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Innovation, Science and Economic Development Canada (ISED)
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Re: Comments on the Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite

Kuiper Systems LLC (**Kuiper**), a wholly owned subsidiary of Amazon.com Services LLC (together, **Amazon**), respectfully submits these comments in response to the Public Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite (**Consultation**).¹ Amazon commends ISED's commitment to facilitating access to wireless telecommunications services for all Canadians, including by now proposing a framework to expand direct-to-device connectivity through supplemental mobile coverage from space (**SMCS**).

I. Background

Amazon's Project Kuiper is an initiative to increase global broadband access through a constellation of non-geostationary satellite orbit (**NGSO**) fixed-satellite service satellites in low Earth orbit. Project Kuiper will provide ubiquitous, high-capacity, high-speed, low latency broadband services to residential customers, schools, businesses, and institutions around the world, and communications to terrestrial mobile network operators, global enterprise, and government users, among others. Through Project Kuiper, Amazon will help close the digital divide by enabling affordable connectivity for unserved and underserved communities, including in remote parts of Canada.

In October 2023, Amazon launched its two prototype satellites. Within 30 days of launch, Amazon validated its technology and mission procedures, achieving a 100% success rate across key mission objectives, with every major system and subsystem on board performing nominally or better on

¹ Canada Gazette, Part I, Notice No. SMSE-006-24— *Consultation on a Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite* (June 29, 2024) ("Consultation").

orbit. Amazon is now actively de-orbiting the prototype satellites and will continue to do so over the next year in line with its orbital debris mitigation plan. On the ground, Amazon has started full-scale production of its satellites with the first launch planned in 2024. In Canada, Amazon is actively working towards service launch and related licensing.

II. Comments on the Policy, Licensing and Technical Framework for Supplemental Mobile Coverage by Satellite

In the comments below, Amazon has associated its responses with specific questions posed by ISED, or groups of questions, if Amazon believes its response covers multiple questions.

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

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.

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.

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.

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.

Amazon applauds ISED's leadership as an early global actor to pioneer regulatory frameworks that enable valuable, innovative services offering connectivity directly from satellite constellations to commercial handsets. Amazon therefore supports ISED's proposal to permit SMCS in Canada by modifying the Canadian Table of Frequency Allocations (CTFA) to add a secondary MSS allocation specific to SMCS by way of a footnote applicable to terrestrial flexible use frequency bands. Amazon also agrees that SMCS licenses could be granted on a no-interference and no-protection basis, with terrestrial services currently maintaining regulatory priority.

Amazon also encourages ISED to turn its mind towards future-proofing its SMCS framework when selecting available frequency bands, and to foster early innovation, investment and competition. With the addition of proper entry criteria and safeguards, it is Amazon's position that ISED could allow SMCS in *all* terrestrial flexible use frequency bands, rather than limiting SMCS operations to specific bands that support frequency division duplex (**FDD**) technology in their channel plans. As ISED noted: "Recognizing that SMCS is in the early stages of development and will continue to evolve, ISED intends to review the appropriateness of opening additional frequency bands for SMCS in the future As technology matures, this may include expanding the SMCS framework to other flexible use bands" ² Amazon agrees that SMCS is currently a rapidly growing technology and will continue to develop. Given this, ISED should promulgate a framework that not only covers the current iteration of SMCS services but also provides flexibility for iterations of SMCS that are forthcoming and imminent. For example, ISED noted that time division duplex (**TDD**) technology is currently seldom applied in satellite communications; however, this technology may be advantageous specifically for SMCS. Allowing the provision of SMCS services in TDD spectrum bands would not only improve compatibility between SMCS and terrestrial operations but would also provide satellite operators with greater flexibility to scale their SMCS operations internationally.

Conversely, waiting to open additional frequency bands through further, possibly multiple and lengthy, public consultations ³ will delay SMCS innovation. Instead, Amazon urges ISED to use the current Consultation to review the possibility of adding a broader SMCS secondary allocation that could be applied to all flexible use spectrum. Because SMCS would be introduced as a secondary allocation across all flexible use bands, incumbents and future primary terrestrial licenses are already sufficiently protected. To further protect these licensees, however, Amazon proposes that this broader footnote be modified to state that SMCS applicants for frequencies not specifically listed in the current footnote (i.e., flexible use frequencies not listed in ISED's initial SMCS bands) would need to meet certain entry criteria prior to license approval and that such approvals could be granted on a case-by-case basis. In frequency bands not included in ISED's initial bands, and as part of the SMCS licensing process, applicants could be required to demonstrate compatibility with existing terrestrial services by way of, for example, a technical showing. This requirement would make available more spectrum for possible SMCS use cases while also allowing ISED to maintain regulatory control and oversight. With appropriate entry

² Consultation, ¶ 53.

³ *Ibid* ("Any future bands to be considered for SMCS will be subject to further public consultation, which will take into account the issues specific to the frequency band.").

criteria, the inclusion of a broader case-by-case approach would not risk interference with terrestrial licensees while also not foreclosing potential SMCS use cases.

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.

ISED noted that it launched its Connectivity Strategy in 2019, with the aim of making universal broadband available along underserved roads and highways. Despite this worthy goal, ISED also noted that in 2022, connectivity gaps remained unaddressed along more than 14,000 kilometers of major Canadian roads and highways.⁴ Amazon agrees with ISED that these gaps “pose significant safety concerns for motorists and travelers in need of emergency services, among other challenges”.⁵ SMCS is uniquely suited to close these connectivity gaps, especially where the expansion of terrestrial services has proven difficult over the years despite the Connectivity Strategy. It is possible that terrestrial service expansion in these areas may never materialize, and that alternatives such as land-based earth stations in motion and SMCS become the necessary gap fillers. ISED should take into account this possibility, which further militates towards the implementation of a flexible and future-oriented framework for SMCS, viewing it as potentially an additional driver of connectivity in unserved or underserved areas.

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.

As Amazon notes in its response to Q20 below, imposition of mandatory roaming for SMCS is premature. It is Amazon’s position that existing mechanisms to support emergency communications are sufficient, without the need for new SMCS specific obligations.

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**

⁴ *Ibid*, ¶¶ 7-8.

⁵ *Ibid*, ¶ 64.

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.**

Amazon agrees with ISED's proposal that SMCS licensing could follow the existing and reliable MSS licensing framework, with separate authorizations issued for space and earth stations. Amazon further agrees that an SMCS Agreement should be a condition of SMCS service delivery and that agreements between terrestrial mobile service providers and satellite operators should not be exclusive. This approach will foster flexibility and competitive choice in provision of SMCS services, to the benefit of consumers. However, Amazon disagrees with the limitation that the SMCS Agreement needs to be in place *prior* to the filing of any SMCS license applications. Requiring an agreement to be in place before filing would add unnecessary delay to a process that could be accelerated if licensing and agreement negotiations were allowed to run in parallel. Instead, an SMCS Agreement should be a license condition for offering the service.

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.**

Given ISED's proposal to follow the existing MSS licensing approach, Amazon proposes that SMCS license terms match existing terms for Canadian satellite spectrum licenses, foreign satellite approvals, and generic earth station spectrum licenses rather than including different terms. Doing so will reduce the complexity and cost of deploying this new service and provide clarity for providers at this early stage, enabling more rapid deployment of expanded connectivity where it is most needed.

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.

Considering the nascent nature of SMCS, Amazon proposes that Option 2 be implemented, which would align ISED with the U.S. Federal Communications Commission's (FCC) recent decision to not apply roaming requirements at this early stage of SMCS development. After careful consideration of stakeholder input, the FCC concluded: "We decline to require roaming with respect to SCS at this time because we find that applying roaming requirements in the SCS context at this nascent stage is premature and may add complexity and additional technical considerations that could affect the development of SCS collaborations".⁶ The FCC's reasoning aligns with the point raised in ISED's comment that "[a]s SMCS is a new and emerging technology, it may be argued that mandatory roaming should not apply. In addition, as the market and technology are in an early stage of development, it may not be practical to apply mandatory roaming immediately."⁷ Amazon agrees with ISED's comment and the FCC's decision that roaming requirements for SMCS licenses at this stage are likely premature. By avoiding additional regulatory burdens and promoting international consistency, ISED's Option 2 will promote the efficient and affordable expanded connectivity sought in this Consultation.

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.

⁶ *Single Network Future: Supplemental Coverage from Space; Space Innovation*, Report and Order and Further Notice of Proposed Rulemaking, Docket Nos. 23-65, 22-271, FCC 24-28, ¶ 172 (rel. Mar. 15, 2024).

⁷ Consultation, ¶ 96.

Amazon respectfully recommends that ISED ensure that its expectation that SMCS satellite operators “coordinate their constellations in advance” not present an obstacle to foreign systems entering Canada when they are specifically seeking to provide SMCS, which has other safety mechanisms in place, such as the need for an SMCS agreement.⁸ Allowing foreign satellite systems to contribute to SMCS capability in Canada will foster broader technology innovation and greater customer choice for these services to the benefit of consumers in Canada.

III. Summary

Amazon is grateful to ISED for the opportunity to contribute to the development of a framework for SMCS in Canada. We look forward to working alongside ISED to expand connectivity access and increase customer choice for more households and businesses in the country. We would welcome the opportunity to meet with ISED to discuss these comments or any other issues of interest in this submission.

Respectfully submitted,

/s/ Catherine Kuersten

Catherine Kuersten

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Project Kuiper

On behalf of Kuiper Systems LLC

⁸ Consultation, ¶ 116.