHz,[46] the Department should extend its moratorium on new WBS licences to include all areas, not just those listed in Annex D.[47] Not only will this measure help with coordination during a potential transition period as the Department states,[48] it will also help to ensure that that parties do not seek to acquire such licences for speculative purposes, such as obtaining priority access in a subsequent licensing process.

V. TREATMENT OF USERS IN THE 3700-4200 MHZ BAND AND SATELLITE DEPENDENT AREAS

67. With respect to treatment of existing users in the 3700-4200 MHz band, the Consultation Document proposes that these users, including licensed FSS space stations, licensed FSS earth stations and licence exempt earth stations, would consolidate their operations in the 4000-4200 MHz portion of the band. Shaw supports this proposal. It would align Canada with the U.S., facilitate the deployment of 5G, and facilitate competition in 5G through the adoption of a significant set-aside.

68. The Consultation Document also proposes that licensed FSS users continue to utilize the full 3700-4200 MHz band in areas that are considered "satellite dependent". The Department proposes to define these areas as the Tier 4s identified in the interim guideline GL-10.[49] As the Consultation Document states, the areas identified in GL-10 focused on service areas with low populations and remote communities.[50]

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[46] Consultation Document, Figure 5.
[47] Consultation Document, Decision 1 in Section 9.1.3.
[48] Consultation Document, paragraph 106.
[49] ISED, *Interim Guideline for Licensing of Earth Stations in the Fixed-Satellite, Earth Exploration-Satellite and Space Research Services in the Frequency Bands 26.5-28.35 GHz and 37.5-40 GHz*, June 2019, hereinafter referred to as "GL-10". <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11513.html>
[50] Consultation Document, paragraph 120.

69. Shaw is not opposed to the Department preserving FSS use across the full band in remote areas of the country that depend exclusively on satellite for essential telecommunications services. However, Annex E includes many areas that are not truly satellite dependent because it fails to account for the availability of terrestrial transport services (e.g., fibre and microwave radio). For example, the SuperNet services 429 communities throughout Alberta (including several remote areas that appear in Annex E). These communities should not be defined as "satellite dependent". Adopting a definition of "satellite dependent" that is too broad would run counter to the Department's objective of facilitating the deployment and timely availability of services across the country by potentially preventing the deployment of mobile or fixed wireless services in such areas.

70. The Department's alternate proposal, to designate as "satellite dependent" the Tier 5 "remote areas" identified by the Department[51] provides a narrower and thus more appropriate definition, but it too does not consider availability of other forms of connectivity.

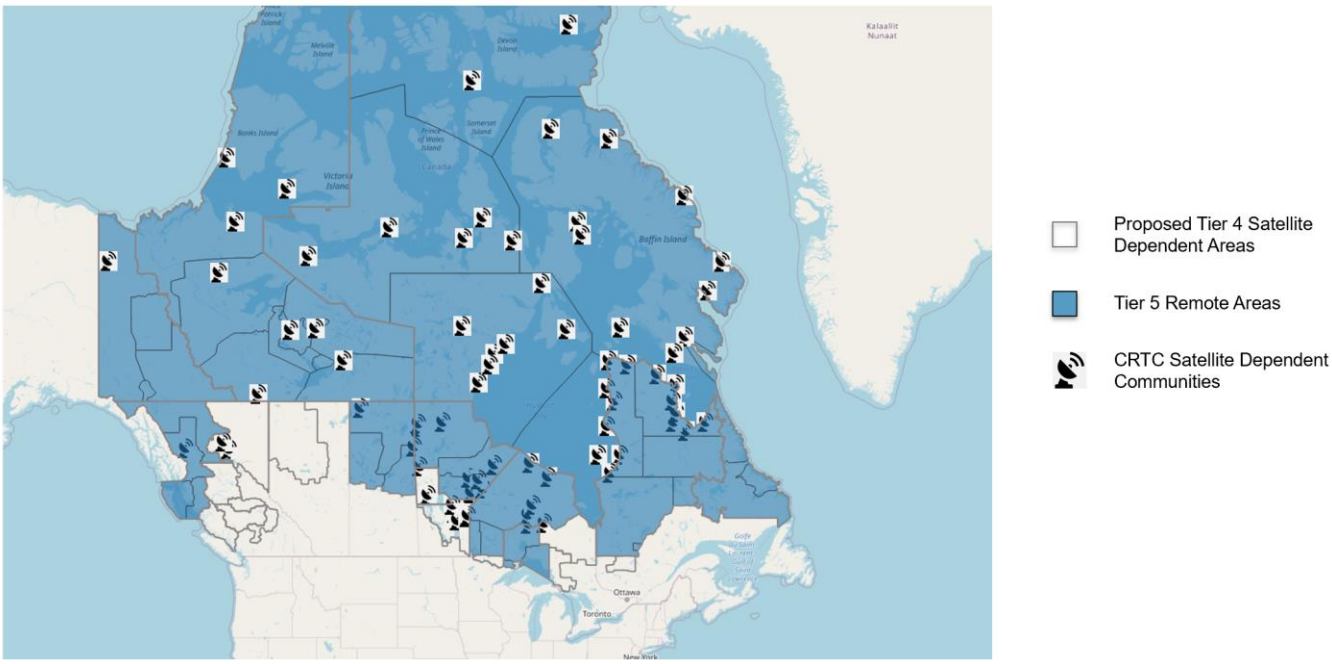
71. In order to capture areas that are truly satellite dependent, Shaw recommends that the Department focus on communities where terrestrial transport is unavailable. Many of the areas listed in Annex E already have access to non-satellite forms of connectivity, including fibre. We note that the CRTC Report defined a "satellite-dependent community" as "a community that has no connection to terrestrially based telecommunications facilities […] and that relies on satellite transport to receive one or more telecommunications services (such as voice, wireless [both fixed and mobile], and Internet Services."[52] The CRTC Report, which is also a source of data for the National Broadband Internet Service Availability Map illustrating service availability,[53] identified 83 communities that rely on an aggregated satellite transport model for the delivery of voice services and 89 communities that rely on this model for Internet services.[54]

72. In turn, to preserve critical FSS, the Department should establish exclusion or coordination zones around the satellite-dependent communities, instead of maintaining a co-primary protected designation for FSS throughout the entire Tier 4 area. If this is

[51] ISED, *Decision on a New Set of Service Areas for Spectrum Licensing*, July 2019, hereinafter referred to as the "Tier 5 Decision". <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11525.html>
[52] CRTC Report, Section 2: Definitions.
[53] ISED, *National Broadband Internet Service Availability Map.* <https://crtc.gc.ca/eng/publications/reports/rp150409/rp150409.htm#h5_3>
[54] CRTC Report, Section 3.

not administratively practical, FSS should be protected at the Tier 5 level. This approach would strike a better balance between protecting critical services and promoting enhanced connectivity and competition in areas outside urban centres. Flexible use systems in the 3800 MHz band are ideally suited for delivering broadband in areas outside of urban centres. Restricting flexible use to an entire Tier 4 service area would run counter to the Department's objectives.

73. The below map delineates the Department's proposed Tier 4 satellite dependent areas based on GL-10 and set out in Annex E, along with the "remote areas" as set out in the Tier 5 Decision. It also illustrates the "satellite dependent communities" identified in the CRTC Report.



74. As shown above, the GL-10 Tier 4 areas extend to many areas that are far away from satellite dependent communities and in some cases well beyond the "remote areas" as defined in the Tier 5 Decision. Narrowing the definition to capture an additional criterion – namely, the availability of other services – would ensure that the Department captures communities that are truly "satellite dependent".

VI. CONCLUSION

75. We applaud the Department for launching this important consultation and taking steps to free-up spectrum critical to Canada's digital future. The Department must also use this consultation to lay the foundation for the adoption of meaningful and effective

measures to support sustainable competition in the 5G era and beyond. This means ensuring that the resulting band plan is set up to facilitate the adoption of appropriate pro-competitive measures.

76. It also means that the Department must proceed with its standard reallocation and licensing procedures, consistent with the legitimate expectations of the various stakeholders to this proceeding. The Department has developed a thoughtful and comprehensive Consultation Document in which it thoroughly considers a number of key issues, including the treatment of existing users, maintenance of services in satellite dependent areas, and the band plan for flexible use. It must stay the course and continue consulting on these issues and the issues identified for further consultation, including pro-competitive measures, licence conditions and auction design.

77. The Clearing Proposal constitutes an inappropriate delegation of critical policy functions to a private party, which would set a dangerous precedent for Canada at a pivotal moment for the wireless industry. Accordingly, the Clearing Proposal must be dismissed.

78. Shaw appreciates the opportunity to submit these comments, which are intended to assist the Department with implementing a band plan and a technical and policy framework that will facilitate a 5G environment that is competitive, affordable and widely available, thus driving the adoption of digital technologies that will enhance the productivity and international competitiveness of Canada’s economy.

APPENDIX A: RESPONSES TO CONSULTATION QUESTIONS

Use of 3800 MHz band in other countries

Q1 - ISED is seeking comments on the timelines for the development of an equipment ecosystem using 5G technologies in the 3800 MHz band. In particular:

a. **the ecosystem maturity level and readiness of equipment under band classes n77 or n78 for the Canadian market**

b. **the ability of existing or future base station radios to handle multiple technologies and band classes at the same time (i.e. whether all four band classes (B42, B43, n77 and n78) or a subset of these band classes are able to operate on the same base station radio) and how it may affect the adoption of 5G technologies in the 3800 MHz band**

Q2 - ISED is seeking comments on the potential linkages between the equipment ecosystems using 5G technologies in the 3500 MHz and 3800 MHz bands. In particular:

a. **whether contiguity between the 3500 MHz band and 3800 MHz band is preferred given that 3GPP specifications allows for non-contiguous carrier aggregation**

b. **whether there are any technical or operational impediments (e.g. equipment limitations/challenges to support aggregated use of spectrum, or requirements for additional base station radios) that would be incurred if operators have a large frequency separation between frequency blocks in one or both bands, and at what point (i.e. how wide the frequency separation) such impediments would become significant**

c. **whether the equipment ecosystem deployed for the 3500 MHz band will be able to operate in the 3800 MHz band, and whether this equipment could easily be extended to 3800 MHz after being deployed**

79. There are two 5G 3GPP band classes that overlap with the 3800 MHz (3650-4200 MHz) band: band class n78 (3300-3800 MHz) and band class n77 (3300-4200 MHz). According to GSMArena, there are currently 154 5G devices available globally that

support band class n78 and 94 that support band class n77. [55] In Canada, devices that support band n77 and n78 are not expected to become available to the public until after the respective bands have been auctioned. In terms of base station radio equipment, there are two 5G equipment ecosystems that can potentially be leveraged for the 3800 MHz band: the 3400-3800 MHz equipment ecosystem in the EU; and the 3700-3980 MHz equipment ecosystem in the U.S. The EU ecosystem is currently more mature than the U.S. ecosystem, but both are expected to be widely available at the time of 3800 MHz deployments in Canada.

80. Both current and future base station radios should be capable of operating on multiple technologies and band classes simultaneously. This allows operators to support a mix of LTE and 5G user equipment on different bands, facilitating the migration to 5G. The simultaneous operation on multiple bands is limited, however, by the operating frequency range and instantaneous bandwidth ("IBW") of the base station radio. For example, current base station radio technology is not able to operate across the entire 3500 MHz and 3800 MHz bands (i.e., 3450-3980 MHz). As a result, operators with spectrum in 3500 MHz band and the upper 3800 band (3800-3980 MHz) will require multiple radios to operate in both bands. Similarly, if the frequency separation between frequency blocks is greater than the IBW (typically a few hundred MHz), multiple radios will be required.

81. Although 3GPP specifications support carrier aggregation between non-contiguous blocks, contiguous blocks are preferred because they provide lower latency, require less signalling overhead, and are more spectrally efficient than non-contiguous blocks. Contiguous blocks may also allow more spectrum to be aggregated in total due to limitations on the number of component carriers that can be aggregated by any given device. Having said that, the benefit of contiguity between the 3500 MHz and 3800 MHz bands is somewhat limited in that only licensees that hold adjacent blocks in both bands (with a combined bandwidth of not more than 100 MHz) within the same service area would potentially benefit from contiguity.

82. Base station radios based on the EU equipment ecosystem (3400-3800 MHz) that are deployed for the 3500 MHz band may be able to operate in the 3650-3800 MHz portion of the 3800 MHz band depending on the future Radio Standards Specification (RSS) for the band.

[55] GSMArena, *Phone Finder*. Search results indicate that 94 phones support band n77 and 154 support n78. <https://www.gsmarena.com/search.php3?>

Q3 - ISED is seeking comments on how the difference in technical rules between the U.S. and EU could impact Canada's ability to leverage the economies of scale from the global 3800 MHz ecosystem. In particular:

a. would the difference in technical rules (such as out-of-band-emission (OOBE) power limits) result in two distinct region-specific equipment ecosystems

b. which equipment ecosystem would be more suitable in the Canadian environment (noting that Canada has, for the most part, aligned with the U.S. on low- and high-band spectrum for 5G but in the mid-band, Canada is more aligned with the EU in the 3500 MHz band (3450-3650 MHz)) and specifically, whether Canada should generally align its technical rules with the U.S. or the EU in the 3800 MHz band

83. Since the operating frequency ranges for the EU and U.S. equipment ecosystems cover different portions of the 3800 MHz band and current base station radio technology cannot operate across the combined 3500 MHz and 3800 MHz bands, two distinct region-specific equipment ecosystems will likely exist between the EU and U.S. markets for the foreseeable future.

84. As noted in our response to Q1, the EU base station equipment ecosystem overlaps with the 3650-3800 MHz portion of the 3800 MHz band and the U.S. base station equipment ecosystem overlaps with the 3700-3980 MHz portion of the band. As such, Canada could adopt the EU equipment ecosystem for the lower portion of the 3800 MHz band (e.g., 3650-3700 MHz) and the U.S. equipment ecosystem for the upper portion of the band (e.g., 3700-3980 MHz). Avoiding any frequency overlap between the two lower and upper bands eliminates any potential complications in harmonizing the EU and U.S. technical rules.

Changes to the spectrum utilization for the 3800 MHz band

Q4 - ISED is seeking comments on the proposal to add a primary mobile service, except aeronautical mobile, allocation in the 3700-4000 MHz band to the CTFA and the specific changes shown in annex B.

85. Shaw supports the proposal to add a primary mobile service, except aeronautical mobile, allocation in the 3700-4000 MHz band to the CTFA and the specific changes shown in Annex B. It is widely accepted that mid-band spectrum will be the workhorse for 5G, and the 3800 MHz band presents one of the last opportunities to correct long-standing mid-band spectrum imbalances that pose a threat to sustainable competition in 5G. Therefore, it is critical that the Department allocate as much spectrum as possible (for which there is a viable mobile ecosystem). Moreover, Shaw agrees with the Department that allowing mobile use in the 3700-4000 MHz band will enable harmonization of spectral use, and thus adoption of common industry equipment standards, with other major economies (such as the U.S. and EU).

Q5 - ISED is seeking comments on developing a flexible use licensing model for fixed and mobile services in the 3650-4000 MHz band.

86. Shaw supports the proposal to allow flexible use in the 3650-4000 MHz band. Applying a flexible use licensing model for the band will align it with the 3500 MHz band. A flexible use designation gives operators the ability to use the spectrum for different purposes, encouraging innovation and allowing for greater spectral efficiency.

Q6 - Given the proposal in section 7.2 on developing a flexible use licensing model for fixed and mobile services in the 3650-4000 MHz band, ISED is seeking comments on the proposal that no new FSS earth stations be authorized in the 3700-4000 MHz band in the future and that the authorization of new FSS earth station licences be limited to the 4000-4200 MHz band.

Q7 - ISED is seeking comments on the proposal to implement a 20 MHz guard band between 3980-4000 MHz to protect FSS operations in 4000-4200 MHz band from proposed flexible use operations in the 3700-3980 MHz band.

Q8 - ISED is seeking comments on the proposal to maintain a primary allocation to FSS in the entire 3700-4200 MHz band and the proposal that existing FSS earth stations in satellite-dependent areas remain licensed in the entire 3700-4200 MHz band.

Q9 - ISED is seeking comments on the future demand for C-band in rural and remote areas such as the North, including the following:

a. the trend towards using higher frequencies by FSS operations to provide broadband connectivity

b. the ability of using higher frequencies to replace current C-band capacity and the potential timelines

c. the possibility of a trend towards using 4000-4200 MHz in combination with other connectivity options (e.g. higher frequencies satellites or wireline solutions) and when it would be expected to be available for satellite-dependent areas

Q10 - In addition to capacity requirements, ISED is seeking comments on other issues that should be considered in maintaining broadband connectivity in satellite-dependent areas.

87. Shaw agrees that in order to maximize the benefits of allowing flexible use in the 3700-4200 MHz band, new authorizations for FSS earth stations should be limited to the 4000-4200 MHz band.

88. Shaw also supports the Department's proposal to implement a 20 MHz guard band between 3980-4000 MHz to protect FSS operations in the 4000-4200 MHz band from flexible use operations in the 3700-3980 MHz band, which would align the Canadian and U.S. band plans.

89. Although the decline in C-band demand is well-documented,[56] Shaw acknowledges that many remote and northern communities continue to rely on satellites, including those that leverage the C-band, for the delivery of essential communication services.[57] Therefore, Shaw supports ISED's proposal to maintain a primary allocation to FSS in the entire 3700-4200 MHz so that existing FSS earth stations in satellite-dependent communities may continue to operate under licence in the entire 3700-4200 MHz band.

[56] Spectrum Outlook, paragraph 62. See also: ISED, *Decision on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Decisions on Changes to the 3800 MHz Band*, June 2019, paragraph 188. <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11437.html>
[57] CRTC Report, Section 3.

However, as discussed in the body of our submission, the Department should adopt a narrower definition of "satellite-dependent area" and consider the use of exclusion zones to protect satellite services from interference.

Q11 - ISED is seeking comments on its proposal to remove the FSS allocation in the 3500-3650 MHz band and to suppress Canadian footnote C20 in the CTFA as detailed in annex B. In addition, ISED is seeking comments on the proposed grandfathering of the existing earth station operations listed in annex C, such that fixed or mobile stations in the 3500-3650 MHz band will be required to coordinate with these earth stations as specified in SRSP-520.

90. Shaw supports ISED's proposal to remove the FSS allocation in the 3500-3650 MHz band and to suppress Canadian footnote C20 in the CTFA as detailed in Annex B. It will give full expression to ISED's decision to fundamentally reallocate the 3475-3650 MHz band for mobile use.

91. At the present time, Shaw does not have any comments on ISED's proposal relating to the existing earth station operations listed in Annex C, such that fixed or mobile stations in the 3500-3650 MHz band will be required to coordinate with these earth stations as specified in SRSP-520, but we reserve the right to make submissions on this issue in the reply phase of this proceeding.

Q12 - ISED is seeking comments on its proposal to remove the primary FSS allocation from 3650-3700 MHz and suppress Canadian footnote C33 in the CTFA as detailed in annex B.

92. Consistent with our submissions above that FSS use should be consolidated in the 4000-4200 MHz band, Shaw supports ISED's proposal to remove the FSS allocation in the 3650-3700 MHz band and suppress Canadian footnote C33 in the CTFA as detailed in Annex B.

Block sizes in the 3650-4000 MHz band

Q13 - ISED is seeking comments on:

a. establishing unpaired blocks of 10 MHz for the 3650-3700 MHz band

b. establishing unpaired blocks of 10 MHz for the 3700-3980 MHz band

93. Shaw supports the use of unpaired blocks of 10 MHz for both the 3650-3700 MHz and 3700-3980 MHz bands. The use of unpaired 10 MHz blocks will preserve the range of options available for pro-competitive licensing measures. We note that establishing a band plan on this basis will not preclude ISED from licensing blocks as aggregated packages of multiple 10 MHz blocks to facilitate large bandwidth channels for 5G technologies, as was done in the 3500 MHz licensing proceeding.[58]

Treatment of existing users

Q14 - Subsequent to changes to the spectrum utilization described in section 7 and recognizing the need to change the current WBS licensing model, ISED is seeking comments on its proposal to displace the existing WBS licensees and designate 80 MHz of spectrum available for the development of a new shared licensing process in the 3900-3980 MHz band as described in Option 2. Specifically, ISED is seeking comments on:

a. the amount of spectrum proposed (80 MHz) under a shared spectrum licensing process

b. whether there should be a provision that allows certain users (e.g. existing WBS licensees) priority licensing (e.g. an initial application window before accepting applications from others)

Q15 - Given the proposal to implement Option 2, ISED is seeking information on potential costs such as upgrading equipment, which may be incurred by WISPs that are displaced from 3650-3700 MHz to provide services using the 3900-3980 MHz band.

94. Please refer to Section IV above. As discussed, while both Option 1 and Option 2 would entail the release of a reasonable amount of spectrum for flexible use, Option 2 may

[58] ISED, *Policy and Licensing Framework for Spectrum in the 3500 MHz Band*, March 2020, Section 5. <https://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf11584.html>

not be optimal from a device ecosystem and efficiency perspective. Many of the purported benefits of Option 2 can be achieved without displacing the WBS users, including by adopting new technical rules, and a new licensing and sharing approach. This would avoid the complexity, potential delays and costs associated with the relocation of WBS users to a new frequency range.

Q16 - Based on the proposal to implement Option 2, ISED is seeking comments on the proposed displacement deadlines, with WBS operations in urban areas being displaced by December 2023 and all others by December 2025. Respondents are invited to propose other protection and displacement options for consideration, provided they include a strong rationale.

Q17 - ISED is seeking comments on the Tier 4 service areas that would be considered urban as defined above and as listed in annex D.

95. Should the Department adopt Option 2, Shaw supports the use of a fixed displacement date and the Department's proposed timeline for displacement of WBS licensees. We note that in urban areas, it is imperative that the entire band be vacated on the same timeline to ensure that there is no head-start advantage to any licensee following the auction process.

96. Shaw is concerned that there may be non-urban Tier 4 service areas in which WBS is not actively used to provide service. In Shaw's view, the extended displacement period should only apply where there are a sufficient number of end users to justify the need for additional protection.

Q18 - ISED is seeking comments on whether the moratorium should be extended to include all Tier 4 service areas.

97. It is important that the rules established by ISED through this consultation do not unintentionally incentivize speculative licensing applications or otherwise allow parties to engage in regulatory gaming. Absent strictly enforced deployment requirements, allowing entities to continue to apply for WBS licences outside of urban Tier 4 service areas might result in some companies applying for licences for the true purpose of securing an advantage in a subsequent licensing process (in this regard we refer to the

Department's proposal in Q14 above to give existing licensees priority treatment in a subsequent licensing proceeding). Therefore, we support extending the moratorium to include all Tier 4 service areas. If the moratorium is not extended, the conditions of licence for any new WBS licence must be amended to include clear deployment obligations.

Q19 - ISED is seeking preliminary comments on the future spectrum licensing process for 3900-3980 MHz, including the following:

a. what type of applications are envisioned for this spectrum

b. what type of shared licensing process ISED should consider (e.g. database approach, licensee to licensee coordination)

c. what additional measures ISED should consider employing to manage access to the band in high demand areas, such as major metropolitan centres

d. what technical restrictions should be considered (e.g. technical rules similar to adjacent 3500 MHz flexible use band with reduced power levels, a guard band between new flexible use systems below 3900 MHz, shared use above 3900 MHz, etc.)

e. what type of eligibility criteria, if any, should be established

98. Shaw does not have any comments on these issues at the present time, but we reserve the right to submit comments in the reply phase of the proceeding.

Q20 - ISED is seeking comments on its proposal that existing FSS earth stations licensed in 3650-3700 MHz after June 11, 2009, be permitted to continue to operate on a no-protection basis with respect to proposed new flexible use operations.

99. At this time, Shaw takes no position on ISED's proposal that existing FSS earth stations licensed in 3650-3700 MHz after June 11, 2009 be permitted to continue to operate on a no-protection basis with respect to proposed new flexible use operations.

Q21 - ISED is seeking comments on whether the Tier 4 service areas identified for exemption of certain provisions in GL-10 for mmWave bands as listed in annex E would be appropriate to apply for FSS operations in the 3700-4200 MHz band. ISED invites alternative proposals for areas that would be considered satellite-dependent (e.g. based on Tier 5 categories).

Q22 - ISED is seeking comments on whether certain remote industry operations, for example offshore oil drilling platforms, should be included in the definition of satellite-dependent areas.

100. Please refer to Section V above. As discussed, Shaw is not opposed to continued FSS use in areas that are truly satellite dependent, but the list set out in GL-10 and Annex E is overly broad. A narrower definition would balance the goals of preserving service levels in truly satellite dependent communities and facilitating mobile and fixed wireless deployment and competition across the country, including in 5G.

101. The Department should narrow the definition by including the availability of other services, including terrestrial and wireless services, as a criterion. We refer the Department to the definition used in the CRTC Report, which more accurately captures communities that are truly satellite dependent. Once such communities are identified, exclusion or coordination zones could be used to protect the FSS installations from interference.

Q23 - ISED is seeking comments on its proposal to modify the existing FSS satellite authorizations to limit FSS operations in 3700-4000 MHz in non-satellite-dependent areas of Canada to a no-interference basis. ISED is also seeking comments on the proposal to adjust the conditions of licence for FSS operations to reflect the proposals as of the FSS transition deadline, including the possible removal of a high expectation of renewal for the 3700-4000 MHz portion of the band.

Q24 - ISED is seeking comments on its proposed date of December 2023 as the Canadian FSS transition deadline.

Q25- ISED is seeking comments on how the U.S. transition will impact the availability of FSS capacity in Canada.

102. Consistent with our comments in the body of this submission, Shaw agrees with ISED's proposal to modify the existing FSS satellite licences to limit operations in the 3700-4000 MHz band in non-satellite-dependent areas of Canada to a no-interference basis. The proposal to limit FSS use in non-satellite-dependent areas strikes an appropriate balance between freeing up crucial 5G spectrum for mobile use and preserving C-band service coverage in the remote and northern parts of the country that still rely on it for essential communication services. In the current circumstances, it is also appropriate to remove the FSS high expectation of renewal for the 3700-4000 MHz portion of the band, since the introduction of flexible use in the band constitutes a fundamental reallocation of spectrum.

103. Shaw agrees that December 2023 is an appropriate Canadian FSS transition deadline. As the Department has observed, C-band satellite footprints usually cover the entire continent of North America. Thus, most, if not all, providers are already required to transition to meet the FCC's December 2023 deadline. Indeed, Shaw is already actively relocating the FSS service that we originate and we are preparing to modify our receivers (through physical antenna repointing/relocation or potential equipment changes) or source content from alternate paths (e.g., terrestrial) as required by our uplink providers.

Q26 - ISED is requesting information to assist with the consequent decision following this consultation. This information includes satellite transponder migration plans, frequencies, and how satellite operators serving the Canadian market will accommodate all Canadian customers, and on which frequencies. Requested information could include, but is not limited to:

- **the names and number of satellites that will need to migrate to the 4000-4200 MHz band**
- **the number of new satellites that may be required to serve the Canadian market**
- **the locations of earth stations communicating with these satellites**

- **the number of antennas and locations of associated earth stations that will need to be retuned and/or repointed**
- **the flexibility of existing satellites to modify operations according to the different areas of Canada**

104. Shaw is a provider of uplink C-band services in Canada. We are already in the process of transitioning these services to the 4000-4200 MHz band on another satellite (located in a materially different orbital arc location) due to end-of-life of the current spacecraft. With two of Telesat's three C-band satellites approaching end-of-life, the company is already facing a significant transition process in the 2023/4 timeframe quite apart from this spectrum repurposing initiative. The timing of this consultation and the transition it contemplates is arguably beneficial to Telesat as it may allow it to realize efficiencies from the parallel transitions.

105. Shaw may make additional submissions in this regard in the reply phase of the proceeding.

Q27 - ISED is seeking comments on its proposed transition deadline of December 2023 for FSS earth stations, in which existing FSS earth station licences would be modified to 4000-4200 MHz in the relevant areas.

Q28 - ISED is seeking comments on making amendments to the relevant conditions of licence and technical rules in the 3700-4200 MHz band as well as the 3450-3700 MHz band in order to implement the following proposals with respect to protection from interference:

a. prior to the transition deadline, existing licensed FSS earth stations may operate in the entire 3700-4200 MHz band in all areas and be protected from interference from flexible use operations both in-band (3700-3980 MHz) and the adjacent 3450-3700 MHz band

b. after the transition deadline, existing licensed FSS earth stations may continue to operate in the entire 3700-4200 MHz band in satellite-dependent areas and be protected from interference from in-band flexible use operations in 3700-3980 MHz, but would not be protected from flexible use operations in the adjacent 3450-3700 MHz band; however, ISED also proposes that flexible use

licensees deploying stations in the 3450-3700 MHz band within 25 km of an existing licensed FSS earth station in the 3700-4200 MHz band be required to provide a notification to these operators, one year prior to the deployment of fixed or mobile stations

c. after the transition deadline, FSS earth stations would only be licensed to operate in the 4000-4200 MHz band in non-satellite-dependent areas and would be protected from flexible use operations in the adjacent 3700-3980 MHz band

d. after the transition deadline, FSS earth stations operating in 3700-4000 MHz, in all areas, which are not eligible for licensing could continue to operate as a licence-exempt station without protection from flexible use operations both in-band and adjacent band(s)

Q29 - ISED is seeking comments on the proposed change to the CTFA to add the new footnote CZZ proposed above and shown in annex B.

Q30 - ISED is seeking comments on how to ensure the continued operation of gateways that support the provision of services in satellite-dependent areas, specifically:

a. how much spectrum would be required at these gateway sites

b. if these stations could be consolidated into two sites, away from major population centres, and where the best locations for those sites would be

106. As discussed above, Shaw supports the licence amendments proposed by ISED, as well as the proposed transition date of December 2023. To effect these changes, Shaw agrees that the new footnote CZZ should be added to the CTFA.

107. With respect to the treatment of gateways to support the provision of service in satellite-dependent areas, Shaw does not have any substantive comments at the present time but reserves the right to comment in the reply phase of this proceeding.

Q31 - ISED is seeking comments on its proposal to issue interim authorizations for certain existing licence-exempt earth stations in the 3700-4200 MHz band.
Q32 - ISED is seeking comments on the proposed deadline of up to 90 days after the publication of a decision for submitting applications for these interim authorizations of existing licence-exempt FSS earth stations in the 3700-4200 MHz band.
Q33 - ISED is seeking comments on its proposal that receive-only earth stations that are not eligible for an interim authorization or whose operators do not seek authorization, could continue to operate as a licence-exempt earth station on a no-protection basis.
Q34 - ISED is seeking comments on its proposal that in non-satellite-dependent areas, existing earth stations that operate under interim authorizations receive in-band protection from flexible use operations in the 3700-3980 MHz band until the transition deadline.
Q35 - ISED is seeking comments on its proposal that in satellite-dependent areas, existing earth stations that operate under an interim authorization receive in-band protection from flexible use operations in the 3700-3980 MHz band before and after the transition deadline.
Q36 - ISED is seeking comments on its proposal that in all areas, existing licence-exempt earth stations that operate under an interim authorization receive no protection from adjacent band WBS stations and flexible use stations operating below 3700 MHz before and after the transition deadline.
Q37 - ISED is seeking comments on whether the interim authorization process should also apply to new receive-only FSS earth stations in the 4000-4200 MHz band.
Q38 - ISED is seeking comments on the proposed conditions for interim authorizations for licence-exempt FSS earth stations in 3700-4200 MHz and new

receive-only FSS earth stations in the 4000-4200 MHz portion of the band as detailed in annex G.

Q39 - ISED is seeking comments on the proposed eligibility of licence-exempt stations that could apply for an interim authorization.

108. At the present time, Shaw does not have any objections to or substantive recommendations on the proposals made by ISED and referred to in Questions 31 through 39.

Q40 - ISED is seeking comments on its proposal to no longer issue new licences for fixed services to operate fixed point-to-point applications in the 3700-4000 MHz band.

Q41 - ISED is seeking comments on whether to allow new licences for fixed services to operate fixed point-to-point applications in the 4000-4200 MHz band.

Q42 - ISED is seeking comments on the proposal to grandfather existing point-to-point operations in the 3700-4000 MHz band under existing licences for fixed service (as identified in annex A), such that flexible use systems in these two tiers may not claim protection from, nor cause interference to these fixed service stations.

109. Consistent with its fundamental reallocation of the band for flexible use, Shaw is supportive of ISED's proposal to cease issuing new licences for fixed services to operate fixed point-to-point applications in the 3700-4000 MHz band. Given that existing FSS earth stations already coexist well with fixed services and have high antenna discrimination, Shaw does not, at this time, see any reason to disallow new licenses for fixed services to operate fixed point-to-point application in the 4000-4200 MHz band.

Technical Considerations

Q43 - ISED is seeking comments on the proposal to rely on technical limits and coordination procedures rather than mandate specific technology solutions (e.g. TDD

synchronization between systems) to address interference issues between TDD flexible use systems in the 3650-3980 MHz band.

Q44 - ISED is seeking comments on whether any additional measures should be taken to limit potential interference issues between flexible use systems in the 3650-3980 MHz band.

110. Shaw agrees with the Department's proposal to rely on technical limits and coordination procedures rather than mandate specific technology solutions to address interference issues between TDD flexible use systems in the 3650-3980 MHz band. This would be consistent with the approach already adopted in SRSP-520 for the 3500 MHz band.

111. Shaw recommends that ISED also establish coordination procedures to minimize interference between flexible use systems similar to those adopted in SRSP-520.

Q45 - ISED is seeking comments on whether specific technical measures should be adopted to address potential interference issues between flexible use systems and WBS systems until the displacement deadline.

a. For co-channel flexible use and WBS operations in the 3650-3700 MHz band, what specific measures may be needed to protect WBS? For example, should new flexible use stations be required to coordinate with WBS stations within a specified distance prior to deployment? Alternatively, should a technical parameter such as a power flux density (pfd) trigger for coordination measured at the WBS receive antenna be adopted? Are there other more appropriate measures that ISED should consider? Should multiple measures, such as a combination of distance and pfd trigger for coordination, be adopted? How would these requirements impact the deployment of new flexible use stations?

b. For adjacent band flexible use systems, is there a need to adopt any additional measures, beyond what is currently specified in RSS-192 and SRSP-520, to further address coexistence between these flexible use and WBS systems? If so, what should they be? How many flexible use frequency blocks (or MHz) immediately adjacent to the 3650-3700MHz band could potentially affect WBS

systems? How would these requirements impact the deployment of flexible use stations?

112. Should the Department adopt Option 2, Shaw supports the adoption of the guidelines in SRSP-520 for the coexistence of flexible use broadband systems operating in the same frequency blocks and in adjacent service areas.

113. For adjacent band flexible use systems, the provisions in RSS-192 and SRSP-520 should be sufficient to ensure coexistence between adjacent flexible use and WBS systems.

Q46 - Until the transition deadline, in all areas for flexible use in the 3650-3700 MHz band: ISED is seeking comments on the proposal that until the transition deadline, those flexible use licensees deploying stations in 3650-3700 MHz within 25 km of a licensed FSS earth station (not including interim FSS authorization) in the 3700-4200 MHz band will be required to coordinate with the operators in these earth stations.

Q47 - After the transition deadline, in all areas for flexible use in the 3450-3650 MHz band: ISED is seeking comments on its proposal that the current SRSP-520 coexistence requirements for flexible use operations in the 3450-3650 MHz band to protect FSS operations in the adjacent band 3700-4200 MHz be removed.

Q 48 - For FSS earth stations licensed in the 4000-4200 MHz band and flexible use in the 3800 MHz band, in all areas: ISED is seeking comments on adjacent band coexistence measures, taking into account the coexistence measures adopted by the EU (i.e. a stringent OOBE limit) and the U.S. (i.e. a combination of guard band, a typical OOBE limit, pfd limits, and baseline minimum filter specifications for earth station operations) and the current Canadian requirements (i.e. a typical OOBE limit and coordination distance):

a. What are the benefits and technical limitations associated with the above coexistence measures?

b. Which set of coexistence measures above (i.e. EU, U.S., Canada) is preferred? If applicable, comments are sought on the values of the limits in relation to the supported measures.

c. Given the proposal in section 9.1 to displace WBS in 3650-3700 MHz and identify 3900-3980 MHz for shared use, are there any additional considerations that may impact the response to a) and b) above?

d. Which portion of the 3800 MHz band should the above measures be applied to in order to protect FSS in the 4000-4200 MHz band (i.e. how many frequency blocks or MHz)?

Q49 - ISED is seeking comments on what technical requirements should be imposed to ensure co-channel protection of FSS earth stations from flexible use systems, in the relevant scenarios and timeline as stated in sections 9.5 and 9.6. For example, could the pfd limit of -124 dBW/m2/MHz measured at the earth station antenna proposed by FCC above be used to protect co-channel FSS earth station? Alternatively, should other measures be adopted, such as a separation distance as described in section 7.3? Or should a combination of measures be adopted? If applicable, what are the specific values that should be adopted?

Q50 - ISED is seeking comments on whether the assumptions made by the FCC about earth stations, including baseline minimum filter specifications for earth station operations as stated above, are applicable to Canadian operations. Is there any additional information that ISED should consider in the development of appropriate technical rules to enable coexistence both co-channel and in adjacent bands?

114. Should the Department adopt Option 2, Shaw supports ISED's proposal that until the transition deadline, those flexible use licensees deploying stations in 3650-3700 MHz within 25 km of a licensed FSS earth station (not including interim FSS authorization) in the 3700-4200 MHz band will be required to coordinate with the operators in these earth stations.

115. Shaw supports the Department's proposal to remove the current co-existence requirements for flexible use operations in the 3450-3650 MHz band to protect FSS operations in the adjacent band 3700-4200 MHz after the transition deadline.

116. Although adopting the EU coexistence measures (i.e., a stringent OOBE limit) would minimize the need for coordination with FSS earth stations, it would likely preclude the use of the U.S. equipment ecosystem in the 3800 MHz band, severely limiting the availability and affordability of equipment for the Canadian market. The U.S. coexistence measures (i.e. a combination of guard band, a typical OOBE limit, PFD limits, and baseline minimum filter specification for earth station operations) provides very clear guidelines for coexistence that also mitigate the need for coordination. Further, the current Canadian requirements, including the proposed 20 MHz guard band, are similar to the U.S. approach except a coordination distance is used instead of a PFD limit and an earth station minimum filter specification. While easier to administer when the coordination distance is exceeded, it lacks clear guidelines for resolving coexistence issues.

117. Shaw recommends that the Department adopt the U.S. approach because it aligns with the U.S. equipment ecosystem and provides clear guidelines for coexistence. The specific values of the limits should be determined during the development of the RSS and SRSP for the band.

118. Shaw's response above to questions a) and b) would not be impacted if the proposal to displace WBS incumbents (i.e., Option 2) is adopted as the same OOBE limits should apply, even though they may be easier to meet with presumably lower EIRP limits in the 3900-3980 MHz band.

119. The coexistence measures noted in Q48 should apply across the entire 3800 MHz band.

120. The technical requirements that should be imposed to ensure co-channel protection of FSS earth stations should be determined during the development of the RSS and SRSP for the band.

Q51 - ISED is seeking comments on its proposal to not implement any technical requirements for the coexistence between flexible use operation in the 3650-3980 MHz band and radionavigation operations in the 4200-4400 MHz band, noting the 220 MHz frequency separation between the bands of operation. If this is not sufficient for coexistence, what other measures would be appropriate?

121. Shaw supports ISED's proposal to not implement any technical requirements for the coexistence between flexible use operation in the 3650-3980 MHz band and radionavigation operations in the 4200-4400 MHz band.

Q52 - ISED is seeking comments on the use of an auction as the licensing process for the flexible use spectrum that would be considered as the 3800 MHz band, noting a separate consultation process would be issued, if required, to determine the licensing framework for the range 3900-3980 MHz.

122. Shaw strongly recommends that an auction featuring price discovery be used as the licensing process for the flexible use spectrum in the 3800 MHz band. Price discovery has been a central feature of most broadband spectrum auctions worldwide. The experience of the Canadian operators, and indeed most operators worldwide, is almost entirely based on multi-round auctions with increasing prices and some amount of rest-of-market demand information, which promotes price discovery and reduces common value uncertainty. Even when the products being offered were well-known in nearly every aspect – business case, deployment strategy, technology, and costs – price discovery was still important for achieving efficiency.

123. Furthermore, as discussed in the body of this submission, true competition in 5G will depend on the inclusion of a significant set-aside in the 3800 MHz band to offset the pernicious spectrum imbalances that continue to persist in mid-band spectrum holdings in Canada.

Proposed accelerated spectrum clearing approach

Q53 - ISED is seeking general comments on the proposal submitted by Telesat found in annex H, including whether such an approach would be in the best interest of Canadians and more specifically, whether it would result in the faster deployment of 5G services in the affected frequencies; more efficient use of spectrum and what the implications of this repurposing plan would be for other users of the band.

Q54 - ISED is seeking comments on whether the Telesat proposal meets ISED's policy objectives outlined in section 3, including:

a. supporting rural/remote connectivity

b. promoting competition in mobile services

c. making more mid-band spectrum available to support 5G services

Q55 - ISED is seeking comments on what elements from sections 7 to 10 of this consultation would still apply or need to change if ISED were to implement the Telesat proposal, in particular:

a. **the proposal for maintaining the primary allocation for FSS in the 3700-4200 MHz band**

b. **the proposed implementation of an exemption to transition for satellite-dependent areas and the proposed changes to satellite licenses to apply it**

c. **the proposal for treatment of WBS incumbents**

d. **the proposal to issue interim authorizations for certain existing licence-exempt earth stations in the 3700-4200 MHz band**

e. **technical considerations for coexistence between FSS and flexible use**

f. **technical considerations for coexistence between flexible use and aeronautical radionavigation systems**

g. **the overall impact on existing users in the 3700-4200 MHz band**

Q56 - If ISED were to implement the Telesat proposal, ISED would need to consider the licensing framework for the 3700-3900 MHz band. Thus, ISED is seeking comments on:

a. **whether it should, as proposed by Telesat, issue flexible licences in the 3700-3900 MHz band using the same conditions of licence as those contained in annex H of the 3500 MHz Framework, noting that some conditions may need to be adjusted to reflect the differences in the two bands and the decisions resulting from this consultation process**

b. **whether it should issue a single Tier 1 flexible use licence as proposed by Telesat or align with the 3500 MHz band and issue Tier 4 licences**

c. **what deployment conditions should apply to these licences including Telesat's proposal that the deployment requirements would only come into force after the Minister approves a transfer**

d. any additional conditions of licence that should apply given the nature of the proposal

Q57 - In its proposal, Telesat indicates that it takes no position on ISED imposing a pro-competitive measure such as a spectrum cap or set-aside on the 3700-3900 MHz licences. ISED would review any request for transfer in accordance with provisions related to commercial mobile spectrum through section 5.6 of CPC-2-1-23, Licensing Procedure for Spectrum Licences for Terrestrial Services. However, ISED would also consider the competitive implications on the 3500 MHz and 3800 MHz bands and consider pro-competitive measures in accordance with the Framework for Spectrum Auctions in Canada. As such, ISED is seeking comments on:

a. the need for a pro-competitive measure (e.g. spectrum cap or set-aside)

b. the type of competitive measure that should be applied

c. the amount of spectrum that should be considered under any such competitive measure

Q58 - ISED is seeking comments on Telesat's proposals for the transition of FSS earth stations and whether any additional measures are required to ensure a smooth transition.

Q59 - Telesat's proposal includes ISED allocating an additional 80 MHz for flexible use in the 4000-4100 MHz band. ISED is seeking comments on the feasibility of making this extra spectrum available, specifically:

a. whether there would be standardized 5G equipment available for this 80 MHz, given that it does not align with the U.S. band plan

b. whether there would be FSS filters available, given the reduced amount of FSS spectrum and that it would not align with the U.S. band plan

c. whether there would be enough capacity to continue FSS services in Canada with the proposal to reduce the amount of FSS spectrum to 100 MHz

d. to what degree would the requirement to protect U.S. FSS earth stations in the border areas have an impact on the ability to deploy flexible use stations near the border and to what degree would this impact the value of this spectrum

124. Please see Section II above, in which we discuss Shaw's opposition to the Clearing Proposal.

125. As detailed in Section II, the Clearing Proposal is not in the best interest of Canadians and runs counter to the Department's objectives for this proceeding. Furthermore, there are a number of reasons to doubt Telesat's assertion that the Clearing Proposal, if accepted, would result in the faster deployment of 5G services. In the U.S., only 120 MHz (3700-3820 MHz) will be made available by December 2021 and only in 46 of the top 50 service areas. Nationwide deployment across the entire range, including the remaining 180 MHz (3820-4000 MHz), will not be available until December 2023. Interference issues at the border would likely complicate the early deployment of mobile for 5G in the 3700-3900 MHz range. Moreover, even if a sale process is conducted with extraordinary speed, the subsequent transfers and subordinations will still be subject to ISED's review process, which, depending on the number of applications involved, may be very lengthy and complex. In Shaw's view, the Department's proposal, which will actually free up more spectrum for flexible use at once, is more certain to facilitate rapid 5G deployment.

126. The Department seeks comments on the elements of the consultation that would have to change if the Department adopts the Clearing Proposal. In Shaw's view, this question illustrates the impracticability of the Clearing Proposal and its sequencing with the current proceeding. The Consultation Document solicits feedback on the Telesat Proposal but does not engage with it in the Department's own proposals. In short, nearly every element in sections 7 through 10 would need to be adjusted if Telesat's proposal were to be adopted, and in some cases, the Telesat position is unclear. For example, with respect to the treatment of existing users, including WBS users, the Department has sought comments on two practical, reasonable options. Since many of the issues in the Consultation Document are related, the determination of treatment of WBS will affect multiple other issues. If the Clearing Approach is adopted, Option 2 will no longer be feasible. Additionally, a significant portion of the Consultation Document is dedicated to preserving service in satellite-dependent areas, yet Telesat does not refer to special treatment for satellite-dependent areas, suggesting that such areas are not dependent on access to the full C-band to preserve service levels.

127. The Department also seeks comments on pro-competitive measures in the context of the Telesat proposal. Please refer to Sections II and III above. As detailed therein, Shaw strongly opposes the sequencing proposed by Telesat, which asks parties to comment and the Department to make a determination on this critical issue prior to the establishment of a band plan. We will provide further details regarding pro-competitive measures when the Department consults thoroughly on this issue at a future stage, as stated in the Consultation Document.[59]

128. As explained in Section II, the assertion that the Clearing Proposal would be inherently competitive ignores the reality that, absent prudently crafted pro-competitive measures, the Big 3 will foreclose new competitors from acquiring access to this critical spectrum. At this stage, it is important for the Department to establish an appropriate band plan and lay the foundation for a pro-competitive outcome as part of the future process. The Clearing Proposal would undermine this.

129. The Department seeks comments on Telesat's proposals for the transition of FSS earth stations. Telesat states that it will "coordinate with other Satellite Operators" to provide "transitional support" to their Canadian customers, and that Telesat would migrate onto LEO while other satellite operators would procure "comparable facilities".[60] Telesat's unwillingness or inability to substantiate these claims raises significant doubt about the practicability of these proposals. As stated in Section II, Telesat "taking responsibility" for these types of matters would constitute an inappropriate delegation of a public policy function to a private party. Telesat has no experience in coordinating large scale transitions of this nature and it is unclear how such coordination and support would work in practice.

130. The Department seeks comments on the proposed additional 80 MHz for flexible use in the 4000-4100 MHz range. As detailed in Section II, the purported benefits of this proposal are overstated. This approach would take Canada out of step with the U.S., raising questions about the availability of equipment for this frequency range. Opening up this frequency range at this time could also create interference issues with U.S. satellite operations at the border and, potentially, for Canadian stations that receive American and foreign satellite feeds. It could also create interference issues with aeronautical services in the 4200-4400 MHz band. Should the Department wish to

[59] Consultation Document, paragraph 184.
[60] Clearing Proposal, paragraphs 48 and 51.

review this portion of the band further, it should be reviewed as part of the Department's normal-course processes, not in the context of the Clearing Proposal.

END OF DOCUMENT