

NOTICE NO. SMSE-006-24

**CONSULTATION ON A POLICY, LICENSING AND
TECHNICAL FRAMEWORK FOR SUPPLEMENTAL
MOBILE COVERAGE BY SATELLITE**

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**COMMENTS
OF
BELL MOBILITY INC.**

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Table of Contents

	<u>Page</u>
1.0 EXECUTIVE SUMMARY	3
1.1 Spectrum Bands for SMCS	3
1.2 Emergency Services	4
1.3 Out-of-Band Emissions	5
2.0 SPECTRUM BANDS FOR SMCS	6
2.1 Changes to the Canadian Table of Frequency Allocations	8
3.0 DEPLOYMENT	9
4.0 EMERGENCY SERVICES	10
5.0 SMCS LICENSING FRAMEWORK	13
5.1 SMCS Licence Terms and Conditions	14
5.2 Licence Fees	16
6.0 TECHNICAL CONSIDERATIONS	16
7.0 OTHER CONSIDERATIONS	19

1.0 EXECUTIVE SUMMARY

ES1. These Comments are provided in accordance with the procedure set out by Innovation, Science and Economic Development Canada (the Department or ISED) in Notice No. SMSE-006-24, *Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite* (the Consultation).¹

1.1 Spectrum Bands for SMCS

ES2. Supplemental Coverage by Satellite (SMCS) services offer a great opportunity to connect unserved areas as satellite spot beams will be able to cover hard-to-reach remote areas. In general, we support the considerations proposed by ISED to identify frequency bands to be available for SMCS service. However, in our view, all terrestrial commercial mobile spectrum has the potential to be used for SMCS services. Thus, while we agree with ISED's initial proposed list of spectrum bands for the application of the SMCS framework, we recommend that ISED work towards implementing a more streamlined approach to approving new spectrum bands for SMCS services rather than having a lengthy consultation process initiated by the Department.

ES3. ISED should not consider service area size and/or the presence of mobile service providers holding the same frequency block as part of the general considerations for identifying frequency bands where the proposed SMCS framework will be applied. The proposed SMCS service is provided on a no-interference, no-protection (NINP) basis and thus, the onus of managing the interference from SMCS operations and protecting existing terrestrial service is on the mobile network operator (MNO) and its satellite partner.

ES4. We recommend that ISED simply allow MNOs to offer SMCS service in service areas and with frequencies covered by their commercial mobile spectrum licences that are in a frequency band approved for SMCS service. The SMCS framework needs to be flexible enough to allow MNOs and satellite providers to form partnerships that aggregate service areas and/or frequencies to offer SMCS services across larger geographic areas. Without this flexibility, MNOs would be excluded from offering SMCS services across Canada, contrary to ISED's stated policy objectives outlined in paragraphs four to eleven in the Consultation. Moreover, focusing on

¹ ISED, *Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite*, SMSE-006-24, June 2024, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/learn-more/key-documents/consultations/consultation-policy-licensing-and-technical-framework-supplemental-mobile-coverage-satellite> (The Consultation).

service area size would unnecessarily prevent commercial mobile spectrum bands licensed with small service areas from being adopted for SMCS service even if it is technically feasible to do so. This would artificially restrict the supply of spectrum used by SMCS services as well as the overall service offer to the Canadian population.

ES5. We support ISED's proposed licensing framework for SMCS services. In particular, the requirement to have an SMCS agreement in place between MNOs and satellite operators will help mitigate interference and support the orderly development of SMCS services in Canada.

1.2 Emergency Services

ES6. We understand the importance of emergency services for Canadians and SMCS services offer a great opportunity to connect unserved areas and provide help to Canadians during an emergency. However, it is important to understand the limitations of SMCS services. Although incumbent local exchange carriers (ILECs), competitive local exchange carriers (CLECs), and wireless service providers (WSPs) have 9-1-1 obligations, there is no current obligation on mobile satellite providers such as Iridium or Inmarsat to offer 9-1-1 services over satellite phone. SMCS would be a mobile satellite service, subject to the same limitations as other satellite phone services and should be treated in the same manner even if the "satellite phone" also happens to be a device that is capable of calling over wireless networks.

ES7. We note that there are significant challenges associated with a potential implementation of emergency services over satellite. Unlike with respect to 9-1-1 calls over mobile wireless services which are received by a tower and routed to an appropriate emergency response centre based on location information associated with the tower; in the case of satellite service, the receiving satellite would likely not have a narrow enough coverage area to ensure that emergency calls are routed to the appropriate emergency response centre. Importantly, there is also a likelier possibility in the case of satellite services that the caller may be calling from an area that is not currently served by a PSAP or first responders such as a remote unorganized territory. To the extent a future emergency service over SMCS is developed, the framework should be based on realistic expectations of the service (e.g., intermittent coverage) and the relevant availability of emergency service providers.

1.3 **Out-of-Band Emissions**

ES8. We agree with ISED's proposal to apply the same technical requirements and coexistence measures stipulated in the existing Standard Radio System Plans (SRSP) and Radio Standards Specifications (RSS) for terrestrial commercial mobile services. The co-existence limits defined in the SRSP and RSS will be sufficient for co-channel operations as those limits are straight forward and can be applied to signals emanating from satellites. However, for the case of adjacent band operations an out-of-band emission limit must be defined to account for satellites operating under very different geometry from terrestrial networks. The aggregate impact of unwanted signals emanating from multi-beam satellites employing high gain antennas can lead to harmful interference to adjacent band operations.

ES9. The Federal Communication Commission (FCC) set a power flux density (PFD) limit of -120 dBW/m²/MHz for out-of-band emissions in all supplemental coverage from space (SCS) bands measured at 1.5 metres above ground level. The limit accounts for the aggregate interference from satellite operations and a 6 dB I/N interference threshold. The FCC concluded that these "limits are both necessary and technologically feasible for satellite operators providing SCS."² It is therefore clear that the uniform limit not only simplifies the co-existence rules but is also necessary to adequately protect terrestrial operations from SMCS services. Additionally, the prospective SMCS satellite operators have the technological capability to meet this limit. Therefore, we recommend ISED adopt the FCC limit of -120 dBW/m²/MHz for SMCS bands in order to adequately protect terrestrial operations.

ES10. SMCS services are just being developed and ISED should avoid adopting technical parameters that are relaxed or permissive considering that SMCS service has not undergone extensive development and testing. In addition to the issue of interference with terrestrial networks, having different technical limits in Canada than the U.S. could lead to other operational issues as SMCS providers are expected to offer the service over North America using the same satellite.

² FCC, *Single Network Future: Supplemental Coverage from Space*, FCC-CIRC2403-03, 22 February 2024, paragraph 206, <https://docs.fcc.gov/public/attachments/DOC-400678A1.pdf> (*Single Network Future*).

2.0 SPECTRUM BANDS FOR SMCS

Q1. ISED is seeking comments on the proposed considerations to identify frequency bands where the proposed SMCS framework will be applied.

1. In general, we support the considerations proposed by ISED to identify frequency bands to be available for SMCS service. However, in our view, all terrestrial commercial mobile spectrum has the potential to be used for SMCS services. As a result, we recommend that ISED work towards implementing a more streamlined approach to approving frequencies for SMCS services rather than having a lengthy consultation process initiated by the Department.

2. For example, if an MNO requests the addition of a frequency band for SMCS service, ISED should refer the analysis to the Radio Advisory Board of Canada (RABC) for a short (one to two month) consultation to identify and address any concerns from adjacent and co-services. The co-existence framework between terrestrial commercial mobile operators and SMCS service providers will have already been established because of the decision to this consultation. Moreover, there should be limited concerns about interference as terrestrial commercial mobile network operators will remain the licensees of the commercial mobile spectrum and thus remain responsible for interference management with adjacent and co-channel services. Furthermore, the proposed SMCS service is to be provided on a NINP basis. ISED can then review the RABC feedback and decide on the inclusion of the frequency band for SMCS services. This would ensure the timely inclusion of additional frequency bands as advancements in technology allow for more spectrum to be used for SMCS services.

Q2. ISED is seeking comments on whether it should consider the service area size and/or the presence of mobile service providers holding the same frequency block as part of the general considerations for identifying frequency bands where the proposed SMCS framework will be applied.

3. ISED should not consider service area size and/or the presence of mobile service providers holding the same frequency block as part of the general considerations for identifying frequency bands where the proposed SMCS framework will be applied. The proposed SMCS service is provided on a NINP basis and thus the onus of managing the interference from SMCS operations and protecting existing terrestrial service is on the MNO and its satellite partner.

4. We agree with ISED's view "that mobile service providers and satellite operators can find approaches to mitigate co-channel interference to adjacent geographies"³ Interference mitigation with respect to SMCS services is essentially the same as when the MNO ensures that its terrestrial network does not cause adjacent or co-channel interference. The operation limits set within the SRSP of each frequency band are sufficient for operators offering SMCS services to plan the coverage area accordingly.

5. We recommend that ISED simply allow MNOs to offer SMCS services in service areas and with frequencies covered by their commercial mobile spectrum licences that are in a frequency band approved for SMCS service. The SMCS framework needs to be flexible enough to allow MNOs and satellite providers to form partnerships that aggregate service areas and/or frequencies to offer SMCS services across larger geographic areas. Without this flexibility, MNOs would be excluded from offering SMCS services across Canada, contrary to ISED's stated policy objectives outlined in paragraphs four to eleven in the Consultation. Moreover, focusing on service area size would unnecessarily prevent commercial mobile spectrum bands licensed with small service areas from being adopted for SMCS service even if it is technically feasible to do so. This would artificially restrict the supply of spectrum used by SMCS services.

Q3. ISED is seeking comments on the potential for the SMCS satellites to have smaller beam sizes such that they could serve smaller service areas and potentially reduce protection areas around existing mobile networks.

6. We have no comments on this question.

Q4. ISED is seeking comments on other considerations it should take into account when identifying frequency bands where the proposed SMCS framework will be applied.

7. We do not propose any further considerations that should be taken into account when identifying frequency bands where the proposed SMCS framework will be applied.

³ The Consultation, paragraph 39.

Q5. ISED is seeking comments on its proposal to apply the SMCS framework to the following initial bands: 600 MHz (617-652 MHz/663-698 MHz); 700 MHz (698-756 MHz and 777-787 MHz); 800 MHz Cellular (824-849 MHz/869-894 MHz); PCS (1850-1915 MHz/1930-1995 MHz); AWS-1 (1710-1755 MHz/2110-2155 MHz); AWS-3 (1755-1780 MHz/2155-2180 MHz).

8. We support ISED's proposal to apply the SMCS framework to the 600 MHz; 700 MHz; 800 MHz Cellular; PCS; AWS-1; and AWS-3 frequency bands.

Q6. ISED is seeking comments on any other bands that are used for commercial mobile services for which the SMCS framework should be applied.

9. As indicated in our response to question 1, we recommend that ISED work towards implementing a more streamlined approach to approving frequencies for SMCS services rather than having a lengthy consultation process initiated by the Department.

2.1 Changes to the Canadian Table of Frequency Allocations

Q7. ISED is seeking comments on its proposal to modify the CTFA to add new secondary mobile-satellite service allocations, through a footnote, for the provision of SMCS only.

Q8. ISED is seeking comments on its proposal to enable SMCS on a no-interference, no-protection basis with respect to all radiocommunication services.

10. We agree with ISED's proposal to modify the Canadian Table of Frequency Allocations (CTFA) to add new secondary mobile-satellite service (MSS) allocations for the provision of SMCS only and to enable SMCS services on a NINP basis with respect to all radio communication services. It is important to limit MSS allocation only for the use of SMCS services as the proposed frequency bands are exclusively licensed for terrestrial services and a secondary MSS allocation by itself will not be sufficient because allowing general MSS services will lead to significant interference issues. In addition, NINP offers the most practical way to enable the SMCS service. NINP will ensure the responsibility of interference resolution lies with the new supplementary service rather than the well-established terrestrial mobile services. As noted by ISED, "the nature of SMCS is to supplement terrestrial mobile services in unserved and underserved areas through the use of satellites."⁴

⁴ The Consultation, paragraph 62.

3.0 DEPLOYMENT

Q9. ISED is seeking comments on the roles that SMCS and terrestrial mobile service expansion may play, as well as any potential limitations, in providing greater mobile service coverage to Canadians, including along roads and highways.

11. SMCS service will play a positive role in expanding service to unserved and underserved areas of Canada as satellite spot beams will be able to cover over hard to reach remote areas. The width of spot beams is expected to be tens of kilometres wide and as a result, SMCS service will be able to cover large areas (including roads and highways) through a collection of spot beams. However, while signal strength is expected to be weaker inside vehicles due to the attenuation from the vehicle body, in most cases we expect devices inside the vehicle to be able to communicate with SMCS services. Moreover, given the size of the spot beams we expect communication with fast moving vehicles to occur without the need to switch between spot beams rapidly.

12. Initially, there will be limitations with respect to SMCS coverage until there are enough satellites in operation to provide continuous coverage. Our understanding is that it will take several years before there will be continuous coverage over most of southern Canada (i.e., up to 55-60 degrees latitude). Low Earth orbit (LEO) satellite operators will then require satellites in polar orbits to cover Northern Canada (i.e., above 60 degrees latitude), which will take even longer.

Q10. ISED is seeking comments on its proposal that SMCS would not contribute to meeting deployment conditions associated with flexible use licences.

13. We do not support ISED's proposal that SMCS services would not contribute to meeting deployment conditions associated with flexible-use spectrum licences. As with terrestrial-based services, significant investment is required to enable SMCS services. A large number of satellites need to be deployed to ensure continuous coverage across Canada. Allowing SMCS coverage to count towards deployment requirements will incent operators to invest in improving SMCS services to the benefit of Canadians.

14. At the very least, SMCS services should count as used spectrum when identifying where access licences will be made available as described in SPB-001-24, *Decision on New Access Licensing Framework, Changes to Subordinate Licensing and White Space to Support Rural and*

*Remote Deployment.*⁵ By not considering spectrum used by SMCS services, given the smaller Tier 5 service areas used for access licensing, the addition of a protection area around each awarded access licence could create several large holes in SMCS service coverage. The extent of the negative coverage impact could grow over time as more access licenses are awarded. This could undermine the usability and the viability of SMCS services.

4.0 EMERGENCY SERVICES

Q11. *ISED is seeking comments on any considerations and/or limitations in providing network reliability and resilience using SMCS, based on the requirements in the MOU on Telecommunications Reliability.*

Q12. *ISED is seeking views on any considerations and/or limitations to providing emergency roaming using SMCS based on the requirements in the MOU on Telecommunications Reliability.*

15. SMCS services are in the early stages of development and are not currently ready to be an option for network reliability and resilience. The actual capacity of SMCS satellites and their capabilities are yet to be tested and verified. SMCS satellites are expected to have limited capacity initially, and any obligation to provide reliability will be impractical. Moreover, given that SMCS services have not been launched, the ability to provide emergency roaming is not well understood. We recommend that telecommunications reliability may be addressed through a technical working group such as the RABC at least three years after the launch of SMCS services in Canada. By that time MNOs and their satellite partners will be more informed on the practical limitations with respect to capacity and the network architecture required to offer a viable alternative for network reliability and resiliency. Therefore, we recommend that SMCS services not be part of the *Memorandum of Understanding on Telecommunications Reliability* at this time.

Q13. *ISED is seeking comment on the technical possibilities and limitations of SMCS for the provision of 9-1-1 access to all handsets from all service providers where there is SMCS satellite coverage.*

16. We understand the importance of emergency services for Canadians and SMCS services offer a great opportunity to connect unserved areas and provide help to Canadians during an

⁵ ISED, *Decision on New Access Licensing Framework, Changes to Subordinate Licensing and White Space to Support Rural and Remote Deployment*, SPB-001-24, January 2024, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/spectrum-allocation/decision-new-access-licensing-framework-changes-subordinate-licensing-and-white-space-support-rural>.

emergency. However, it is important to understand the limitations of SMCS services. E9-1-1 service was implemented in the 1990s, initially only offered by ILECs but expanded to CLECs with the introduction of local telephone competition. 9-1-1 obligations were then expanded to WSPs.⁶ However, there is no current obligation on authorized and approved Mobile Satellite Service providers such as Inmarsat or Iridium to provide 9-1-1 services for satellite phone service.⁷ SMCS would be a mobile satellite service, subject to the same limitations as service offered by other satellite phone operators, and should be treated in the same manner.

17. We note that there are significant challenges associated with a potential implementation of emergency services over satellite. In particular, current enhanced and next-generation 9-1-1 services automatically route emergency calls to the appropriate public service answering point (PSAP). This is accomplished, for wireline services, by routing 9-1-1 calls based on customer address information associated with the wireline service (e.g. a customer's home address). For wireless services, it is currently accomplished by routing based on location information associated with the receiving tower. However, in the case of satellite service, the satellite would not have a narrow enough coverage area to map a specific PSAP for emergency call routing. As such, automatic routing of a 9-1-1 call directly to the appropriate PSAP is likely not possible. Importantly, there is also a likelier possibility in the case of satellite services that the caller may be calling from an area that is not currently served by a PSAP or first responders such as a remote unorganized territory.

18. To our knowledge, rather than 9-1-1 service, current satellite phone providers tend to offer customers the ability to program emergency contacts into satellite phones that can be reached through an SOS button and/or explain 9-1-1 limitations and encourage customers to program the full international access code, country code and phone number of local fire, police and ambulance into a satellite phone.⁸ In some cases providers also inform users they can register to a private global rescue service.⁹

⁶ For a summary of the regulatory background for 9-1-1 services see Telecom Regulatory Policy CRTC 2017-182, *Next-generation 9-1-1 – Modernizing 9-1-1 networks to meet the public safety needs of Canadians*, paragraphs 11 to 18.

⁷ See ISED List of Authorized and Approved Mobile Satellite Service Providers, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/licences-and-certificates/authorized-and-approved-mobile-satellite-service-providers>.

⁸ See, for example, "How to call emergency numbers from your Sat Phone," OSAT, <https://osat.com/en-ca/blogs/blog/how-to-call-emergency-numbers-from-your-sat-phone>.

⁹ See, for example, "Can I call 911 in Canada from my Inmarsat phone or are there other numbers for emergencies?," *Canada Satellite*, <https://www.canadasatellite.ca/faqs/question/view/id/10369/>.

19. The ability to offer a robust emergency service (and in particular a voice-based emergency service) over SMCS is yet to be tested in the field and therefore, we are not in a position to provide a meaningful technical solution at this stage. Moreover, compatibility of handsets with SMCS satellite providers solutions will also need to be evaluated once the service is deployed and extensive testing is conducted. To the extent a future emergency service over SMCS is developed, the framework should be based on realistic expectations of the service (e.g., intermittent coverage) and the relevant availability of emergency service providers.

Q14. ISED is seeking comments on how SMCS deployments would support the distribution of emergency alerts to mobile devices.

20. As noted in our response to question 13, initially SMCS services will have intermittent coverage and the accuracy of location determination has yet to be tested. Moreover, it is not clear if satellite operators will have the ability to broadcast emergency alerts. The FCC in its report and order recognized the challenges associated with emergency alerts and deferred requiring emergency alerts over SMCS services.¹⁰ We recommend that a working group be formed after the launch of SMCS services to develop technically feasible solutions to provide emergency alerts using SMCS services. The group should work with all satellite providers, and MNOs to identify the technical capabilities of each provider and limitations of the SMCS service being offered to propose a workable solution for emergency alerts.

Q15. ISED is seeking comments on whether existing mechanisms will support emergency communications in the absence of a roaming agreement between providers, or whether a new obligation would be appropriate regarding this issue for SMCS.

21. It is important to understand the initial limitations of SMCS services and how different operators provide the service. Satellite companies getting ready to provide SMCS services have their own unique capabilities and limitations when it comes to offering SMCS services. These capabilities must be considered when developing solutions that may have to differ based on each SMCS satellite provider's capabilities. Emergency service solutions should be developed based on detailed information rather than imposing obligations. Uninformed obligations will be detrimental for the development of SMCS services in Canada.

¹⁰ *Single Network Future*, paragraph 191.

5.0 SMCS LICENSING FRAMEWORK

Q16. *ISED is seeking comments on its licensing proposals:*

- a. to issue space station spectrum licences to Canadian satellite operators seeking to provide SMCS***
- b. to issue FSAs to foreign satellite operators seeking to provide SMCS in Canada***
- c. to issue generic earth station spectrum licences to flexible use licensees seeking to offer SMCS***
- d. to limit the eligibility for SMCS earth station licences to flexible use licensees that are considered mobile service providers and that are in good standing with their existing flexible use licences, to authorize the subscriber devices that would be communicating with the SMCS satellites***
- e. to issue all SMCS licences on a Tier 1 basis and to limit their scope to only those the service areas and frequency blocks held by the flexible use licensee where they plan to offer SMCS, as supported by the SMCS Agreement***
- f. for FSAs and earth station licences, to require that an SMCS Agreement be in place and that specific provisions of that agreement be submitted to ISED as part of the application process***
- g. for Canadian space station spectrum licences, to require that an SMCS Agreement be in place and that specific provisions be submitted to ISED for review prior to offering SMCS within Canadian territory***
- h. to require that the following provisions of the SMCS Agreement be submitted to ISED for review as described in f) and g) above: the associated flexible use spectrum licences; the specific frequency blocks and areas (which must be part of the mobile service provider's spectrum holdings) where SMCS will be offered; a provision stating that the agreement is not exclusive; and any provisions dealing with interference management, coordination, compliance with technical rules; measures required to facilitate compliance with the SMCS earth station licence conditions; or any other aspects dealing with spectrum management; the signature page; and provisions related to the term of the agreement***
- i. that separate licences be required for different pairings of mobile service provider and satellite operator***

22. We support ISED's proposed licensing framework for SMCS services and ISED's view that the deployment of SMCS services "will need to be directed by Canadian mobile service providers to facilitate coexistence."¹¹ In particular, the requirement to have an SMCS agreement

¹¹ The Consultation, paragraph 79.

in place between MNOs and satellite operators will help mitigate interference and support the orderly development of SMCS services in Canada.

Q17. ISED is seeking comments on any potential use cases for SMCS in waters that are outside of flexible use service areas (e.g. off-shore), and how such use could be coordinated.

23. We have no comments on this question.

5.1 SMCS Licence Terms and Conditions

Q18. ISED is seeking comments on its proposals on licence term:

- a. For Canadian space station spectrum licences and foreign satellite approvals: a term that either aligns with the associated flexible use spectrum licence term or with the termination date of the agreement between the flexible use licensee and its partner satellite operator, whichever is earlier.**
- b. For generic earth station licences: annual spectrum licences for SMCS earth stations that will expire on March 31 of each year, with a high expectation of renewal. Licences would be renewed annually until the flexible use spectrum licence term ends, or when the associated SMCS Agreement is terminated, whichever is earlier.**

24. It is not clear why ISED is proposing to issue spectrum licences for SMCS earth stations on an annual basis. Given that the proposed licensing framework requires that an MNO have a SMCS agreement in place with a satellite operator before applying for a SMCS earth station licence and that a satellite operator is required to have a SMCS agreement in place with an MNO before applying for a SMCS space station licence, there should be no difference in the licence terms. Therefore, we recommend that the generic earth station licences have the same term as those for space station spectrum licences and foreign satellite approvals which is a term that either aligns with the associated flexible-use spectrum licence term or with the termination date of the agreement between the flexible-use licensee and its partner satellite operator, whichever is earlier.

Q19. ISED is seeking comments on its proposals to:

- a. impose conditions of licence for Canadian satellite spectrum licences to providing SMCS in Canada as set out in annex A**
- b. impose conditions on approvals issued to foreign-licensed satellites providing SMCS in Canada as set out in annex B**
- c. impose conditions of licence for SMCS generic earth station spectrum licences, as set out in annex C**
- d. not to allow the division, transfer or subordination of SMCS licences**

25. We support ISED's proposed conditions of licence.

Q20. ISED seeks comments on whether Option 1 (implement a mandatory roaming requirement for SMCS licences that would take effect 5 years following the publication of a decision) or Option 2 (not impose a mandatory roaming requirement) would be most appropriate. Alternate options supported with a strong rationale may also be considered.

26. SMCS services are an emerging technology where there will be differences in how different operators will provide services and initial SMCS services will have intermittent coverage. Given the emerging nature of the technology and the initial limitation on availability, we do not object to ISED's proposal not to impose a mandatory roaming requirement. If, however, ISED decides to implement a mandatory roaming requirement for SMCS licences five years following the publication of a decision, then the roaming requirement must apply to all SMCS licensees symmetrically and be offered at commercially negotiated rates. To do otherwise would unnecessarily distort the evolution of SMCS services by favouring one set of SMCS service providers over another. This is counter to Enabling Guideline (a) of the *Spectrum Policy Framework for Canada* which states that "market forces should be relied upon to the maximum extent feasible."¹²

¹² ISED, *SPFC - Spectrum Policy Framework for Canada*, DGTP-001-07, June 2007, section 4.4, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/official-publications/policies/spectrum-utilization-policies-sp/spfc-spectrum-policy-framework-canada>.

5.2 Licence Fees

Q21. ISED is seeking comments on the above proposed licence fees and service standards.

27. We do not object to ISED's proposed licence fees and service standards. However, we recommend that ISED consider imposing an overall cap on the total amount of fees paid by the industry (preferably set at a level to only recover the costs associated with managing spectrum resources). This would ensure that the quantum of annual spectrum licence fees will not lessen innovation and will support network deployment in areas with lower population densities and the Government's objective of increasing services to unserved and underserved areas.

6.0 TECHNICAL CONSIDERATIONS

Q22. Technical requirements to be applied to commercial mobile user equipment for SMCS: ISED is seeking comments on its proposal that existing technical requirements in the relevant SRSP and RSS in each frequency band would be sufficient for UE for SMCS.

28. We support ISED's proposal that existing technical requirements in the relevant SRSP and RSS in each frequency band would be sufficient for user equipment (UE) for SMCS services. SMCS services will offer supplemental coverage from satellites to existing mobile UEs without requiring any modification to the UE. The mobile UE will be agnostic to the type of base station it is connected to, whether it is a terrestrial station or a space station. Accordingly, the same technical requirements should be applicable to the UE in both cases.

Q23. Technical requirements to be applied to SMCS space stations: ISED is seeking comments on its proposal to apply the same technical requirements and coexistence measures, such as maximum field strength or power flux density, and unwanted limits, stipulated in the existing applicable SRSPs and RSS for terrestrial commercial mobile services in the respective band of interest, to space stations for SMCS. ISED is also seeking comments on whether the specified general provisions in existing technical standards are sufficient to enable SMCS and to facilitate coexistence with terrestrial operations. ISED is also seeking comments on any additional technical requirements that may be needed for space stations for SMCS.

29. We agree with ISED's proposal to apply the same technical requirements and coexistence measures stipulated in the existing SRSPs and RSSs for terrestrial commercial mobile services. The co-existence limits defined in the SRSP and RSS will be sufficient for co-channel operations

as those limits are straight forward and can be applied to signals emanating from satellites. However, for the case of adjacent band operations an out-of-band emission limit must be defined to account for satellites operating under very different geometry from terrestrial networks. The aggregate impact of unwanted signals emanating from multi-beam satellites employing high gain antennas can lead to harmful interference to adjacent band operations.

30. SMCS operations will be offered on a NINP basis, and the protection of terrestrial networks is of utmost importance. Canadians rely on the terrestrial mobile services which operate under strict service availability, accessibility and quality requirements and billions of dollars have been invested in building these networks. It is essential that the terrestrial networks continue to operate without interference from SMCS services.

31. The FCC set a PFD limit of $-120 \text{ dBW/m}^2/\text{MHz}$ ¹³ for out-of-band emissions in all SCS bands measured at 1.5 metres above ground level. The limit accounts for the aggregate interference from satellite operations and a 6 dB I/N interference threshold.¹⁴ The FCC concluded that these "limits are both necessary and technologically feasible for satellite operators providing SCS."¹⁵ It is therefore clear that the uniform limit not only simplifies the co-existence rules but is also necessary to adequately protect terrestrial operations from SMCS services. Additionally, the prospective SMCS satellite operators have the technological capability to meet this limit. Therefore, we recommend ISED adopt the FCC limit of $-120 \text{ dBW/m}^2/\text{MHz}$ for SMCS bands in order to adequately protect terrestrial operations.

32. There have been certain recommendations to allow less stringent limits for bands above 1 GHz. We do not support such recommendations as they are not based on thorough analysis and are not supported by evidence that relaxing the limits will offer the same protection to terrestrial networks. AT&T has submitted an analysis in an FCC proceeding showing that a relaxed out-of-band emissions limit in the bands above 1 GHz can result in 18% throughput/capacity reduction.¹⁶ SMCS services are just being developed and ISED should avoid adopting technical parameters that are relaxed or permissive considering that SMCS service has not undergone extensive development and testing. In addition to the issue of interference with terrestrial networks, having different technical limits in Canada than the U.S. could lead to other

¹³ *Single Network Future*, paragraph 205.

¹⁴ *Ibid.*

¹⁵ *Ibid.*, paragraph 206.

¹⁶ AT&T Petition to deny SpaceX's request for an SCS out-of-band emission (OOBE) waiver, page 6, FCC, <https://www.fcc.gov/ecfs/search/search-filings/filing/1081242986780>.

operational issues as SMCS providers are expected to offer the service over North America using the same satellite.

Q24. *Interference resolution: Given that SMCS is proposed to operate on a NINP basis, ISED is seeking comments on its proposal to require operators of SMCS (both earth stations and satellite licensees) to assume the onus of mitigating any interference that occurs to licensed in-band and/or adjacent band/block terrestrial operations. ISED is seeking comments on any potential challenges in complying with the existing coexistence measures prescribed in the applicable technical standards.*

33. We support ISED's proposal to require SMCS operators (both satellite and earth station licensees) to take steps to eliminate interference to other licensed operations. Satellite operators are able to mitigate potential interference to other licensed operations by increasing the no-service protection area and/or reducing satellite beam power near their service area boundary.

Q25. *Coexistence between SMCS space stations: ISED is seeking comments on its expectation that operators of SMCS space stations coordinate their constellations and resolve any case of interference between them that may arise.*

Q26. *Protection of radio astronomy services: ISED is seeking comments on its proposal to require SMCS satellites to meet the protection criteria as set out in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2, for the applicable radioastronomy frequency bands.*

34. We have no comments on these questions.

Q27. *Cross-border coexistence: ISED is seeking comments on its proposal to apply existing cross-border rules, as defined in the applicable TRAA, and on whether other technical considerations must be taken into account to ensure protection of cross-border terrestrial operations.*

35. We support ISED's proposal to use existing cross-border rules. Existing Terrestrial radiocom agreements and arrangements (TRAA) could be used as a framework for cross-border SMCS service coexistence. However, current TRAA's have rules specific to terrestrial mobile networks which may not apply to SMCS services, and thus, may not address cross-border interference from SMCS operation. New rules will be needed. Until a new TRAA can be developed, we recommend ISED adopt rules similar to FCC rules in §25.208(w) for cases where current TRAA's do not address SMCS operation. §25.208(w) states:

- (w) The aggregate field strength at the earth's surface produced by all visible beams and satellites within each satellite constellation providing SCS service as they move over any given point or area in bands authorized by NG33A in the United States Table of Frequency Allocations and § 25.125 must meet:
- (1) 40 dBµV/m for the 600 MHz, 700 MHz, and 800 MHz bands; and
 - (2) 47 dBµV/m for the AWS and PCS bands; and
 - (3) Licensees must comply with all applicable provisions and requirements of treaties and other international agreements between the United States Government and the governments of other countries, including Canada and Mexico. Absent specific international agreements regarding SCS, licensees must comply with the limited provided in paragraphs (w)(1) and (2) of this section.¹⁷

Q28. ISED is seeking comments on the extent to which technical factors such as ensuring coexistence, managing interference, etc. could impact SMCS coverage.

36. The expected solution for co-existence is to leave a one-beam protection area at the SMCS service area boundary, which would result in either no, or degraded, SMCS service within the protection area. Given that SMCS operation is on a NINP basis, the SMCS operators need to add a protection area at the service area boundary. This can be problematic if there are a number of service areas boundaries that need to be accommodated. For example, Tier 5 service areas are used for access spectrum licences. Given the smaller Tier 5 service areas for access licensing, the addition of a protection area around each awarded access licence could create several large holes in SMCS service coverage. The extent of the negative coverage impact could grow over time as more access licenses are awarded. This could undermine the usability and the viability of SMCS services.

7.0 OTHER CONSIDERATIONS

Q29. ISED is seeking comments on any other considerations related to the introduction of SMCS in Canada which may not have been specifically addressed in this consultation.

37. We request that ISED provide guidance on the use of gateway earth stations located outside of Canada. Gateway earth stations are a key component of the SMCS satellite network. They provide connectivity to and from satellites to terrestrial networks. Unlike geostationary

¹⁷ FCC, *Code of Federal Regulations* (CFR), Title 47, Part 25, Subpart C, § 25.208, <https://www.ecfr.gov/current/title-47/part-25/subpart-C>.

satellites, LEO satellites require several gateways. LEO satellites when passing over a certain geography are required to communicate with a terrestrial gateway that is situated within the footprint of the satellite. As a LEO satellite moves over the earth, the footprint changes and thus the satellite is required to communicate with another gateway to maintain communication with terrestrial networks. As a result, we expect that multiple gateways will be required to support SMCS services across Canada.

38. SMCS satellite providers are planning to offer the service across North America partnering with MNOs in both the U.S. and Canada. The number of gateways required to provide service over the U.S. and Canada could be optimized by planning gateway locations such that some gateways can cover both the U.S. and Canadian footprint. This would be practical and would reduce the initial investment for both SMCS satellite providers and their MNO partners.

39. Such an arrangement would result in Canadian SMCS traffic flowing through a U.S. gateway into Canada and vice versa. We recommend that ISED clarify that such arrangements are permissible as it would not only result in cost savings but will also hasten the rollout of SMCS services across Canada. ISED has already allowed such arrangements for MSS operations in the past.¹⁸

40. With regards to licensing for gateways we believe that the framework already exists in Canada and using that framework SMCS satellite operators or their MNO partners should be able to licence gateways using any available Fixed Satellite Service (FSS) band in Canada (while respecting band specific limitations).¹⁹ We support the use of site-based licensing for SMCS gateways as required per the licensing framework for earth stations.²⁰ The requirements to protect the gateways from interference and their limited number in Canada is aligned with the site-based licensing approach already adopted for FSS, BSS, and MSS gateways, rather than the generic licensing approach. Moreover, we recommend that ISED should require that existing

¹⁸ ISED, *Policy Framework for the Provision of Mobile Satellite Services via Regional and Global Satellite systems in the Canadian Market*, page 1, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/sites/default/files/attachments/2022/rp007.pdf> which states that "routing of mobile satellite services between points in Canada, and between Canada and points in the United States will be unrestricted."

¹⁹ Such as ISED's *Moratorium on the Licensing of Earth Stations in the Frequency Bands 26.5-28.35 GHz and 37.5-40.0 GHz in Certain Areas*, SAB-002-21, April 2021, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/official-publications/policies/spectrum-advisory-bulletins-sab/sab-002-21-moratorium-licensing-earth-stations-frequency-bands-265-2835-ghz-and-375-400-ghz-certain>.

²⁰ ISED, *Decision on Updates to the Licensing and Fee Framework for Earth Stations and Space Stations in Canada*, SMSE-008-22, May 2022, Section D2, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/learn-more/key-documents/consultations/decision-updates-licensing-and-fee-framework-earth-stations-and-space-stations-canada>.

Canadian satellite gateway operators be open to hosting SMCS gateway earth stations as is the case for C-band gateways.²¹ This would hasten the deployment of SMCS services in Canada and prevent unnecessary duplication of facilities.

*** End of Document ***

²¹ ISED, *Decision on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band*, SLPB-002-21, May 2021, Section D31, <https://ised-isde.canada.ca/site/spectrum-management-telecommunications/en/spectrum-allocation/3650-4200-mhz/decision-technical-and-policy-framework-3650-4200-mhz-band-and-changes-frequency-allocation-3500>.