



TELUS COMMUNICATIONS INC.

Comments for
CONSULTATION on a POLICY, LICENSING and
TECHNICAL FRAMEWORK for
SUPPLEMENTAL MOBILE COVERAGE by
SATELLITE

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Introduction

1. TELUS appreciates the opportunity to comment on the *Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite* (“the Consultation”)¹.

Summary of TELUS’ key proposals on policy related to the Consultation

2. TELUS is pleased that ISED is taking steps to establish a regulatory framework to make SMCS possible in Canada (following a similar approach that was adopted in the US in March 2024). This framework will enable mobile providers to fill coverage gaps with satellites, especially in otherwise underserved rural and remote areas, using spectrum already allocated. That this service can be provided using existing handsets with no changes means Canadians will reap the benefits as soon as SMCS services are deployed.
3. The details behind TELUS’ recommendations and TELUS’ comments in response to the various questions raised by ISED follow in the main body of this document, and can be summarised as follows:
 - SMCS offers the ability to connect existing handsets in use today by Canadians through the expanded use of commercial mobile spectrum. Consistent with ISED’s proposed framework, TELUS agrees that commercially negotiated agreements between a mobile wireless licensee and a satellite licensee are a fundamental requirement for any SMCS service to be initiated and commercially

¹ *Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite*, Canada Gazette SMSE-003-24, published June 2024. Link: <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#sB>

negotiated agreements must remain a requirement as the service evolves in the future.

- SMCS should be enabled under a MSS secondary allocation, but without the excessive restriction of operating completely on a no-interference, no-protection basis. Enabling secondary use is consistent with the intended purpose of this framework, and provides a known regulatory framework for operators to develop a business case to invest in this nascent and yet to be proven technology.
- SMCS offers an exciting potential with technology early in the development cycle. TELUS urges ISED to develop a flexible regulatory framework that allows for all commercial mobile spectrum where technically feasible (including Public Safety Broadband spectrum, once assigned) to be used while not restricting the service area size. Additionally, setting appropriate technical rules for co-channel, adjacent channel and cross-border coexistence is crucial, as overly restrictive standards may inhibit innovative growth.
- Emergency services should not be mandated to be available at SMCS launch. Currently the CRTC has no 9-1-1 requirements for handsets connected to MSS. Nonetheless, TELUS anticipates that stable and reliable voice capabilities will be available at some point in the future over SMCS, making access to 9-1-1 an important feature of the service. Having said that, whether and when 9-1-1 access should be provisioned on SMCS should be determined by the CRTC based on its authority under the *Telecommunications Act*, taking into account that it has the expertise and history in terms of setting the 9-1-1 requirements for

wireless service providers in Canada. To ensure a coherent 9-1-1 framework, ISED should not impose any 9-1-1 requirements and defer to the CRTC's jurisdiction over 9-1-1.

- SMCS is a nascent technology and will require years of development and investment in order for additional capabilities and services to be rolled out. TELUS recommends that ISED not impose a mandatory roaming requirement (as per ISED's "Option 2") at this early stage of SMCS technology development. While there may be clear benefits for all Canadian mobile users to gain access to this expanded coverage and service, roaming arrangements should be reached under commercially-negotiated terms at this time.

TELUS' comments on specific questions posed by ISED

Q1-Q8: General considerations for identifying bands for SMCS

Q1: Considerations to identify frequency bands for SMCS

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

4. TELUS notes that ISED's proposed approach to establishing a framework for SMCS differs from that of the FCC. The FCC chose a simplified approach by not tackling many technical considerations and confining the US's new "SCS" service to bands with (a) a single terrestrial entity holding spectrum block(s) that span all of the continental US and (b) where there are no primary, non-flexible-use legacy incumbent operations in the band. Given the fact that SCS in the US will still need to coexist at international borders, coupled with the extent of fragmented flexible use holdings in Canada, TELUS commends ISED for postulating a divergence in this regard.
5. Rather than identifying specific terrestrial bands for SMCS use, ISED should consider identifying SMCS as a permitted use of commercial mobile terrestrial spectrum subject to requirements adopted in the final framework (including being subject to reaching an agreement between satellite operator and terrestrial licensee and demonstration of adherence to technical protection limits that would prevent harmful interference to adjacent-band or adjacent-area licensees). The flexible use licensee must retain exclusive rights to the spectrum.

6. In subsequent questions, TELUS addresses any perceived challenges to providing SMCS services while ensuring co-channel, adjacent channel and service area coexistence with both cellular and non-cellular terrestrial services. TELUS suggests that where SMCS operations are feasible in any flexible use band without harmful interference to terrestrial wireless operations, ISED should consider such bands for the SMCS framework.
7. TELUS recommends that ISED not limit SMCS to a subset of flexible use frequency bands, but rather open the framework to all flexible use bands. This principled approach would serve to not limit future SMCS development and would alleviate the need for further consultation cycles to enable SMCS in other flexible use bands, including TDD bands as the technology and coexistence feasibility dictates.

Q2: Service area for SMCS

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.

8. TELUS views SMCS as an opportunity to help to close commercial mobile service coverage gaps by enabling an expanded service potential using flexible use spectrum where it otherwise lies fallow². SMCS could provide significant public safety benefits, including potential emergency coverage in areas that terrestrial networks do not reach

² TELUS maintains that it is natural for some commercial mobile spectrum to otherwise lie fallow as population density, government subsidies and business cases dictate.

today. To best realise these valuable potential benefits, ISED should establish a flexible framework to provide the best chance of success for this nascent technology in Canada.

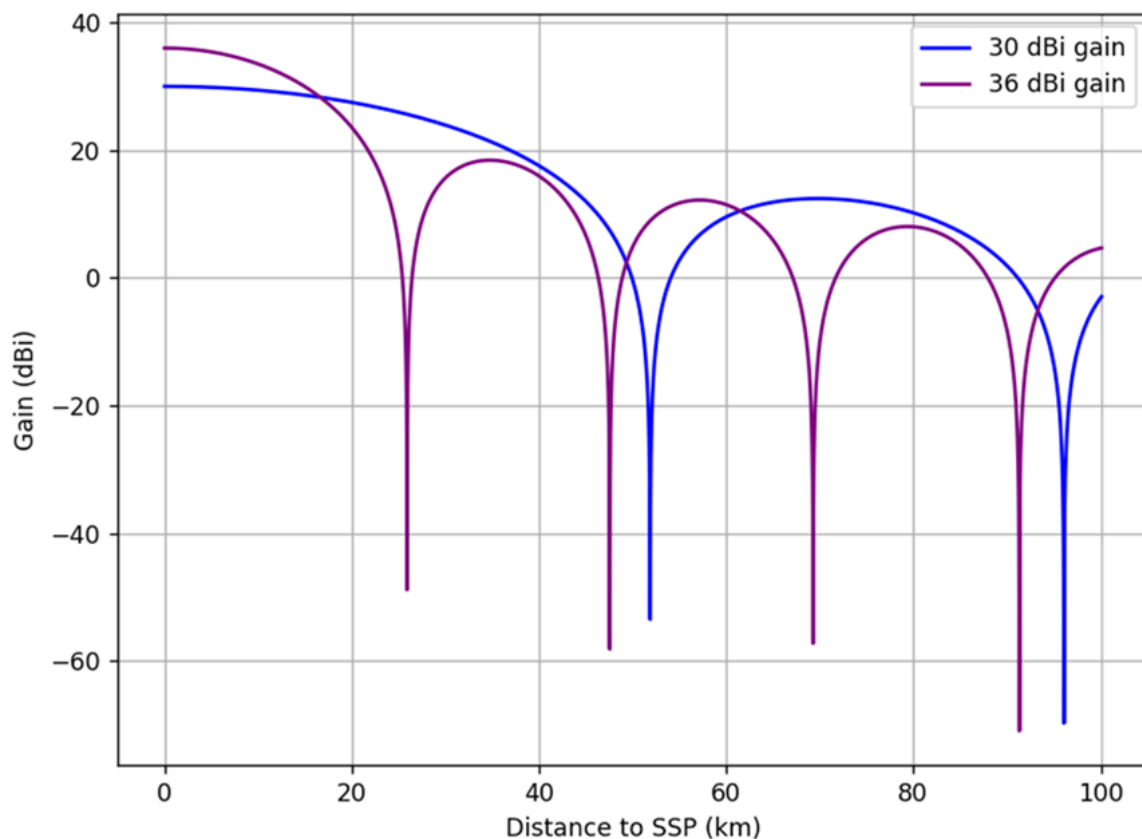
9. As described in TELUS' response to Question 1, ISED proposes to deviate from the simplistic criteria established by the FCC and proposes a less restrictive approach for which spectrum licences should be eligible for the provision of SMCS services. TELUS urges ISED not to define a minimum service area size as a requirement to obtain an SMCS licence, so as to not prejudge what may or may not be technically and economically feasible. ISED should permit satellite operators to hold an SMCS licence if they have negotiated a commercial agreement with a terrestrial licensee for a specific area and they can demonstrate that they will not cause harmful interference to the adjacent channels / bands / areas of operations.
10. The generally fragmented nature of flexible use holdings in Canada makes it almost impossible to not consider the presence of mobile service providers holding the same frequency block in adjacent areas. In its response to Question 22, TELUS proposes PFD limits for co-channel operations with adjacent service areas by band for the SMCS service to coexist with mobile services without unduly increasing the interference risk.

Q3: Reduced protection areas around terrestrial networks

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.

11. Smaller beam sizes are expected to result in reductions in protection area sizes, provided that the system is designed with careful consideration of the maximum allowable EIRP. For example, smaller spot beams tend to have higher gains, and antenna sidelobes would not be significantly lower than the main lobe of the larger spot beam if the same conducted transmission power was used, as illustrated by the RABC in Figure 1 below.

Figure 1: Satellite antenna gain at different SSP distances



12. All terrestrial bands have well defined technical rules (power limits, emissions limits, and protection PFDs to and from interferers). An SMCS operator should be able to demonstrate that it will not cause harmful interference in a given geographic area. TELUS recommends that ISED not limit the possibility of offering an SMCS service by arbitrarily setting a minimum service area size or Tier level. As long as an SMCS operator can demonstrate that it will not cause harmful interference in the proposed area or to adjacent area operations, it should be permitted to operate regardless of the geographic size of the licence. The economics involved will determine the business case for small areas and as such, there need not be a regulatory impediment.

Q4: Considerations for SMCS frequency band applicability

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.
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13. ISED should establish a framework such that terrestrial licensees can permit use of their commercial mobile licences by satellite operators for SMCS on a voluntary basis under commercially agreeable terms and conditions, so long as there is no harmful interference to others (beyond currently established technical requirements).
14. Further to TELUS' response to Question 1, ISED must not allow SMCS in mobile spectrum bands that have been identified for shared use through the non-competitive local licensing framework (NCL) due to SMCS being fundamentally incongruent with the shared and localised nature of NCL. Additionally, TELUS urges ISED to specifically exclude SMCS authorisations on access spectrum licences (i.e., those issued under

ISED's Access Licensing framework), as justified in TELUS' response to Questions 10 and 16.

Q5 & Q6: Frequency bands for SMCS

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)

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

15. TELUS supports a framework whereby SMCS is authorised as an expanded use for all terrestrial flexible use spectrum bands, such that flexible use licensees may permit SMCS uses under commercially negotiated terms, so long as there is no harmful interference to others and subject to requirements adopted in the final SMCS framework. ISED should not unnecessarily exclude any flexible use bands, to only later require an additional consultation process before adding them to the framework.
16. WCS, BRS-FDD, and 700 MHz Public Safety Broadband spectrum should be included in the baseline of bands, while commercial mobile TDD bands should be considered as

possible candidates for SMCS operations. TDD bands are being considered in 3GPP standards groups as it is expected that new technologies will enable sufficient control over timing to ensure protection of adjacent services. WCS is a candidate band for review at the ITU³. While it is expected that BRS will be transitioning to TDD there does not appear to be any specific reason for it to be excluded. The 3500 MHz and 3800 MHz bands are globally allocated for mobile use and could be future candidates for SMCS as well.

Q7 & Q8: Changes to the CTFA

Q7. ISSED 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. ISSED is seeking comments on its proposal to enable SMCS on a no-interference, no-protection basis with respect to all radiocommunication services.

17. The ITU Radio Regulations do not currently include any MSS allocations⁴ in the bands allocated for mobile service under consideration. Historically, it was considered very difficult for mobile services and MSS to coexist. Importantly, WRC-27 Agenda Item 1.13 will consider new coexistence studies between mobile satellite services (MSS) and terrestrial mobile services in the same bands, including a possible study of coexistence with TDD bands. As a consequence of the studies, WRC-27 may decide to add MSS allocations in some mobile bands. However, ISSED, much like the FCC, is proposing to

³ As noted by ISSED in Paragraph 20 of the Consultation, WRC-27's Agenda Item 1.13 "direct to device" studies will examine potential allocations in 694/698 MHz to 2.7 GHz, which could include the 2.3 GHz (WCS) band.

⁴ Except for Cellular band as ITU RR 5.317 allocated 806 - 890 MHz to MSS on a primary basis.

introduce domestic authorisations for MSS by relying on Article 4.4 of the ITU Radio Regulations, which requires the allocation to be on a no harmful interference, no protection from harmful interference basis towards any system.

18. Licensed SMCS use of terrestrial flexible use spectrum under a MSS secondary allocation must only confer rights on a secondary basis and must not create any expectation that the spectrum is being designated for satellite use.
19. A terrestrial licensee, or group of licensees, could voluntarily enter into a commercially negotiated agreement to share their licensed spectrum with an SMCS satellite operator to offer SMCS services. That would make an SMCS satellite operator's rights derivative of, and secondary to, the rights of the terrestrial licensee. ISSED's proposed SMCS framework only creates secondary and derivative rights to spectrum, which would make clear internationally that Canada continues to consider the spectrum to be terrestrial mobile spectrum, maintaining international harmonisation of terrestrial mobile spectrum designations.
20. The SMCS status for space station operations internationally would still be under a no harmful interference, no protection from harmful interference basis as required by the ITU RR Article 4.4.
21. TELUS does not agree that SMCS be required to operate on a strict no-interference, no-protection basis with respect to all radiocommunication services. SMCS should be enabled by a secondary MSS allocation, and not be permitted to cause harmful interference to primary or existing secondary services.

22. TELUS recommends the following footnote to all terrestrial flexible use bands identified for SMCS, as described in TELUS' response to Questions 5 and 6 (*Emphasis added for TELUS' insertions*):

ADD Cxx: *Additional allocation*: The following frequency bands 617-652 MHz/663-698 MHz, 698-756 MHz/777-787 MHz, **758-768/788-798 MHz**, 824-849 MHz/869-894 MHz, 1850-1915 MHz/1930-1995 MHz, ~~and 1710-1780 MHz/2110-2180 MHz~~, **2305-2320/2345-2360 MHz, 2500-2690 MHz, and 3450-3900 MHz** are also allocated to mobile-satellite service on a secondary basis, limited to the provision of supplemental mobile coverage by satellite (SMCS) only. ~~Further, the use of these bands for SMCS shall be based upon not interfering with, or claiming protection from, any radio services.~~ *Use of these bands for SMCS is subject to the rules of the SMSE-006-24 Decision. If any unwanted emission from a transmitter operating in the SMCS service results in harmful interference to users of another radio service, ISED may require a greater attenuation of the SMCS emission than specified in the SMSE-006-24 Decision. SMCS shall not cause harmful interference to stations to which frequencies are already assigned in the same bands allocated on a secondary basis to a radio service.*

Q9 - Q10: SMCS deployment and road coverage

Q9: Road coverage

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.

23. TELUS anticipates that SMCS service offerings will be of limited functionality in the short term and ISED should not equate them to the robust wireless services that Canadian consumers expect from terrestrial networks. In its technical studies, TELUS calculated that the range of SNR values varies between 0 dB and 20 dB, thus enabling outdoor coverage anywhere within line of sight (LOS) of the satellite. For roads and

highways, where the in-car penetration loss is expected to be around 7 dB, in-car coverage would be limited only to the areas where the free-space SNR exceeds about 6 dB (without any margins).

24. TELUS recognises the potential benefits that SMCS could offer in supplementing coverage where services are non-existent today, including along roads and highways. However the initial service expectation for customers should be that this is a limited service with low bandwidth, with texting being the primary use. ISED must continue to work with terrestrial providers with subsidies to fill coverage gaps along roads and highways.

Q10: SMCS contributing to mobile deployment

Q10. ISED is seeking comments on its proposal that SMCS would not contribute to meeting deployment conditions associated with flexible use licences.
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25. As above in the response to Question 9, TELUS agrees with ISED that in the near term, SMCS will be a limited service and not a replacement for terrestrial coverage. As such, SMCS should not count towards the deployment requirements of flexible use terrestrial licences. SMCS not counting toward deployment requirements would be consistent with SMCS being supplemental to terrestrial wireless services. If SMCS services were to count toward flexible use deployment conditions, this could undermine the intent of deployment conditions of licence. Those licensees, who to date have only built urban

coverage, would be provided a work-around to avoid the onerous suburban and rural build requirements under which the flexible use licences were made available.

26. In the future, if SMCS services expand beyond text and limited calling to become a more robust service offering that is akin to terrestrial wireless services, ISED should revisit by way of industry consultation whether it is appropriate for SMCS service to contribute to meeting mobile deployment requirements.
27. TELUS has identified possible policy incompatibility issues between Access Licensing and the SMCS framework. As proposed, a licensee that has deployed SMCS in some of its undeployed rural spectrum could potentially face new and challenging coexistence requirements, if some of its spectrum were provided to another licensee under the Access Licensing framework. Regardless of whether ISED decides that SMCS service contributes to mobile deployment, a provision in the Access Licensing framework should be introduced to ensure that Cellular and PCS licences being used to offer SMCS services in a given service area would not be eligible for Access Licensing on a first-come, first-served basis.

Q11 - Q15: Emergency management and network reliability

Q11 & Q12: Considerations for network reliability, resilience and emergency roaming

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.

28. The very nature of SMCS is as a supplemental service to terrestrial networks and there will be material limitations in providing network reliability and resilience using SMCS. Emergency roaming in the MOU on Telecommunications Reliability (MOU) is intended for terrestrial wireless networks such that where there are multiple networks in a geographic area and one network fails, users may roam on an emergency basis until the home network is restored.
29. SMCS, on the other hand, operates only outside of the terrestrial network coverage. A customer's expectation of service should be much different than when connected to the terrestrial network. Further, the MOU only requires the provision of emergency roaming "to a level that can be accommodated by its existing [network] capacity" and that will not materially adversely impact the services the roaming provider ordinarily provides to its own end-user customers.⁵

⁵ *Memorandum of Understanding on Telecommunications Reliability*, published September 2022.
Link: <https://ised-isde.canada.ca/site/ised/en/memorandum-understanding-telecommunications-reliability>

30. Given the very limited capacity of SMCS services in at least the near term and the potential bandwidth demands that emergency roaming via the MOU could cause on the SMCS service provider, emergency roaming between service providers might not be technically or practically feasible. Just as importantly, forcing a service provider that deploys SMCS to enable emergency roaming for other providers could disincent wireless service providers from seeking commercial agreements with satellite licensees to implement SMCS solutions in the first place, given the bandwidth and load demands that emergency roaming would cause. As the technology develops, with additional capacity on satellite systems, and adoption increases, then ISED could consult upon adding SMCS services to the MOU.

Q13, Q14 & 15: SMCS 9-1-1 and the National Public Alerting System

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.

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

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.

The CRTC Is the Regulator that Should Investigate any 9-1-1 Requirements for SMCS

31. ISED has correctly identified that SMCS has the potential to support 9-1-1 capabilities in the future. However, whether or not 9-1-1 could and should be supported over SMCS

is an issue that should be determined by the CRTC. The CRTC is the regulator with sole jurisdiction over the provision of 9-1-1 services. The CRTC has asserted that authority in 81 separate 9-1-1 decisions since 1997⁶, most notably, creating a framework for the Next-generation 9-1-1⁷, the network which SMCS calls, sessions and events will need to transit to reach a public safety answering point (“PSAP”).

32. As the telecommunications regulator, the CRTC is continually monitoring developments across the industry, and should SMCS develop beyond a nascent service, the CRTC could then undertake a review of the applicable 9-1-1 requirements for SMCS. As such, ISED should defer consideration of 9-1-1 and SMCS to the CRTC.
33. To date, the CRTC has not mandated that mobile satellite services provide access to 9-1-1 services. How and when such access should be provided should only be determined by the CRTC, because it has the technical, operational and policy infrastructure along with decades of experience in supporting new 9-1-1 technologies and how new technologies interact with 9-1-1⁸.
34. TELUS recognizes that the FCC adopted rules⁹ in the US that required that 9-1-1 be supported by service providers that deploy SCS. However, while the CRTC has never mandated that mobile satellite providers make 9-1-1 access available to customers, the FCC has, due to a very different scope and distribution of 9-1-1 responsibilities in the United States.¹⁰ As such, there are clear differences in 9-1-1 service delivery for satellite services across the countries, which demonstrates why there could be different 9-1-1

⁶ <https://crtc.gc.ca/eng/phone/911/pol.htm>

⁷ <https://crtc.gc.ca/eng/archive/2017/2017-182-1.htm>

⁸ VoIP and wireless services are two examples.

⁹ *Single Network Future: Supplemental Coverage from Space*, GN Docket No. 23-65

¹⁰ CC Docket No. 94-102, IB Docket No. 99-67; FCC 03-290

rules in Canada for SMCS versus the US and SCS.

There Are Technical Limitations that Prevent SMCS from Providing 9-1-1 At Present

35. Of course, SMCS offers the potential to enable emergency communications in areas of the country and to Canadians that would otherwise be out of reach of a conventional mobile wireless network. Developments in technology are already giving customers the benefit of additional coverage by way of satellite.
36. As an example, Apple through its Emergency SOS¹¹ via Satellite is the first iteration where a cellular customer could obtain emergency services connectivity via satellite in areas where a cellular network is unavailable. However, it does not provide direct access to a 911 PSAP. When an iPhone user is in an area where no terrestrial network coverage is present and wishes to place a 9-1-1 call, Apple SOS via Satellite provides limited messaging capabilities, by allowing the iPhone user to select from a drop down list to predetermined questions such as what type of emergency is being experienced, who needs the help and if the distressed person is breathing normally. The device will also provide device-generated location information and the iPhone battery level to Apple's partner call centre, who then can forward that information along to a PSAP that may be in a position to deploy first responders to assist the iPhone user. The information provided by Apple indirectly to PSAPs through their Emergency SOS via Satellite offering does not meet the standards for a Canadian 9-1-1 call, which in all cases requires a 9-1-1 session to be initiated via a voice session to 9-1-1.

¹¹ <https://support.apple.com/en-ca/guide/iphone/iph2968440de/ios>

37. SMCS is a nascent service and is not currently equipped to handle current Canadian terrestrial 9-1-1 requirements. Notably, SMCS will not provide reliable voice capabilities. Canadian Next-generation 9-1-1 networks have been built to the National Emergency Number Association (“NENA”) i3 version 3 standard¹² and any traffic transiting to Canadian PSAPs must adhere to that standard. SMCS traffic will not at the outset meet that standard and, as such, cannot be carried by Canadian 9-1-1 networks. ISD must also take into account that text to 9-1-1, though widely available in the United States, has not yet been made available in Canada.
38. Given the lack of reliable voice capabilities for SMCS, it would be necessary to establish the underlying expectations for Text to 9-1-1 as well as identification of a call centre that would be willing to receive these messages, provide initial triage and interface with PSAPs to obtain emergency services. Since the SMS-texting does not include support for conveying a person’s location, it would be necessary for the caller to explicitly provide their location to an intermediary operator prior to being transferred to a PSAP that could assist the caller. Given that voice services are not expected to be reliable at launch, it may not be feasible to dispatch first responders. In short, there are significant technical, regulatory and logistical issues that must be addressed in detail with the entire Canadian 9-1-1 industry before 9-1-1 services can be supported over SMCS.

¹²

<https://www.nena.org/news/572966/NENA-Releases-New-Version-of-the-i3-Standard-for-Next-Generation-9-1-1.htm>

39. Once SMCS has reliable voice functionality, ISED could request that the CRTC undertake a review of how SMCS voice calls can be delivered to the Canadian 9-1-1 points of interconnection and full integration into the Canadian 9-1-1 eco-system can be implemented. The CRTC is the proper regulatory authority to explore and mandate SMCS to 9-1-1.

Wireless Public Alerting (“WPAS”)

40. The CRTC in Telecom Regulatory Policy CRTC 2017-91 - *Implementation of the National Public Alerting System by wireless service providers to protect Canadians*, set out that wireless service providers were required to receive and distribute alerts from emergency management organisations across Canada. In that decision, the Commission was clear that satellite services were exempted from the requirement to participate in the Canadian WPAS. The Commission cited that the “inability to undertake precise geo-targeting¹³” would make the provision of WPAS impractical. As with 9-1-1, ISED must not regulate the provision of WPAS as in so doing, ISED risks creating dual, and potentially conflicting regulatory regimes. Accordingly, any investigation into WPAS requirements and SMCS should be undertaken by the CRTC, not ISED. ISED’s focus must be limited to the framework that encourages the deployment of the technology, at which point, the CRTC can examine whether WPAS should be made available on SMCS.

¹³

TRP 2017-91

41. Initially, WPAS could work for SMCS users the same as it does for any other user. However, because the satellite spot beams will be significantly larger than that of a typical terrestrial tower coverage area, it is possible that some users will be notified about alerts that are not relevant to them, given their specific location in relation to the emergency. In the event of notifications such as evacuation orders that should otherwise have a very focused location delivery, WPAS over SMCS could lead to confusion. There is research underway to enable technology that will compare the handset's current location with broadcast information included in the emergency alert to validate whether or not specific alerts are applicable on a user by user basis. These types of developments would serve to reduce possible confusion with respect to misdirected alerts.

Emergency Call Completion and Roaming on SMCS

42. With regards to the concept of roaming arrangements, while an “emergency attach” feature exists for voice calls to 9-1-1 even where no roaming arrangement is in place, no similar mechanism exists for 9-1-1 texting, since 9-1-1 texting is not a service that is currently available in Canada. As a result there would either need to be development to support the creation of such a feature/operational capability to facilitate this.

Emergency services should not be mandated to be available at SMCS launch

43. Accordingly, access to 9-1-1 and other emergency services, like 9-8-8, should be considered out of scope for the purposes for any SMCS offering at the outset. This determination should be reviewed by the CRTC as SMCS develops and when SMCS is

able to integrate reliably with the Canadian 9-1-1 ecosystem. Once stable and reliable voice capabilities are made available for SMCS, 9-1-1 access should be provisioned as soon as is technically practical, in a timeframe and manner as dictated by the CRTC.

Q16 - Q21: SMCS licensing framework

Q16: SMCS licensing

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

SMCS Eligibility

44. SMCS is so promising because it works with all the existing handsets in use today by Canadians. Fundamental to this expanded use of terrestrial spectrum is the collaboration between wireless service providers and satellite operators. A commercially negotiated agreement is the basis for terrestrial licensees to permit use of their spectrum in certain geographies by a satellite operator before any SMCS authorisation may take place.
45. As noted in TELUS' response to Question 4, TELUS maintains that an access spectrum licence should not grant eligibility for an SMCS licence. Access licences could present unforeseen and indeterminate coexistence challenges since there can be up to two licensees (i.e., the primary spectrum licence and the access spectrum licence) able to deploy in certain Tier 5 areas. Further, NCL is *local* licensing and as such NCL licensees should not be eligible for SMCS licences.

SMCS Licensing

46. Once an agreement has been reached, TELUS agrees with ISED that the licensing framework for MSS systems should be used to issue a space station spectrum licence or foreign satellite approval, as appropriate to the satellite operator seeking to offer SMCS services. However, TELUS notes that the requirement to offer service anywhere within Canadian territory would require an explicit exemption given the supplementary nature of SMCS. The application should include a description of the coverage area that will be

served as well as any and all measures taken to ensure these operations will not cause harmful interference domestically or internationally.

47. Similarly, the existing terrestrial handset must be authorised to transmit and receive to and from a satellite. TELUS does not agree that a generic SMCS earth station spectrum licence should be issued to terrestrial licensees in order to offer SMCS services. Despite the subscriber devices communicating with satellites for SMCS, the subscriber devices are fundamentally not operating any differently when connecting via SMCS and are already covered by the terrestrial licences and have been certified for operations in Canada to the applicable RSS.
48. To align with the mobile satellite licensing framework and provide for a simplified process, TELUS agrees that SMCS licences should be issued on a Tier 1 basis and that the area of operation be limited in accordance with the commercially negotiated agreement. The SMCS licence must align with the frequency block(s) of the applicable terrestrial flexible use licence(s) and the specified area of operation must be equal to or smaller than the licence area of such licence(s).
49. TELUS further notes that terrestrial spectrum licences are fragmented across Canada in many bands. As such it may be possible that a satellite operator holds multiple agreements with multiple licensees. ISED proposes and TELUS agrees that such an arrangement may be covered with the issuance of separate licences for different pairings of mobile service provider and satellite operator.

SMCS Application Process and Non-Exclusivity

50. TELUS agrees that certain required provisions of the agreement between the wireless service provider and satellite operator be submitted to ISED as part of the SMCS application process. The provisions should be limited to what is necessary for reviewing the application including:
- The spectrum licences including frequency blocks
 - SMCS service area(s)
 - Provision stating that the agreement is not exclusive
 - Details regarding interference management, coordination, compliance with technical rules
 - Agreement signature page
 - The term (i.e., duration) of the agreement.
51. TELUS agrees that ISED's connectivity objectives could be best served by disallowing exclusive agreements between wireless service providers and satellite operators in the short term. This would promote a more dynamic and innovative ecosystem and limit any potential anti-competitive behaviour that could delay the benefits of SMCS to some Canadians. TELUS recommends that ISED allow the technology and the market to evolve and expand before consulting on whether to issue SMCS licences under exclusive agreements. For clarity, TELUS does not consider any additional intervention is required beyond a short term prohibition on exclusive agreements.

Q17: Off-shore use cases

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.

52. TELUS sees potential use cases with benefits to Canadians by permitting SMCS operation in waters that are outside of flexible use service areas, importantly as a potential aid in times of emergency. Enabling these potential lifesaving services to in-market handsets should be extended off-shore. Current terrestrial spectrum licences extend off shore into the Atlantic, Pacific, and Arctic Oceans but unlike satellite licences (which are Canada-wide within Canadian airspace and waters) do not entirely cover Canadian territorial waters.
53. While the idea of a terrestrial service extending off-shore was not a contemplated use case when establishing terrestrial spectrum licence tier area boundaries, TELUS considers the best way to offer SMCS off-shore is to extend existing terrestrial licences to cover Territorial waters (or even to cover the entire Exclusive Economic Zone (EEZ)). As such, any agreement contemplated between satellite operators and terrestrial licensees would have the potential to offer such a service offshore without delay vis a vis currently licensed areas.
54. Alternatively, if ISED does not extend the terrestrial licence area boundaries, ISED could simply allow an extension of the licence for SMCS purposes only by providing FCFS terrestrial flexible use licences to cover Territorial waters or the EEZ.

Q18: Licence term

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.

55. TELUS agrees that the proposed term for space station spectrum licences and foreign satellite approvals should align 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. ISED should adopt an SMCS framework that avoids unduly restricting a wireless operator's ability to reach commercial arrangements such as through minimum terms. TELUS recommends ISED not impose a minimum SMCS term while the maximum term would be the duration of the remaining term of the underlying flexible use terrestrial licence.

Q19: SMCS satellite conditions

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

56. TELUS agrees with the proposal to impose the conditions of licence listed in Annexes A and B. However, the sections A18 and B9 regarding no-interference, no-protection should be removed as per TELUS' response to Questions 7 and 8. In TELUS' response to Question 16, TELUS recommends that an SMCS earth station spectrum licence should not be required for terrestrial licensees and as such the proposed conditions of licence in Annex C are unnecessary.
57. Part of the eligibility to hold an SMCS licence is to be party to an agreement with a terrestrial commercial mobile licensee. TELUS concurs that SMCS licences should not be allowed to be divided, transferred or subordinated but rather any changes would require a new SMCS licence based on a newly defined agreement.

Q20: Mandatory roaming for SMCS

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.

58. SMCS is a nascent technology and will require years of development and investment for additional capabilities and services to be rolled out. While there may be clear benefits for all Canadian mobile users to gain access to this expanded coverage and service, TELUS recommends that roaming arrangements be reached under commercially negotiated terms at this time. Therefore, ISED should implement Option 2 for SMCS licences because ISED should not impose mandatory roaming on SMCS licences.
59. Given the capacity constraints of SMCS at present, mandating roaming would cause congestion and other concerns on bandwidth, which will disincent wireless service providers from seeking commercial agreements with satellite licensees to implement SMCS services. Therefore, for the near-term, the focus should be creating the commercial incentives for this technology to be adopted in the first place. As the technology develops, as greater satellite capacity is deployed, and adoption increases, then ISED could examine to what extent the existing mandatory roaming CoL could apply to SMCS. TELUS explains below.

SMCS Is Not Expected to be the Same as Terrestrial Coverage in the Near Term

60. ISED's description of this technology as "supplemental" mobile coverage is key. SMCS is not expected to support the services available on a terrestrial wireless network. ISED noted that because of SMCS' "limited service offering in the near term," it "does not view this new service as a replacement for terrestrial coverage."¹⁴ The differing nature of terrestrial wireless networks and SMCS is the main reason why ISED has proposed two separate options, both of which would avoid mandatory roaming in the near term.
61. In this light, TELUS agrees with ISED that the mandatory roaming should not apply. ISED itself noted that the "technical feasibility of immediately applying roaming to SMCS may be uncertain." Furthermore, ISED stated that "immediate application of mandatory roaming could result in the unintended consequence of curtailing SMCS deployment by operators due to the complexity of accommodating roaming."¹⁵
62. While ISED included these statements under its mandatory roaming Option 1, which proposes to not institute mandatory roaming for five years, the reasoning applies equally to not applying mandatory roaming to SMCS on an indefinite basis. Rather than proposing a future date where mandatory roaming would automatically apply, the better approach is to not apply mandatory roaming and monitor the deployment of SMCS and its adoption. It would be open to ISED in the future to review SMCS if the technology proves to be robust, with full voice, text and data services available. If it becomes an integral part of how wireless service providers deliver their services in Canada, then

¹⁴ Consultation, para. 67.

¹⁵ Consultation, para. 98.

ISED could re-examine whether mandatory roaming should apply to SMCS at that point.

The FCC Did Not Mandate Roaming in the US for SCS

63. Similar to what ISED is proposing in this consultation,¹⁶ the FCC issued a recent order¹⁷ where it did not mandate roaming on SCS after reviewing the technology as part of a proceeding. Importantly, the FCC did not apply its automatic mandatory roaming rules to SCS because its primary objective is “to establish a framework that will facilitate the rapid provision of [SMCS].”
64. With that in mind, the FCC found that requiring roaming at this time would be “premature and may add complexity and additional technical considerations” that would affect SCS development.¹⁸ The situation in Canada has identical considerations, underscoring the need for ISED to refrain from mandatory roaming obligations on an indefinite basis.

The CRTC’s Mandatory Roaming Framework Does Not Apply to SMCS at Present

65. In Canada, the CRTC has its own mandatory roaming framework¹⁹ that applies to mobile wireless providers. Under that framework, the CRTC stipulated that mandatory roaming applied to the “GSM-based” networks of TELUS, Bell Mobility and Rogers. Based on

¹⁶ *Single Network Future: Supplemental Coverage from Space*; Space Innovation, GN Docket No. 23-65, IB Docket No. 22-271, Notice of Proposed Rulemaking, FCC 23-22 (Mar. 17, 2023). The FCC’s terminology for SMCS is “supplemental coverage from space” [or “SCS”]

¹⁷ *Report and Order and Further Notice of Proposed Rulemaking*, FCC 24-28, March 14, 2024 (the “FCC Order”)

¹⁸ FCC Order, para. 172.

¹⁹ *Regulatory framework for wholesale mobile wireless services*, Telecom Regulatory Policy CRTC 2015-177 (“TRP 2015-177”)

that requirement, TELUS filed a wholesale domestic roaming tariff, which the Commission has approved.

66. Importantly, the “Available Footprint” for TELUS’ mandatory roaming tariff²⁰ is defined as the “geographic areas where [TELUS], or an Affiliate of the [TELUS], owns and operates the UTRAN (Universal Terrestrial Radio Access Network) or EUTRAN (Evolved Universal Terrestrial Radio Access Network...)”²¹ Therefore, the CRTC accepted that its mandatory roaming framework applies to terrestrial wireless networks.
67. Similar to ISED, it would be open to the CRTC to review the mandatory roaming framework and its applicability to SMCS in the future. Such a review could be occasioned if marketplace developments show robust adoption of SMCS.
68. As a related point, the fact that there are two mandatory roaming requirements cast upon wireless service providers under two separate regimes could lead to conflicting rules. It is imperative that ISED and the CRTC have consistent regimes, as much as possible, and to avoid entirely situations where, for example, mandatory roaming is imposed as part of SMCS under one regime but not the other. Refraining from mandatory roaming on an indefinite basis, and allowing the marketplace and technology to develop on its own course, ISED would be choosing a path of regulatory coherence. At a future point, the issue of mandatory roaming for SMCS could be explored on a comprehensive basis so as to put in place a roaming regime that is consistent across the industry.

²⁰ TELUS’ Carrier Access Tariff, CRTC 21462 (“TELUS’ Roaming Tariff”)

²¹ TELUS’ Roaming Tariff, Item 233.2, Definitions, “Available Footprint”.

Q21: Applying existing satellite fees to SMCS licences

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

69. TELUS notes that ISED's proposal to use the existing satellite licence service standard of 126 calendar days to issue an SMCS licence is rather long in comparison to the service standards for other licensing such as non-auctioned terrestrial (mobile) licences which is 28 days. To advance the introduction of the beneficial new service and make it available to Canadians in a timely fashion, TELUS recommends that ISED strive for a tighter service standard to review and issue SMCS licences.

Q22 - Q28: Technical consideration, cross-border coexistence and international obligations

Q22: Technical requirements to be applied to commercial mobile user equipment for SMCS

Q22. 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.

70. TELUS agrees with the ISED proposal that existing technical requirements established in the relevant SRSP and RSS are sufficient for user equipment of SMCS services.

SMCS uplink operations (handset to satellite)

71. Existing technical requirements applicable to mobile user equipment are sufficient to allow operation of SMCS, as the systems are designed to operate with existing devices. As noted in TELUS' response to Question 16, user equipment are certified for use in Canada under the technical requirements for the specific band and actively operating

using the terrestrial flexible use licences. Given that no modifications to the operations of the user equipment will take place, TELUS considers it would be a redundant regulatory requirement for wireless service providers to obtain SMCS earth station licences.

SMCS downlinks impact on adjacent terrestrial mobile service areas

72. TELUS' comments to Question 2 and 3 for co-channel coexistence with adjacent service areas apply a PFD on the ground for determining the SMCS beam size and subsequent required protection areas. The comments reflect the bands proposed by ISED in Question 5 of the Consultation, noting that TELUS' technical studies support the PFD limits of -116 dBW/m²/MHz for the sub-GHz bands and -106 dBW/m²/MHz for the mid-bands SMCS service to coexist with mobile services without unduly increasing the interference risk.
73. TELUS calculated the following PFD limits in Table 1 below at the boundary of a licensed SMCS service area domestically and internationally for cross-border coexistence (with further cross-border comments to Question 27 below). TELUS notes that further detailed study is required for the WCS, BRS, 3500 MHz and 3800 MHz bands to determine the appropriate PFD limit for co-channel operations.

Table 1: Proposed PFD limits for co-channel operations with adjacent service areas by band

Band	SRSP/RSS	PFD limit for co-channel (dBW/m ² /MHz)
600 MHz	SRSP-518/RSS-130	-116
700 MHz	SRSP-518/RSS-130	
Cellular	SRSP-503/RSS-132	
PCS	SRSP-510/RSS-133	-106
AWS-1, AWS-3	SRSP-513/RSS-139	

SMCS downlink's impact on adjacent terrestrial mobile frequency blocks or bands

74. Existing technical requirements related to unwanted emissions²² from terrestrial base stations, if applied to SMCS satellite transmissions, would be sufficient to protect terrestrial mobile stations in adjacent channels within overlapping geographical areas provided that satellite antenna gains are limited to about 33 dBi (at LEO heights of 520 km). Under the same scenario, but with higher gain (above 33 dBi) antennas, interference would exceed $I/N = -6$ dB, thus interfering with terrestrial mobile operations in adjacent channels.
75. An I/N of -6 dB is the typical criterion applied for the protection of terrestrial mobile services, which results in a known interference level resulting in ~15% to 18%

²² Unwanted emission limit of -13 dBm/100 kHz in bands below 1 GHz and -13 dBm/MHz for bands above 1 GHz, per each band's respective RSS, as listed in Table 1.

degradation at the cell edge²³. While this level is not negligible, it is considered adequate for the protection of terrestrial mobile user terminals from SMCS satellite transmissions.

76. Alternatively, if mobile service in the adjacent channels are not operating in overlapping geographic areas, SMCS service would not be interfering with mobile services when engineered with sufficient satellite gain reduction through distance separation. To avoid introducing potentially complex policies that may limit design of SMCS services, it is recommended to define two levels of adjacent channel PFD limits that would apply to sub-GHz bands and mid-bands. The proposed PFD limits are listed in Table 2 below. TELUS notes that further detailed study is required for the WCS, BRS, 3500 MHz and 3800 MHz bands to determine the applicable PFD limit for adjacent channel operations.

Table 2: Proposed PFD limits for adjacent channel operations by band

Band	Frequency (MHz)	PFD level for -6 dB I/N into adjacent channel (dBW/m²/MHz)	Proposed PFD limit for adjacent channel (dBW/m²/MHz)
600	630	-120.6	-120
700	740	-119.2	
Cellular	860	-117.9	
PCS	1990	-113.6	-113
AWS-1/AWS-3	2145	-112.9	

²³ Assuming terrestrial mobile service at the cell edge operating in the SNR range between 0 and 3 dB.

77. The two proposed limits simplify the PFD limits for adjacent channel operations in the bands and are calculated assuming an I/N of -6 dB, UE noise figure of 9 dB, UE gain of -3 dBi for bands below 1 GHz and 0 dBi for bands above 1 GHz, and with no polarisation loss. Additional polarisation loss, which typically varies from 1 to 3 dB could further relax the above values, depending on the type of polarisation transmission from the satellites, whether circular or linear, and in the case of linear polarisation, the relative direction of the satellite incoming wave relative to the victim user terminal local horizon.

Q23: Technical requirements to be applied to SMCS space stations

Q23. 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.

78. TELUS agrees with the ISED proposal that the same technical requirements established in the relevant SRSP and RSS for terrestrial flexible use services are sufficient to ensure coexistence for SMCS services from satellites. The technical requirements for space stations operating SMCS services have been described above in TELUS' response to Question 22.

Q24: Interference resolution

Q24. 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.

79. As described in TELUS' response to Question 8, SMCS services are supplemental to existing terrestrial services and should be afforded the same level of protection and expectation of coexistence as terrestrial services. TELUS does not agree with the proposal for SMCS to operate on a no-interference, no-protection (NINP) basis. Operating on a secondary basis does not change the fact that the onus for mitigating harmful interference that occurs to licensed in-band and/or adjacent band/block terrestrial operations would be borne by the SMCS licensee in conjunction with the primary terrestrial flexible use licensee.

Q25: Coexistence between SMCS space stations

Q25. 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.

80. As TELUS indicates in response to Question 7, SMCS services should be assigned via MSS allocation in the CTFA on a secondary basis to all terrestrial commercial mobile bands. As a secondary service, SMCS space stations can claim protection from harmful

interference of the same secondary service. The MSS licensing framework establishes that space stations must coordinate their constellations and resolve any interference issues. TELUS agrees that this expectation be imposed on all space stations operating SMCS services.

Q26: Protection of radio astronomy services

Q26. 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 radio astronomy frequency bands.

81. TELUS considers that existing technical requirements are sufficient to protect other active services and will also protect passive services, including radio astronomy. Should ISED determine that existing mobile technical rules are insufficient to protect passive services, TELUS agrees that ITU limits set out in Recommendations ITU-R RA.769-2 and ITU-R RA.1513-2 are the correct protection criteria to impose on satellite operators facilitating SMCS where alternative mutually agreeable sharing arrangements have not been reached.
82. These protection criteria in the ITU-R recommendations would also be sufficient to protect Canadian radio astronomy from the bands proposed by ISED in Question 5 of the Consultation and the additional bands proposed by TELUS in response to Question 6.

83. Protection of the three Canadian radio astronomy stations (two site locations) are registered for protection with the ITU ‘Master International Frequency Register’²⁴, and with RAS frequencies that are not co-frequency but may have limited adjacent band emissions should SMCS service those two locations (e.g. at 614 MHz and 2690 MHz RAS band edge).

Q27: Cross-border coexistence

Q27. 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.

84. TELUS appreciates that ISED is considering cross-border rules and how to apply an applicable TRAA despite SMCS operations under a no harmful interference, no protection from harmful interference basis as required by the ITU RR Article 4.4. The existing cross-border rules from the related Terrestrial Radiocom Agreements and Arrangements (TRAA) should be the basis of a framework for SMCS coexistence with the US SCS service and terrestrial mobile networks.
85. Today, the TRAAs have some specific terrestrial mobile rules that either do not apply, apply with modification, and/or require new rules to be developed to guide SMCS coexistence with international SMCS and mobile services. For instance, the existing TRAA technical rules that consider co-channel coordination trigger distances from the border for terrestrial mobile stations cannot apply to SMCS service delivered by

²⁴ ITU Space Explorer Database, Network Explorer
Link: <https://www.itu.int/itu-r/space/apps/public/spaceexplorer/networks-explorer/radio-astronomy>

satellites but may need to consider rules for SMCS earth stations near the border. As another example, TRAA provisions to protect fixed point-to-point microwave stations in PCS and AWS-1 would need modification for SMCS and SMCS adjacent-channel coexistence may need new rules under the TRAA framework.

86. Prior to the establishment of an updated TRAA framework with the US that includes SMCS, TELUS recommends that cross-border coexistence rules adopt the two PFD limits of -113 dBW/m²/MHz for sub-GHz and -106 dBW/m²/MHz for mid-band SMCS service by way of incorporation in an appropriate SRSP.

87. TELUS notes the recommended PFD limits above, when converted to field strengths using a 5 MHz carrier, align with the US SCS rules under 47 CFR Part 25.208(w)(3):

“(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-1, AWS-3, 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.”

Q28: Technical factors impacting SMCS coverage

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

88. As described in TELUS' response to Question 8, imposing no-interference and no-protection operations to SMCS will negatively affect SMCS coverage and reduce the viability of the SMCS business case. Offering SMCS will require significant investment from both the satellite and terrestrial companies. Inconsistent and restrictive regulations are a hindrance to innovative growth. Key to supporting a strong business case and achieving a positive long-term outcome in the capital intensive wireless market is operating in a stable regulatory environment.
89. TELUS maintains that successful early implementation of SMCS services in Canada is possible by allocating SMCS as a secondary service with the known "standard" for coexistence being harmful interference (as described in section 1.3 of the CTFA).
90. Additionally, setting appropriate technical rules for co-channel, adjacent channel and cross-border coexistence would minimise the protection areas and maximise the SMCS coverage.

Q29: 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.

91. TELUS has no further considerations to note at this time.

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