



**Submission to Innovation, Science and Economic Development
Canada
by**

SSI Canada

In Response to SLPB-002-20

***“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”***

October 26, 2020



Introduction and Context

1. SSi Micro Ltd., doing business as SSi Canada ("SSi"), is pleased to submit these comments to Canada's Minister of Innovation, Science and Economic Development ("ISED" or the "Department") in response to *Canada Gazette* notice SLPB-002-20, "***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***" (the "Consultation").
2. For the most part, our comments are presented as direct responses to the questions the Department poses in the Consultation.

Background and Executive Summary

3. Founded in 1990, SSi is headquartered in Yellowknife, Northwest Territories, with a Satellite Teleport and Network Operations Centre in Ottawa, Ontario. SSi specializes in the design, deployment and operation of innovative and cost-effective communications networks to support the needs of communities with little to no terrestrial access to the outside world.
4. We understand first-hand the challenges faced in providing effective and affordable service to remote and outlying areas, and in providing a competitive alternative to the incumbent operator in small and remote markets.
5. Remote area connectivity has many facets, and we are constantly evaluating, developing and integrating new technologies to ensure our offerings remain attractive and competitive.
6. SSi has deployed advanced satellite networks and local wireless facilities that deliver communications services throughout Nunavut under the "QINIQ" brand, and in communities of the Northwest Territories, an area spanning over three million square kilometres. We are also working with partners to expand communications services in other northern and remote markets of Canada.
7. SSi makes extensive use of both satellite and fibre transport to provide Canadian consumers, businesses and governments with connectivity services. Most notably, satellite transport in our serving areas makes extensive use of and is heavily reliant on the 3700-4200 MHz band which is the subject of this current Consultation.
8. SSi also holds licensed spectrum resources essential to providing "last-mile" access services. In 2009 SSi acquired through a residual auction the 50 MHz "Block F" for Nunavut in the 3500 MHz band, which we use to offer fixed wireless service in Nunavut. We are a licensee of 1900 MHz spectrum in Nunavut, the Yukon and the Northwest Territories, and 2500 MHz spectrum in Nunavut and the Northwest Territories. In addition, we are a sub-licensee of Rogers' AWS

1.7/2.1 GHz licensed spectrum in Nunavut, the Yukon and the Northwest Territories and 800 MHz licensed spectrum in the Eeyou Istchee and James Bay region of Quebec.

9. We have made good use of licensed spectrum wherever feasible to offer valuable fixed and mobile data and voice services to consumers, businesses and government users in northern Canada. For instance, in 2004, in Yellowknife, SSi was the first in Canada to launch state-of-the-art WiMax broadband technology using our 2500 MHz spectrum.
10. In 2005 we became the first to launch broadband service under the QINIQ brand in all 25 Nunavut communities, again using WiMax technology at 2500 MHz, offering the same service level and pricing to Nunavummiut across the Territory. Since then, the positive impacts of broadband for consumers, organizations and small business have been clearly evident across the North, and today a large majority of Nunavut households depend upon QINIQ broadband service.
11. SSi also recently completed a 3-year, \$75 million investment program into Nunavut communications infrastructure (which investments include \$35 million contributed through ISED's Connecting Canadians Program). This has led to infrastructure upgrades in all 25 communities to bring 4G-LTE (operating at 1900 and 2500 MHz) and 2G-GSM (operating at 1900 MHz) last-mile technologies for fixed and mobile data and voice services.
12. In this consultation, ISED makes a series of proposals intended to ensure that Canadians can benefit from the development and deployment of fifth generation (5G) of mobile wireless technology, which spectrum regulators around the world are planning to accommodate, in part, in the 3800 MHz band.
13. We are pleased that ISED recognizes that any proposal to repurpose the 3800 MHz band in Canada must absolutely accommodate the many current uses, and users, of this band. In particular, we must stress that Fixed Satellite Service (FSS) in the C-band, which uses frequencies between 3700 MHz and 4200 MHz for space-to-Earth transmissions, remains a vital means of providing telecommunications services in Canada's north.
14. Many of Canada's satellite-dependent communities remain completely dependent on C-band satellite services for both voice and data communications. While FSS in the Ka-band and Ku-band offer some alternative to C-band, we note that for voice service in particular, C-band remains the preferred alternative due to its propagation characteristics. Planned Low Earth Orbit (LEO) constellations and new High Throughput Satellites (HTS) hold promise to improve both voice and data services – but they are not yet available in Canada. Meanwhile, those living and working in Canada's northern, remote and rural areas must continue to rely on C-band.

15. In general, we applaud the balanced approach that ISED has outlined in this Consultation. We agree, in particular, with the proposal to treat satellite-dependent areas of Canada differently than areas where there is quality and affordable terrestrial backbone connectivity able to provide the near-term capacity demands for 5G services.
16. We also agree generally with ISED's proposal to align long-term use of the 500 MHz between 3700 and 4200 MHz with the determinations made by the U.S. Federal Communications Commission ("FCC"). In particular, we believe it is prudent to preserve the full 500 MHz of spectrum for FSS use in satellite-dependent communities and necessary to reserve at least 200 MHz (between 4000 and 4200 MHz) for Fixed Satellite Service elsewhere in Canada, given Canada's vast geography and the existence of several satellites operating in this band and serving Canada.
17. One significant exception to this proposed alignment, to which we do object, is the ISED proposal to designate new consolidated gateway locations in southern Canada with an aim to protect against interference. This proposal imposes on affected parties like SSi significant known costs, as well as likely compromises in terms of service quality and control, but offers few if any material benefits to any of the participants in the system. We urge the Department to abandon its proposal to consolidate gateway locations.
18. We also have comments concerning the Telesat proposal attached to the Consultation as annex H, and in particular with respect to some of its implications for service customers, users and potentially other operators.
19. The Telesat proposal calls for one FSS provider, namely Telesat itself, to be compensated with exclusive control over a proposed secondary market for 200 MHz of spectrum that, because it is adjacent to the lower band which ISED has already designated for potential 5G use, is likely to be the most commercially active and attractive tranche of the 3800 MHz spectrum, at least in the short term.
20. Telesat also proposes that an intermediate 200 MHz of spectrum would be ceded to ISED for licensing by auction or other means, leaving only 100 MHz between 4100 MHz and 4200 MHz for FSS use, whether by Canadian licensees or international satellite firms approved to offer service in Canada.
21. The rationale that Telesat offers for its proposal is that the compensation is required in exchange for Telesat's promise to ensure all its current C-band users continue to have service throughout the transition.
22. As a current user of C-Band, we have a definite need to ensure we continue to have service throughout the transition. However, we believe that the Telesat proposal raises some concerns, both in principle and in practice, that we address in response to this Consultation.

23. In principle, Telesat is asking ISED to delegate to that company a considerable degree of control over spectrum licensing and management of this potentially significant spectrum and, moreover, to permit a single firm to profit from the creation of a secondary market in spectrum.
24. In practice, Telesat would be reaping significant, and quite likely disproportionate, compensation for a process of transition that satellite operators alone control. But that process has a real impact on SSi and others as licensees, customers and users of the service during the transition.
25. We urge the Department to ensure that any compensation for the transition of this spectrum be accorded directly to all affected licensees, including FSS earth station licensees, such as SSi, which make extensive use of satellite backbone connectivity to provide essential communications services to end-users. If the Department accepts Telesat's view that it is appropriate to subsidize Telesat's LEO project with revenue that is derived from the re-use of the proposed 3800 MHz band for flexible use licensing and the implementation of 5G services, then the Department should direct a portion of those revenues / subsidies to the licensees and users that will bear the potentially significant cost of transitioning to new earth station equipment suitable for use with LEOs and HTS.
26. In this regard, the Department must take into account other public subsidies for the same purpose (for example, awards under the CRTC Broadband Fund) to ensure that no competitor is "double dipping" in terms of compensation, or receiving an improper advantage or head start.
27. We believe that the Department should implement most of the proposals it has outlined in the Consultation, but should adjust them to take into account the observations and comments made below. For ease of reference, we have grouped the Department's questions and our responses to correspond to their presentation in the Consultation itself.

Specific Comments on the Consultation

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 stations 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 the 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.**

In providing comments, respondents are requested to include supporting arguments and rationale.

SSi Comments

28. SSi has no specific comment to offer at this time on the timelines for the development of the 5G equipment ecosystem, nor potential linkages between the equipment ecosystems for 5G technologies in the 3500 MHz and 3800 MHz bands.

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

- a) Would the different 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.**

In providing comments, respondents are requested to include supporting arguments and rationale.

SSi Comments

29. SSi has no specific comment to offer at this time. We add that with the current capacity restraints and high costs associated with satellite backbone connectivity, there can be no realistic near-term plans to enter the market for 5G services in satellite-dependent markets.

Q4. ISED is seeking comments on the proposal to add a primary mobile service, except aeronautical mobile, allocation in the 3700-4200 MHz band to the CTFA and the specific changes shown in annex B.

In providing comments, respondents are requested to include supporting argument and rationale.

SSi Comments

30. SSi supports this proposal to add a primary mobile allocation in this band as shown in annex B. In particular, we note the Department's proposal to "align this primary mobile allocation with the International Telecommunications Union Radiocommunications Regulations" (paragraph 54).

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

In providing comments, respondents are requested to include supporting argument and rationale.

SSi Comments

31. Subject to our comments concerning ISED's proposed allocation in this band in Northern Canada, SSi generally supports the flexible use licensing model for fixed and mobile services. As we noted in our comments in response to "***Consultation on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Consultation on Changes to the 3800 MHz Band***", SLPB-004-18 (the "3500 MHz Consultation"), we generally agree with the Department's observation in that Consultation that "flexible use licensing would enable licensees to better target their services to the needs of their customers" (para. 36). The ability to use licensed spectrum to meet the needs of the market for fixed or mobile service is generally a positive development.

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.

In providing comments, respondents are requested to include supporting arguments and rationale.

SSi Comments

32. SSi supports the general direction of the Department's proposals with respect to FSS use in the 3700-4200 MHz band. In particular, we believe the Department is wise to enact the measures, outlined in Q8, to maintain FSS services in satellite-dependent areas. These proposals strike a reasonable balance between the vital interest of people living, working and building community in the remote areas that depend completely on satellite service for telecommunications, and the wish to ensure that Canada can use 5G technologies to become "a global centre for innovation and move to the forefront of digital development and adoption through the creation and strengthening of a world-class wireless infrastructure" (paragraph 5).

33. We described the importance of C-band satellite systems to our operations in response to the 3500 MHz Consultation:

For as long as C-band satellite systems continue to play a vital role in the networks of operators, like SSi, which offer telecommunications and internet access in remote and northern locations, we believe this band will be vital to future fixed satellite service (“FSS”) operations.

At present and for the foreseeable future, we rely and will rely on C-band satellite transmissions for backbone connectivity to the communities we serve in the North – including all twenty-five communities of Nunavut. Using this band permits us to offer both voice and data services, and FSS in this frequency band is also an essential component of the mesh network we have built to serve large areas in the North. The distribution characteristics of the downlink portion of the C-band make it a suitable component of mesh telecommunications networks over large areas.

Should any portion of the 3800 MHz band be reallocated to a different use in the future, we will still need to have access to lower frequencies to ensure reliable operation of both voice and data services, especially given the often-challenging weather conditions in Canada’s Arctic. Both surface conditions and the distances involved make FSS a crucial component of the network we have built and on which many customers in Nunavut rely to interact with the wider world. Weather conditions in the North make C-band FSS far more reliable as the basis of telecommunications networks than are FSS in the higher frequency Ku-band and Ka-band.¹

34. Although as the Department notes (paragraph 64) there is a shift towards higher frequencies throughout the global satellite industry, we urge ISED to recognize that satellite-dependent communities in Canada require access to C-band communications, both now and for some time to come. The C-band best enables users to enjoy a reasonable level of service for real-time communications, including voice and video calling.
35. While satellites operating in higher spectrum bands, including Ku-band and Ka-band, can accommodate higher bandwidth demands and therefore have potential as the backbone for broadband data services, our experience has been that a mesh configuration using the C-band is far more robust and reliable as a means of carrying real-time communications. We urge the Department to be wary of promises that high frequency band satellite systems, including LEO systems, offer a complete solution to the telecommunications deficiencies that plague remote and rural communities.

¹ SSi Micro Ltd., Submission to Innovation, Science and Economic Development Canada in response to SLPB-004-18, “Consultation on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Consultation on Changes to the 3800 MHz Band,” July 12, 2018, paragraphs 39-41.

36. With specific reference to Q6 and Q7, we note that the main impact on SSi of ISED's proposals for areas other than satellite-dependent communities is to leave our existing satellite earth stations in southern Canada (at Ottawa) unprotected. By proposing to cease authorizing new FSS earth stations in the 3700-4000 MHz band and to implement a 20 MHz guard band to protect FSS operations in the 4000-4200 MHz band, ISED will force SSi (and other FSS customers in a similar position) to work with satellite operators to ensure that their earth stations in southern Canada continue to work well in the upper portion of the C-band satellite-to-earth range.
37. These proposals are acceptable to us only on condition that FSS earth station licensees directly receive any compensation that is made available to enable the reorientation of existing FSS earth stations in affected areas (that is, areas other than in satellite-dependent communities). Equitable allocation would ensure that all such users are treated equally, bearing in mind all public subsidy to them for the establishment of new ground equipment.
38. With specific reference to Q8 and Q9, SSi supports the proposal to maintain a primary allocation to FSS in the entire 3700-4200 MHz band, as well as the proposal that existing FSS earth stations in satellite-dependent areas remain licensed in the entire 3700-4200 MHz band. While we are actively exploring how to make the most effective use of higher frequencies to provide broadband connectivity, as noted above we believe there will be a role for C-band service in satellite-dependent areas, especially to facilitate real-time communications, for some time to come.
39. Accordingly, we would support a trend, such as that suggested in Q9, towards using C-band (whether across the entire 500 MHz between 3700-4200 MHz or the more restricted 4000-4200 MHz band) in combination with additional connectivity options to provide much-needed dedicated backbone capacity in support of broadband internet services. For the satellite-dependent communities we serve, we believe these options will come from higher frequency HTS or LEO satellites before wireline solutions. Terrestrial wireline solutions, such as fibre optic cable, does tend to require road access. Most of the satellite-dependent communities we currently serve in Nunavut are not linked by road to other communities, limiting potential wireline solutions to undersea cables.
40. In addition to considering the economic and demographic circumstances of the population in many satellite-dependent areas, especially Indigenous communities, the Department should ensure that its spectrum policy decisions do not undermine competition in telecommunications markets (Q10). Monopoly at any level of service, including a monopoly over backbone transport, will affect the price, quality, and range of services that can be made available to remote and rural populations. Competitive choice is no less important in satellite-dependent communities than in Southern Canada.

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.

SSi Comments

41. SSi has no comment on these proposals.

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. In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

42. SSi has no comment concerning this proposal.

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**

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

43. SSi takes no position at this time on either of these proposals.

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).**

Preliminary comments on a future shared spectrum licensing process are being sought in section 9.1.4 below.

SSi Comments

44. SSi has no comment on these proposals at this time.

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.

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

45. SSi has no information to provide in response to this question at this time.

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.

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

46. SSi has no comments on these proposals at this time.

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

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

47. SSi has no comments on this issue at this time.

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.**

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

48. SSi takes no position on this question at this time.

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.

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

49. SSi has no comments on this proposal at this time.

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.

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

50. SSi supports the Department's proposal to apply the Tier 4 service areas listed in annex E to define satellite-dependent areas for the purpose of protecting FSS operations in the 3700-4200 MHz band.

51. While these service areas are large and may, in some cases, include communities that are not in fact satellite dependent, we believe that the importance of ensuring that satellite-dependent communities continue to benefit from appropriate and necessary C-band FSS should outweigh the desire to accommodate parties seeking flexible use licences for this spectrum in these areas.
52. We note that the 3800 MHz band is but one of several spectrum bands being made available for use in the provision of 5G services. Based on our assessment of the potential demand for 5G services in the remote areas listed in annex E, we believe the foreseeable use-cases can easily be accommodated using alternative spectrum resources.
53. With respect to Q22, we note that the same characteristics that make C-band FSS a useful tool for serving permanent, onshore communities in remote locations that are satellite dependent apply to industry operations in the same remote areas. In 2017, SSi partnered with the Canada C3 Expedition to deliver broadband internet service on board the Canada C3 vessel as it sailed north along the Atlantic coast, across the Arctic, and down the Pacific west coast of Canada. The following passage provides an explanation for why SSi and Canada C3 chose to use FSS in the C-band to meet the needs of the project vessel and its passengers:

Most seafaring vessels in the North Atlantic, North Pacific and Arctic waters are limited to intermittent Ku-band satellite coverage for minimum data usage such as emails and text messages, with transmission speed rarely exceeding 128 kilobits per second. In order to meet the unprecedented communications requirements of the Canada C3 Project, with daily uploads of high data content such as video and photos, and to allow 60 passengers and crew to engage in regular Internet and social media activity, SSi is providing an innovative solution to achieve much more robust connectivity. Using a 2.4 metre diameter C-band antenna equipped with auto-tracking electronics and gyro-stabilizing mechanics, SSi is able to lock the ship onto a C-band satellite that covers all of Canada, and deliver speeds up to 10 megabits per second – almost 80 times better than the standard marine connection for ships in this northern region!²

54. Based on this experience, as well as the information available to us concerning the use-cases that have been developed for 5G service in remote locations including offshore remote industrial sites, we believe the Department should err on the side of caution and include such remote sites within the definition of satellite-dependent areas, rather than attempting to exclude them from the definition.
55. Again, we note that 3800 MHz spectrum is but one of several options available to service providers seeking to develop and deploy 5G services that meet the specific needs of the

² For more information, please see https://canadac3.ca/en/?post_type=news-or-media&p=15956

operators of such remote industrial sites. Pending clear evidence that it is this band, rather than other licensing options, for which appropriate 5G terminal equipment and applications are appearing, we believe the Department should include such sites in its definition of satellite-dependent areas.

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.

In providing comments, respondents are requested to include supporting rational and arguments.

SSi Comments

56. In general, SSi does not oppose these proposals. However, we urge the Department to ensure that FSS licensees operate in a fair and equitable fashion as they transition users of FSS operations in non-satellite dependent areas of Canada away from the 3700-4000 MHz band. As noted above, SSi is directly affected by these proposals. We will be required to monitor interference with the operations of our existing satellite earth stations in Ottawa, and to ensure that these earth stations are recalibrated to use the 4000-4200 MHz portion of the band in advance of the Canadian FSS transition deadline.

57. We urge the Department to recognize the potential problems associated with giving Canadian FSS satellite licensees complete discretion as to when, how, and at what cost they complete the recalibration of affected users' equipment to the higher portion of the band. The onus should be on the FSS licensee(s) to demonstrate that they have effected this transition for all users in a way that conforms to each user's needs and, most important, does not leave any user at a competitive or undue economic disadvantage.

58. Given that many of the same FSS operators provide service in Canada and in the U.S., we do not anticipate that the U.S. transition will have a material effect on the availability of FSS capacity in Canada.

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 location 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.**

This information should be submitted on a confidential basis, as instructed in section 13.

59. SSi is unable to provide relevant information in response to this question.

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 (3700-3890 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 3700-3890 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 3700-3890 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

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

60. So long as the Department is willing to adopt and enforce rules designed to ensure that FSS licensees and operators of foreign-licensed satellites approved for use in Canada implement the transition of earth stations in non-satellite dependent areas in a just, reasonable, and non-discriminatory manner, SSi has no objection to the proposals referred to in Q27, Q28 or Q29. However, we do urge the Department to recognize that FSS licensees can enjoy sufficient market power in upstream (i.e. backbone) markets to significantly reduce or eliminate competition in downstream markets for telecommunications, internet access, and other services, and must therefore be subject to enforceable non-discrimination provisions.

61. With specific reference to Q30, SSi strongly opposes the proposal to consolidate gateways supporting the provision of services in satellite-dependent areas.

62. A proposal to force FSS earth station licensees to accommodate the move to a consolidated gateway will impose real, quantifiable, and significant costs on those licensees to no perceptible benefit.

63. For a company like SSi, accommodating a move to a consolidated teleport would require moving receiving (and transmitting) electronics to a new hub and arranging backhaul to the Ottawa teleport which houses our fully staffed and managed Network Operations Centre (NOC). We would be required to establish redundant data links between the new shared hub and the NOC, and to recreate the necessary uninterrupted power supply and back-up power required to provide the high standard of telecommunications and broadband service we now deliver.

64. Using a consolidated gateway would make it impossible for SSi – or any other company required to relocate to such a gateway – to control any guaranteed level of service to our

customers beyond what the shared gateway operator is willing to guarantee to us. Our experience suggests that it may be difficult, or even impossible, to secure service-level agreements and quality of service commitments sufficient to support the services we offer, at affordable rates.

65. Moreover, if the idea of a shared gateway is genuinely to protect licensed earth station operations in southern Canada from interference from new users of the 3800 MHz band, it is simply unnecessary.
66. Compared to the disruption, expense, and challenge to high-quality operations attendant on a mandated move to a shared gateway, simply changing the frequency at which an existing teleport like our NOC communicates with the space segment so as to accommodate ISED's proposed repacking of existing satellite operations into the 200 MHz band from 4000-4200 MHz is a relatively simple and inexpensive matter. **The costs to telecommunications service providers such as SSi of ISED's gateway proposal are both real and quantifiable. Its benefits are not.**
67. As a way to accommodate the changes ISED is proposing so as to introduce flexible use licensing in the 3800 MHz band, the proposal for consolidated gateways is neither necessary nor justifiable. If ISED is proposing consolidated gateways in preparation for next-generation satellite technologies such as LEOs, we believe that raises both policy and operational questions that are far beyond the scope of this Consultation.
68. We urge the Department to reverse its preliminary view as stated in paragraph 139 of the Consultation that consolidation of licensed gateway earth stations to two gateway teleport sites would be feasible or desirable.

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 3700-3890 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 3700-3890 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 eligibility of licence-exempt stations that could apply for an interim authorization.

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

In providing comments, respondents are requested to include supporting rational and arguments.

SSi Comments

69. SSi has no comment at this time with respect to any of the proposals advanced concerning licence-exempt receive-only FSS earth stations.

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.

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

70. SSi has no comment to offer at this time concerning the Department's proposals with respect to fixed services to operate fixed point-to-point applications.

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.

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

71. SSi has no comment at this time on these proposals.

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 3650-3700 MHz band could potentially affect WBS systems? How would these requirements impact the deployment of flexible use stations?

In providing comments, respondents are requested to include supporting rationale and arguments.

SSi Comments

72. SSi has no comment concerning the issues raised in these questions.

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.

Q48. 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 OOB limit) and the U.S. (i.e. a combination of guard band, a typical OOB limit, pfd limits, and baseline minimum filter specifications for earth station operations) and the current Canadian requirements (i.e. a typical OOB 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 be 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 timelines as stated in sections 9.5 and 9.6. For example, could the fpd 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?

In providing comments, respondents are requested to include supporting technical arguments and rationale.

In providing comments to Q46-Q49, respondents are requested to consider the coordination burdens such coexistence and protection measures could impose on either flexible use services or FSS earth stations.

SSi Comments

73. SSi has no technical input to provide in response to these questions.

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?

In providing comments, respondents are requested to provide technical analysis to substantiate such proposals.

SSi Comments

74. SSi has no technical input to provide in response to this question.

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 3800-3890 MHz.

In providing comments, respondents are requested to include supporting arguments and rationale.

SSi Comments

75. While SSi does not oppose the use of an auction as the licensing process for the flexible use spectrum that would be made available in the 3700-4200 MHz band as the 3800 MHz band, we are concerned that in this proposal ISED is referring to “flexible use licences, *including those in satellite-dependent areas*” (paragraph 183; emphasis added).

76. In this Consultation, the Department is proposing to allow licensed FSS operations across the entire 3700-4200 MHz band to continue in satellite-dependent areas in recognition of the

“need to ensure that there is sufficient capacity to meet the ongoing needs of satellite-dependent areas” (paragraph 117).

77. We submit that achieving this objective, of ensuring sufficient capacity to meet the needs of satellite-dependent areas, is incompatible with the auction of spectrum in the same licence areas that falls squarely within the 3700-4200 MHz band.

78. We urge the Department to specify exactly the conditions, such as complete abandonment of C-band satellite communications in a satellite-dependent area, in which ISED will consider licensing the 3800 MHz band for flexible use in the same area.

Proposed Accelerated Spectrum Clearing Approach: The Telesat Proposal

In providing comments for the following questions, respondents are requested to include supporting arguments and rationale, taking into consideration the ecosystems for 5G services and the adjacent WBS operations in the 3650-3700 MHz band.

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 and the proposed changes to satellite licences to apply it***
- c) The proposal for treatment of WBS incumbents***
- d) The proposal to issue interim authorizations for certain 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 pro-competitive measures 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.**

SSi Comments

79. Telesat's proposal (annex H) for an accelerated spectrum clearing approach to the 3700-4200 MHz band may serve Telesat's interests, but we are concerned about the impact on its existing customers and the interests of the Canadian public generally.
80. The Telesat proposal raises issues both at the level of policy and on a more practical level.
81. At the policy level, Telesat's proposal that the Department compensate the FSS satellite licensee in exchange for the proposed re-purposing of part of the 3700-4200 MHz band both undermines the Department's ability to fulfill its mandate to ensure the effective management of Canada's radio frequency spectrum resource with due regard to the objectives of the *Telecommunications Act*, and sets potentially dangerous precedents concerning the compensation of certain licensees and users, but not others, for the consequences of decisions the Department takes in fulfillment of that mandate.
82. In response to Q53, SSi believes that Telesat's approach is not in the best interest of Canadians. Because the proposal would defer to Telesat the timing of the allocation of spectrum in the 3700-3900 MHz band, there is no guarantee that it will accelerate the deployment of 5G services in the affected frequencies.
83. Nor will Telesat's proposal necessarily result in more efficient use of the 3700-4200 MHz spectrum, when compared with the suggestions made in the Department's Consultation itself. In fact, the introduction of Telesat as an intermediary between the Department and those parties who might seek flexible use licences to offer 5G services could make spectrum use less efficient because the intermediary's incentives are to extract the highest possible profit from the secondary market, rather than to ensure efficient use or an orderly and equitable transition.
84. Q53 also asks what the implications of this repurposing plan would be for other users of the band. Other satellite operators may address their own views in response to this question, but we do note that we are concerned Telesat's proposal would confine all C-band space-to-earth communications to the 100 MHz between 4100-4200 MHz in all areas of the country, including satellite-dependent areas.
85. As noted above, in our experience there is not yet a better alternative to C-band in a mesh configuration as a means of delivering real-time voice and video communications services to satellite-dependent areas. We urge the Department to consider very carefully whether 100 MHz will provide enough capacity to meet these needs – not just for Telesat, but also for the other approved satellite operators, whose competition could impose a degree of necessary market discipline upon the dominant provider of transport services to rural and remote parts of Canada.

86. As far as SSi is concerned directly, we see in the Telesat proposal uncertain promises rather than clear and quantifiable commitments to cover “reasonable, direct, out-of-pocket” costs of cooperative Eligible Earth Station operators (Telesat proposal, paragraph 48). As suggested above at paragraph 62, we anticipate that the single biggest cost associated with the repacking of C-band space-to-earth communications into a portion of the existing band, whether that is 200 MHz as the Department proposes in line with the FCC’s determinations or 100 MHz as Telesat is proposing, is going to be driven by the requirement to re-tune electronics in earth stations outside of satellite-dependent areas to a narrower portion of the band to comply with the new requirements of the satellite operators.
87. Telesat’s proposal has an unquantified commitment to cover the costs of earth station operators, but it appears to be structured in a manner where any compensation is to be spent on or for services Telesat itself offers. Without greater detail and certainty in the proposal, it is difficult to confirm that it outweighs the policy and practical risks of the overall proposal.
88. In essence, the Telesat proposal argues that because the U.S. Federal Communications Commission compensated satellite operators – including Telesat itself – as an inducement to the rapid clearance of the 3800 MHz band, ISED should do likewise, with the significant difference that ISED should compensate only the sole Canadian FSS satellite licensee – Telesat itself – to accelerate clearing this spectrum. Telesat cites as a Canadian precedent for compensation previous transitions, in which *“ISED provided incumbents with alternative spectrum rights and transitional periods, to mitigate the impact of the reallocations on providers and users.”* Telesat goes on to note that users are generally required to bear the cost of any equipment changes consequent on such transitions.³
89. The proposal to compensate one firm in a competitive market should itself raise concern from a policy perspective. Available compensation, whether in the form of a share of the revenue that accrues from the re-purposing of spectrum that is in active use, compensatory rights to spectrum, or any other form, must be made directly available to the FSS earth station licensees affected by this change, as well as to all satellite operators supporting essential broadband telecommunications services to Canadians in remote and rural locations.
90. While Telesat is a Canadian FSS licensee, in practice users such as telecommunications service providers, broadcasting undertakings and their customers can benefit from access to satellites operated by both domestic and foreign firms that have been approved for operations in Canada. Telesat’s proposal acknowledges that other satellite operators will be affected by the compression of the 3700-4200 MHz FSS designation to accommodate the use of the mid-band at 3800 MHz for 5G. But we are uncertain how effective the proposal’s

³ Telesat proposal, paragraph 32.

consideration of the role of the other operators can be. For instance, Telesat makes the following undertaking on its own behalf and those of its fellow satellite operators:

Telesat, working with the other Satellite Operators, would take responsibility for managing and coordinating (and, to the extent necessary, implementing) any service and equipment changes necessary to protect service continuity for Eligible Earth Stations (as defined below) that would be affected by the proposed spectrum reallocation. In many cases, this will include migrating the Telesat services onto the Telesat LEO constellation or other alternative satellites. The Satellite Operators will provide or procure comparable facilities and services, and would cover reasonable, direct, out-of-pocket expenses incurred by the Eligible Earth Station operators as a result of the transition provided that they receive reasonable cooperation in the process, including access to technical information and facilities. ...

Telesat is not proposing to limit this transition support to its own customers. Telesat will coordinate with the other Satellite Operators to provide the same transitional support to their Canadian customers and end-users or, if necessary, procure or provide comparable alternative services and facilities for the Eligible Earth Stations.⁴

91. This proposal raises obvious practical issues for the Department, including questions such as whether the other satellite operators themselves consent to coordinate the transition with Telesat and to cover the costs of FSS earth station licensees, and exactly what costs Telesat is committing itself and its fellow satellite operators to cover for their Canadian customers and end-users.
92. In addition to the obvious policy concerns associated with providing compensation to one player in a competitive market, however, Telesat's proposal also raises fundamental questions concerning whether ISED can indeed achieve its mandate with respect to the licensing of flexible use for 5G in the 3700-3900 MHz spectrum if the Department relies on Telesat as the intermediary, as the satellite operator proposes.
93. The Consultation asks specifically about this concern in Q56 and Q57. We believe the Department should be particularly concerned by those aspects of Telesat's proposal adverted to in Q56(b) and (c) and in Q57.
94. The identified clauses of Q56 ask, essentially, what the implications for ISED's licensing framework for the 3800 MHz band are of issuing to Telesat (alone) a single, Tier 1, flexible use licence and then relying on the FSS licensee to operate a secondary market in order to

⁴ "Fast tracking affordable, Canada-wide 5G and universal connectivity with 3800 MHz spectrum," Proposal Submitted by Telesat Canada to Innovation, Science and Economic Development Canada, July 5, 2020 (the "Telesat Proposal"), paragraphs 48 and 51. Emphasis added.

ensure that operators deploy 5G services in a way that is parallel to the Department's determinations about the licensing framework that will apply in the 3500 MHz band.

95. We suggest that Telesat's proposal constitutes a significant change to the Department's licensing framework. Any pro-competitive measures the Department determines to be necessary for the 3800 MHz band – as they are for the 3500 MHz band – would have to be implemented at first instance, not by the Department itself by the structure of a spectrum auction or other licensing method, but by a private sector intermediary. Any private sector firm in that intermediary position will face competing incentives: in addition to complying with any rules the Department makes, the firm will have a strong incentive to maximize the payment it receives in the secondary market for subordinating spectrum. Given the structure of the telecommunications market in Canada, we suggest these incentives are unlikely to be compatible.

96. In fact, Telesat's proposal itself suggests that other priorities may limit its ability to manage a secondary market for 3800 MHz spectrum in a way that fully complies with Departmental concerns about competition. Telesat lists three conditions it considers "essential" if any pro-competitive measures are imposed on the secondary market it proposes to manage. They must be:

- *Fully addressed in the Department's consultation and decision relating to this proposal, and not deferred to a future consultation process, in order to avoid unnecessary delays;*
- *Practically capable of being implemented in the context of the secondary market transactions contemplated by this proposal; and*
- *Not substantially undermine Telesat's ability to recoup enough value through the secondary market to underwrite the extensive investments required for a successful transition.⁵*

97. SSi submits that Telesat's proposal raises serious concerns about the Department's ability to apply pro-competitive measures to ensure that potentially valuable spectrum in the 3700-3900 MHz band is not just sold to the highest bidder to maximize the value of the spectrum to Telesat. Such pro-competitive measures as spectrum caps and set-asides are necessary given the continuing dominance of certain national wireless carriers in Canadian markets for mobile services. In response to Q54, we do not believe that Telesat's proposal meets ISED's policy objectives relating to promoting competition in mobile services.

98. Telesat's proposal also, in effect, requests that ISED take advantage of its desire to re-purpose a portion of the 3700-4200 MHz band to deliver an unquantified subsidy to Telesat's own LEO project.

⁵ Telesat proposal, paragraph 44.

99. Telesat does not attempt to quantify the actual impact on itself – or, in specific reference to Q58, on FSS earth station users, whether licensed or unlicensed – of the shift the Department contemplates in this Consultation. Instead, Telesat asserts that the process will be “highly complex and costly” and points, as evidence, to the transition plans filed by SES Americom, Inc. and Intelsat Licence LLC to comply with the FCC’s accelerated spectrum clearing determination.⁶
100. We suggest that if the Department accepts the premise that it should be compensating satellite operators for their costs associated with accommodating flexible use licensing of a portion of the 3700-4200 MHz spectrum, ISED must then insist on a full accounting of those costs as they apply to operators *in Canada*.
101. We note that in the U.S., the approved clearing costs include costs associated with the deployment of a number of new satellites to ensure adequate ongoing coverage in the same frequency band but using a reduced portion of the band.
102. Instead of quantifying the cost for which it seeks compensation or specifying the changes or additions that it must make to its C-band satellite array to accommodate current customers in a reduced *tranche* of spectrum, Telesat asserts that in order to accommodate its Canadian customers during the 3800 MHz transition, it must receive public support for its investment in “new facilities and satellites (particularly Telesat’s state-of-the-art Low Earth Orbit satellite constellation ... which is a core part of Telesat’s plan to continue to provide services to all of its customers).” Elsewhere, Telesat specifies that end user services can be preserved by a combination of re-packing existing use within the 100 MHz that would remain to FSS under Telesat’s plan “and migrating Telesat users to Telesat LEO and, potentially, other satellites.”⁷
103. To the extent Telesat’s proposal will assist moving current customers to its planned new LEO satellite system, Telesat does not address how such a subsidy should be reconciled with the Canadian government’s other systems of support for service in satellite-dependent areas or its previously announced support for Telesat’s LEO project.
104. As a licensed FSS earth station user, SSi believes the proposal to divert some of the potential revenue associated with the re-purposing of the 3700-4200 MHz band to Telesat’s proposed LEO service raises concerns.
105. For one, there is the question whether Telesat’s proposed LEO service, expected to operate at much higher frequencies than the C-band, can adequately support the services being displaced from the 3700-4200 MHz band. If the Department agrees that some FSS in

⁶ Telesat proposal, paragraph 39 and footnote 8.

⁷ Telesat proposal, paragraphs 10 (IV) and 37.

the lower band remains necessary to support communications in satellite-dependent areas and other remote and rural parts of Canada, acceding to Telesat's proposal means accepting that the remaining 100 MHz of spectrum between 4100-4200 MHz will be sufficient to meet these needs.

106. Because of the very real uncertainty of the prospect that the spectrum between 4100-4200 MHz will be sufficient to meet users' needs for real-time communications, we submit that, in answer to Q54, the Telesat proposal may not meet ISED's policy objectives with respect to supporting rural/remote connectivity.
107. For another, unlike the transition to the higher portion of the C-band, transition to LEO absolutely necessitates that users invest in new earth station equipment.
108. If ISED is going to compensate those affected by re-purposing of the 3800 MHz band, the Department should compensate all licensed users directly. And if ISED concurs with Telesat that it is appropriate to redirect the revenues associated with repurposing this band into a subsidy to promote the use of LEO systems, that subsidy should be directed to FSS earth station licensees taking on the expense of LEO conversion.
109. Any subsidy directed to FSS earth station licensees required to migrate to the LEO system should also take into account any other public money already directed to such users.
110. In particular, we note that the Canadian Radio-television and Telecommunications Commission recently apportioned \$4.1 million from its new Broadband Fund to Bell Canada unit Northwestel Inc. ("Northwestel") to "build the earth stations and install the terminals that will be necessary to connect eight satellite-dependent communities in the Northwest Territories to low-earth orbit (LEO) satellites"⁸, and another "\$2.86 million to improve local access infrastructure and satellite capacity for Old Crow, Yukon."⁹
111. Leaving aside the wisdom and propriety of allocating public funds to building earth stations associated with a system that is not yet in existence and for which service plans (and therefore business plans) are still uncertain, we note that the effect of this decision is to provide Northwestel with a head start towards achieving LEO-readiness at the rate of hundreds of thousands of dollars per community.
112. The Department must recognize that the burden of connecting terrestrial access networks to Telesat's proposed LEO system will fall on the licensees of FSS earth stations.

⁸ Telecom Decision CRTC 2020-257, *Broadband Fund – Project funding approval for Northwestel Inc.'s Northwest Territories satellite project*, 12 August 2020, quoting paragraph 1.

⁹ Telecom Decision CRTC 2020-259, *Broadband Fund – Project funding approval for Northwestel Inc.'s Old Crow satellite project*, 12 August 2020.



Consistent with its own precedents, as cited in Telesat's proposal (paragraph 32), the Department should provide those licensees with assistance in meeting the cost of such a transition. In providing such assistance, the Department must ensure that such licensees benefit from a level playing field. To do so, the Department must take into account, at least, other public-sector funding such as the Commission's decision to allocate scarce Broadband Fund money to Northwestel.
