COMMENTS OF TELESAT CANADA

In response to:
Consultation on Updates to the Licensing and Fee Framework for Earth Stations and Space Stations in Canada, SMSE-009-21, Canada Gazette, Part I, Volume 155, No. 33
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1 Telesat welcomes the opportunity to provide these Comments in response to *Consultation on Updates to the Licensing and Fee Framework for Earth Stations and Space Stations in Canada* (the "Consultation Document") issued by Innovation, Science and Economic Development Canada ("ISED"). The Consultation Document proposes a number of important changes to ISED's framework for space and earth station licensing and fees that will have meaningful impacts on the connectivity landscape in Canada and will play an important role in achieving universal connectivity.

2 Telesat applauds ISED for proposing amendments to its licensing and fee framework to introduce earth station spectrum licensing and rationalize earth station licence fees. The proposed changes, coupled with the additional recommendations made by Telesat below, will play an important role in achieving the Government's public policy objectives outlined in the Consultation Document. The introduction of blanket licensing for subscriber earth stations and changes to earth station licensing fees are very important to promoting efficient use of spectrum and fostering the competitive provision of affordable high-quality satellite broadband services across Canada.

3 Telesat understands that ISED is proposing to issue spectrum licences for: all types of space stations; generic earth stations; and, site-specific earth stations. Generic and site-specific earth station licences would authorize an unlimited number of earth stations in Canada communicating with identified satellites in authorized bands. A single site-specific earth station spectrum licence would cover communications from any number of sites in Canada (subject to approval of each site) with multiple geostationary orbit ("GSO") satellites, but only one non-geostationary orbit ("NGSO") system. Each spectrum licence will trigger a fee, based on the amount and type of spectrum authorized by the licence.

4 Based on this understanding, Telesat supports the proposals in the Consultation Document to amend ISED's licensing and licence fee framework for fixed-satellite service ("FSS") earth and space stations, subject to the clarifications and revisions set out below in response to specific questions in the Consultation Document.

5 This consultation comes at a pivotal time, as the global satellite industry is innovating, investing, and making significant technological leaps that will play an important role in bridging the digital divide across Canada and the world. Next generation NGSO systems, in particular, will be an essential tool in achieving this important objective. Telesat is currently undertaking one of the most ambitious, innovative and advanced space programs ever conceived: a $6.5 billion investment in a state-of-the-art, next generation satellite constellation initially consisting of 298 satellites in Low Earth Orbit known as Telesat Lightspeed. But Telesat is not alone. Existing FSS operators, new entrants and countries around the world are all investing billions of dollars into their own NGSO systems given the significant benefits and opportunity they present. The changes outlined in this consultation will help not only enable these next generation satellite constellations, but also foster and incentivize competition, furthering the important policy objectives identified by ISED and Canada's efforts to affordably bridge the digital divide.

LICENSING FRAMEWORK

Introduction of spectrum licensing for earth stations (Consultation Document, section 6.1)

Q1

ISED is seeking comments on its proposals to:

a. use spectrum licences to authorize fixed and transportable earth stations and ESIMs within Canadian territory, with multiple earth stations authorized under a single licence

b. issue the proposed spectrum licences for a Tier 1 service area, and have those licences authorize the radio service and frequency bands

c. apply the general conditions of licence that are listed in annex A to earth station spectrum licences

6 Telesat supports the proposal to use spectrum licences to authorize fixed and transportable earth stations and earth stations in motion ("ESIMs"), with multiple earth stations authorized under a single spectrum licence. Each spectrum licence would authorize an unlimited number of earth stations operating in the satellite service and authorized frequency bands in Canada. This approach is akin to blanket licensing, which is available in other jurisdictions and has proven to be highly efficient and effective.

7 Telesat suggests, however, that the ESIMs conditions of licence address use of Canadian-authorized ESIMs outside of Canada, and the temporary use of foreign-authorized ESIMs in Canada. Currently, roaming is explicitly addressed in A17 (applicable to MSS earth stations). In contrast, there is no reference to roaming in A13 (applicable to ESIMs). These conditions currently state:

> ***A13 [ESIMs]:*** *Earth stations, including those onboard aircraft, are authorized to operate in Canada only. Earth stations on board vessels are authorized to operate in Canada and on board Canadian-licensed or registered vessels outside Canada.*

A17]MSS earth stations]. Technical requirements: *Radio equipment must meet all applicable Canadian radio equipment standards and, if required, be type-approved or certified for use in Canada.*

Any roaming into other countries must respect the licensing regimes of those countries. To ensure compliance, the licensee must provide its subscribers with a copy of this condition of licence.

Additionally, subscriber radio equipment brought into Canada by visitors for use while temporarily located in Canada must:

a. meet any applicable Canadian radio equipment standards and be certified for use in Canada; or

b. be type-approved by an administration that is a signatory to the Global Mobile Personal Communications by Satellite-Memorandum of Understanding (GMPCS-MoU) mark.

8 Telesat proposes the following amendments to A13 to address ESIMs roaming and harmonize the treatment of aeronautical and maritime ESIMs (proposed changes in underline and strike-out):

A13 [ESIMs]: Earth stations, including those onboard aircraft and vessels, are authorized to operate in Canada ~~only~~. Earth stations on board ~~vessels and aircraft are authorized to operate in Canada and on board~~ Canadian-licensed or registered vessels and aircraft are also authorized to operate outside Canada.

Any roaming of earth stations into other countries must respect the licensing regimes of those countries. To ensure compliance, the licensee must provide its subscribers with a copy of this condition of licence.

Additionally, earth stations brought into Canada by visitors for use while temporarily located in Canada are authorized under the terms of this licence, provided they comply with the approved operational and technical characteristics for earth stations operating under this licence.

9 Telesat also seeks clarification on the application of CPC-2-0-03, *Radiocommunication and Broadcasting Antenna Systems* pursuant to licence condition A5. While CPC-2-0-03 includes an exemption for antenna systems that are less than 15m above ground level, this exemption does not apply to telecommunications carriers, such as Telesat. Accordingly, Telesat requests clarification that this exemption also applies to end-user equipment that is authorized under a generic spectrum licence held by a carrier. More generally, Telesat also asks ISED to consider expanding the exemption for antenna systems that are less than 15m above ground level to include satellite carriers. The nature of the earth station licence holder (satellite carrier or end-user) has no affect on the impact of an earth station on its surrounding environment.

Earth station spectrum licences requiring site approval (Consultation Document, section 6.2)

Q2

ISED is seeking comments on its proposals to:

a. implement spectrum licences that require site approvals for all earth stations described above operating in any frequency band
b. collect and assess the technical information listed in annex B as part of the site approval process
c. require earth station licensees with site-approved spectrum licences to hold licences for entire spectrum blocks, as per relevant SRSPs

Q3

ISED is seeking comments on any additional technical information that should be required for site-approved earth stations. In providing comments, respondents are requested to include supporting arguments and a rationale.

Q4

ISED is seeking comments on what other types of earth stations, in addition to those identified, could be subject to spectrum licences that require site approvals.

(i) Categories of earth stations requiring site-specific approval

10 In the Consultation Document, ISED proposes that the following types of earth stations will require site-specific and individual station (antenna) approval:

- earth stations that operate in bands where coordination is required in order to avoid harmful interference with other services sharing the band or where international coordination is required;
- transportable earth stations;
- large earth stations that may have a significant frequency impact on the immediate area;
- stations in frequency bands where deployments are otherwise limited through spectrum policies, such as gateway earth stations; and,
- earth stations conducting telemetry, telecommand and control functions and/or feeder links.

11 According to the Consultation Document, a single spectrum licence will be issued for multiple earth stations falling within these categories, but each individual station and site operating under the spectrum licence must be approved. The process for receiving site and station approval will be similar to the current radio licensing process for fixed earth stations.

12 Telesat believes that the categories of earth stations that require individual site and/or station approval can be stream-lined while continuing to respect spectrum allocations and coordination obligations. Specifically, Telesat proposes that the categories of earth stations that require site and antenna-specific approval be limited to:

- earth stations that operate in bands where coordination is required in order to avoid harmful interference with other services sharing the band or where international coordination is required; and

- earth stations conducting telemetry, telecommand and control functions and/or feeder links.

13 The first category – earth stations that operate in bands where coordination is required to avoid harmful interference with other services sharing the band or where international coordination is required – captures "stations in frequency bands where deployments are otherwise limited through spectrum policies, such as gateway earth stations". This is because coordination is required for earth stations where deployment is limited through spectrum policies. This first category also captures "large earth stations that may have a significant frequency impact on the immediate area" as coordination obligations exist for earth stations that have a significant frequency impact.

14 In addition, Telesat believes that transportable earth stations should be eligible for generic spectrum licensing provided they do not have the characteristics of an earth station that requires site-specific licensing (that is, they do not operate in bands where coordination is required as described above or conduct telemetry, telecommand and control functions or operate as feeder links). Transportable earth stations are earth stations that are designed to be transported between locations for use in a fixed location. Examples of such earth stations would be transportable VSATs. These transportable earth stations do not have any different impact on the interference environment than generic spectrum-licensed fixed earth stations or land ESIMs and would benefit equally from generic spectrum licensing. Generic spectrum licensing of

transportable earth stations would also be consistent with blanket licensing in other jurisdictions, including the U.S., Australia, Japan, and Europe, which do not single out transportable earth stations for purposes of blanket licensing.

(ii) Technical information required for site-specific approval

15 A requirement for licensing of entire spectrum blocks should be assessed on a case-by-case basis in light of specific proposals for such blocks.

Spectrum licences for generic earth stations (Consultation Document, section 6.3)

Q5

ISED is seeking comments on its proposal to adopt generic spectrum licences in order to authorize systems of identical fixed earth stations and ESIMs.

16 Telesat supports ISED's proposal to adopt generic spectrum licences to authorize earth stations and ESIMs. As discussed above, Telesat believes that transportable earth stations operating in bands available for generic licensing for fixed earth stations or land ESIMs should also be eligible for generic spectrum licensing.

17 However, clarification is required on the meaning of "identical" earth stations and ESIMs. Paragraph 28 of the Consultation Document refers to "identical earth stations that share the same technical parameters and frequency bands and that communicate with the same satellites". Telesat agrees that earth stations authorized under a single generic spectrum licence should share frequency bands and communicate with the same satellites. However, Telesat does not believe that these earth stations should be required to have "identical" technical parameters. Rather, it should be sufficient that the earth stations have similar operational and technical characteristics. This concept of a "family" of "similar" terminals has been adopted, for instance,

in the European framework where blanket authorization of user terminals is based on compliance with general technical and operational characteristics (e.g. ECC/DEC(13)01 with ETSI EN 303 978 and ECC/DEC(15)04 with ETSI EN 303 979). Telesat recommends a similar approach in Canada. Subscriber earth stations operating within the envelope of technical and operational characteristics identified in the generic earth station spectrum license would qualify as "similar" or "identical" provided they communicate with the satellites identified on the licence using the licensed frequencies. An ETSI standard, such as those identified above, would define an appropriate envelope of technical and operational characteristics of a family of earth stations.

18 Telesat also seeks confirmation that a generic spectrum licence for subscriber earth stations operating throughout Canada will cover subscriber earth stations of end-users of authorized resellers of the licence holder. This is consistent with the approach to resale of terrestrial wireless services.

(i) Frequency bands where generic spectrum licences will be available (Consultation Document, section 6.3.1)

Q6

ISED is seeking comments on its proposals to allow generic spectrum licensing systems of identical fixed earth stations and ESIMs in the frequency bands discussed above. [see below]

Q7

ISED is also seeking comments on any other bands that should be considered for generic spectrum licensing for fixed earth stations and ESIMs, including for systems of identical receive-only earth stations in the 4000-4200 MHz band. In providing comments, respondents are requested to include supporting arguments and a rationale.

19 Telesat concurs with the proposals in the Consultation Document for frequency bands that will be eligible for generic spectrum licensing with the following exceptions:

- Transportable earth stations – As discussed above, transportable earth stations that do not meet the requirements for site-specific licensing (as identified by Telesat above) should be eligible for generic spectrum licensing;

- 17.7-18.3 GHz (space-to-Earth) – ISED is proposing to allow generic licensing of aeronautical and maritime ESIMs communicating with GSO satellites in this band and has requested comments on also permitting generic licensing of maritime and aeronautical ESIMs communicating with NGSO satellites in the band. Telesat supports ISED's proposal to permit generic licensing of aeronautical and maritime ESIMs communicating with NGSO satellites in this band. Telesat also asks ISED to consider generic licensing of all types of earth stations (fixed and ESIMs) in this band; and

- 27.5-28.35 (Earth-to-space) – Generic licensing of NGSO aeronautical and maritime ESIMs should also be permitted in this band. To address 5G deployment in coastal areas, ISED could identify protection criteria for 5G (e.g. the sharing conditions in Annex 3 of Resolution 169 (WRC-19), which could be temporarily applied also for NGSO ESIMs, or the sharing conditions in Annex 2 of ECC/DEC(13)01 for GSO ESIMs and of ECC/DEC(15)04 for NGSO ESIMs). Telesat also suggests that ISED consider authorizing all types of ESIMs in this band in rural and remote areas where 5G has not been deployed, on condition that the licensee can mute operation of the earth stations if they enter a coordination area where 5G has been deployed. This would promote efficient use of these frequencies given 5G deployment of millimetre wave frequencies in rural areas may be quite limited, at least for the foreseeable future.

20 Telesat also proposes that ISED identify the eligibility of V-band frequencies for generic earth station licensing. This will provide important clarity to planned and authorized V-band space stations, facilitating their timely design and deployment, and therefore offering additional competitive solutions to serve the Canadian market. Specifically, Telesat asks ISED to consider generic spectrum licensing for fixed and transportable earth stations and ESIMs in the 40-42 GHz (space-to-Earth) and 48.2-50.2 GHz (Earth-to-space) bands.

(ii) Additional conditions of licence for generic spectrum licences for ESIMs and for earth stations installed by consumers (Consultation Document, section 6.3.2)

Q8

ISED is seeking comments on its proposals to:

a. issue generic spectrum licences for ESIMs on a no-interference, no-protection basis

b. require ESIM licensees to provide a contact that would be available to respond to interference issues 24 hours a day, 7 days a week, as per the licence conditions in annex A

c. require applicants to submit technical information needed to confirm compliance with SRSP-101 when they apply for generic spectrum licences for ESIMs and for fixed earth stations intended for self-installation by consumers

Q9

ISED is seeking comments on whether an RSS should be developed for earth stations intended for self-installation by consumers.

21 Telesat concurs with the proposals to authorize generic spectrum licences for ESIMs on a no-interference, no protection basis, to require provision of a 24/7 contact for the licence holder, and to require confirmation of compliance with SRSP-101 on application for a generic spectrum licence.

22 Telesat also supports the development of RSS for earth stations intended for self-installation by consumers, if this would facilitate the licensing process and the requirements for

foreign-authorized earth stations roaming in Canada. As indicated above, Telesat suggests that any standards be, to the greatest extent feasible, based on and consistent with recognized international standards such as ETSI EN 303 978 and ETSI EN 303 979.

Types of licences required (Consultation Document, section 6.6)

Q14

ISED is seeking comments on its proposals to:

a. issue the three types of satellite-related spectrum licences separately and assign a separate fee for each
b. allow communication with multiple GSO satellites on a single earth station licence
c. require separate earth station licences for NGSO systems

23 Telesat agrees with the issuance of three types of satellite-related spectrum licences (generic earth station, site-approved earth station and space station(s)). Telesat also agrees with the proposal to allow communication with multiple GSO satellites on a single earth station licence and to require separate earth station licences for communication with different NGSO systems.

24 Telesat agrees with the proposal to apply a separate licence fee to each spectrum licence, subject to Telesat's understanding of the licensing requirements as set out below in response to Questions 15 and 16.

FEE REGIME

Earth Stations (Consultation Document, section 7.2)

Q15

ISED is seeking comments on its proposal to assign a consumption-based fee to earth station spectrum licences, where site and station approvals are required, as follows:

- below or equal to 1 GHz: $2000/MHz
- above 1 GHz and below or equal to 3.4 GHz: $100/MHz
- above 3.4 GHz and below or equal to 7.075 GHz: $20/MHz
- above 7.075 GHz and below or equal to 17.3 GHz: $10/MHz
- above 17.3 GHz and below or equal to 51.4 GHz: $5/MHz
- above 51.4 GHz: $1/MHz

Q16

ISED is seeking comments on its proposal to assign a consumption-based fee to generic earth station spectrum licences for fixed earth stations and ESIMs at the rate of $5/MHz.

25 Telesat believes that the consumption-based earth station fees proposals in the Consultation Document represent a very important step forward, subject to the following understandings:

- A single spectrum licence for site and station approved earth stations will authorize the licence holder to own and operate site-approved earth stations throughout Canada that communicate with GSO satellites in the authorized bands, triggering a single consumption-based fee for these earth stations;

- A single spectrum licence for site and station approved earth stations will authorize the licence holder to own and operate site-approved earth stations throughout Canada that communicate with a single NGSO constellation in the authorized frequency bands, triggering a single consumption-based fee for these earth stations;

- Transportable earth stations will be eligible for licensing under a single generic spectrum licence in bands authorized for generic fixed earth stations or land ESIMs;

- A family-based approach to authorization of earth stations under a single generic spectrum licence is adopted, as discussed above; and

- A generic spectrum licence will authorize the subscriber earth stations of an authorized reseller of the licence holder.

26 While Canadian satellite operators will still be paying for use of licensed frequencies twice and the consumption-based space station fees are higher than in other jurisdictions, the fees proposed in the Consultation Document are a very important step in removing significant anomalies in the current licence fees and promoting the competitive deployment of affordable satellite broadband services in Canada and efficient spectrum utilization.

Spectrum licence fees for NGSO systems (Consultation Document, section 7.4.1)

Q20

ISED is seeking comments on its proposals to:

a. introduce a two-step fee for space station spectrum licences for constellations of NGSO satellites in any satellite service that are subject to phased deployment milestones

b. apply the first fee step currently at $62.42/MHz from the launch of the first satellite up until the deadline for the first deployment milestone (typically year 6). The second fee step, currently at $124.84/MHz, would apply thereafter and would continue until the end of the licence term, recognizing that all annual fees will increase over time, according to the CPI

27 Telesat proposes that ISED adopt the following modification of the two-step fee proposal for NGSO satellite constellations:

- Prior to the first deployment milestone, apply the developmental licence fee as long as any operational satellites are non-revenue-generating;

- Apply the first fee step (currently at $62.42/MHz) from the commencement of revenue generation until the deadline for the first deployment milestone (typically year 6); and

- Apply the second fee step (currently at $124.84/MHz) from the first deployment milestone until the end of the licence term.

28 This modification is consistent with the recognition that non-revenue-generating satellites deployed prior to the first deployment milestone are developmental satellites and as such should be subject to the same fee regime as other developmental satellites.

Minimum spectrum licence fees and developmental spectrum licences for earth stations and space stations (Consultation Document, sections 7.5 and 8)

Q21

ISED is seeking comments on its proposals to introduce a minimum annual spectrum licence fee of $160 for earth stations and $300 for space stations, and to apply these fees whenever the application of the consumption-based fee model would result in a fee lower that those amounts.

Q23

ISED is seeking comments on its proposals to introduce developmental spectrum licence fees for earth stations and space stations at a flat rate of $160 and $300, respectively.

29 Telesat supports the minimum annual licence fees and developmental licence fees of $160 for earth stations and $300 for space stations. As discussed above, the developmental licence fee should apply to non-revenue-generating operational NGSO satellites until the earlier of: (i) commencement of revenue generation and (ii) the first deployment milestone.

Service standards and remissions

Q27

ISED is seeking comments on its proposals to set service standards for the issuance of licensing decisions for satellite-related spectrum licences as follows:

- space stations: 126 days
- generic earth stations: 126 days
- site-approved earth stations: 126 days

- additional sites under an existing site-approved earth station licence: 49 days

30 Telesat is in general agreement with these timelines. This is based on our understanding that: (i) a licensee can obtain a single spectrum licence for site-approved earth stations operated by the licence holder throughout Canada communicating in the authorized frequencies with GSO satellites; (ii) a licensee can obtain a single spectrum licence for site-approved earth stations operated by the licence holder throughout Canada communicating in authorized frequencies with an NGSO constellation; (iii) once a spectrum licence for site-specific earth stations has been issued, the service standard to add a site, a station at an approved site, a GSO satellite (if applicable) and/or frequencies to the licence will be 49 days, consistent with the current service standard for earth station radio licences; and (iv) generic spectrum licences will authorize a family of earth stations that fall within a specified envelope of technical and operating characteristics.

31 While Telesat appreciates that an application for a spectrum licence for a number of sites and communicating with multiple satellites may take longer to assess than the licensing of a single site and antenna, it is very important that satellite operators be able to deploy new site-specific earth stations within the current 49 days period. Furthermore, if the initial application for a site-specific spectrum licence covers a single site only, Telesat would not expect this application to take longer than the current 49 days period to process.

CONCLUSION

32 Telesat thanks ISED for initiating this important consultation. Spectrum licensing for earth stations, including generic licensing for subscriber earth stations, and reasonable, consistent licence fees for earth stations are critical to supporting the competitive deployment of affordable high-quality satellite broadband services across Canada and the efficient use of spectrum as well efficient regulatory processes. The proposals for FSS earth and space stations in the Consultation Document, as clarified and amended herein, will support the achievement of these objectives and Canada's efforts to affordably bridge the digital divide.