



REPLY COMMENTS OF TELESAT CANADA

In response to:

Canada Gazette, Part I, March 4, 2017, Consultation on the Licensing Framework for Non-Geostationary Satellite Orbit (NGSO) Systems and Clarification of Application Procedures for All Satellite Licence Applications, SMSE-009-17

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NOTE: The identifiers in the "Reply Comments" (Part II) in the Table of Contents above align with the identifiers in Section 6 of SMSE-009-17, *Consultation on the Licensing Framework for Non-Geostationary Satellite Orbit (NGSO) Systems and Clarification of Application Procedures for all Satellite License Applications*, March 4, 2017.

REPLY COMMENTS OF TELESAT CANADA

1 Telesat is pleased to offer these reply comments on the proposed changes to the licensing rules for non-geostationary satellite orbit (NGSO) systems set out in *Consultation on the Licensing Framework for Non-Geostationary Satellite Orbit (NGSO) Systems and Clarification of Application Procedures for All Satellite Licence Applications*, SMSE-009-17 (the “Consultation Document”).¹

I. INTRODUCTION

2 As a general matter, Telesat notes that the comments received to date throw into sharp relief an issue that should be front and centre: the risk that the Department’s proposed regulatory policy will create a significant adverse impact on Canadian NGSO licensees and on the competitiveness (and, ultimately the viability) of the Canadian space sector. As Telesat noted in its initial comments, a Canadian licensed NGSO constellation offering communication services must compete not just against NGSO constellations licensed by other administrations, but against GSO and terrestrial services that offer similar capabilities. If the Department is heavy-handed in its regulatory approach, there is a significant risk that Canadian licensed NGSO constellations will either follow the first wave of large NGSO ventures into commercial failure, or simply never attract the enormous investment required to bring them into service in the first place.

3 A related, but separate, concern is the competitive disadvantage that the Department could impose on Canadian licensees by selectively imposing regulatory burdens on them but not on foreign-licensed operators competing in the same market. The comments filed by foreign

¹ Published in the *Canada Gazette*, Part I, March 4, 2017 [*Consultation Document*].

operators generally express no opinions on proposed obligations of Canadian licensees, because they can ignore them. Meanwhile, although there are disagreements on some issues, Canadian operators are generally aligned on the concern that some of the Department's proposals may harm their ability to compete.

4 On this issue, a group of satellite operators and industry stakeholders (the "Coalition"), noted that "in order to have any reasonable chance of commercial success, satellite operators and entrepreneurs require a level playing field – and should not be handicapped by domestic policies and rules which may be well-intentioned, but are not consistent with the GOC's 'open for business' policy."² Furthermore, Planet noted that some proposed requirements would "place Canada at a competitive disadvantage relative to other jurisdictions, such as the United States, and deprive Canada of the opportunity to become a leader in the development and deployment of commercial NGSO systems."³ Telesat shares these concerns.

5 Telesat re-iterates its submission that the Department's licensing policy for NGSO FSS must not create conditions that impair the ability of Canadian licensees to compete in Canadian and global markets. The NGSO market is a green-field regulatory opportunity; there is no reason why the Department should consider itself bound by ill-fitting concepts from the GSO licensing policy that do not make sense for the new, highly complex, global NGSO market. The Department should carefully consider the unique attributes of that market and craft a licensing policy that will achieve (and not undermine) its policy objectives.

² Coalition, para. 7.

³ Planet, para. 4.

II. REPLY COMMENTS

6 As with Telesat’s initial comments, the issues set out in the Consultation Document are highlighted in grey below, followed by Telesat’s reply comments each issue.

A. LIMIT ON THE NUMBER OF LICENCES PER BAND

ISED seeks views on the following:

1. Whether to impose a limit on the number of licences issued per band for commercial systems;
2. If Canada imposes a limit, what would be an appropriate limit;
3. If a limit is imposed, whether to exclude systems whose purpose is data gathering and that transmit to a small number of fixed earth stations and non-commercial systems (i.e. academic, government and developmental) from this limit.

There is a clear consensus that no fixed limit should be imposed

7 Telesat notes that the comments received by the Department demonstrate a clear consensus against any *a priori* limit on the number of licences per band.

- Boeing noted that “Any such limitation would be arbitrary and would likely jeopardize the ultimate goals of ensuring efficient spectrum utilization and that Canadians have the ability to reap the maximum benefits from the most competitive and innovation [sic] systems.”⁴
- In a similar vein, the Coalition stated that “setting arbitrary limits for the number of licensed commercial NGSO systems could have the unintended consequence of stifling innovation and preventing the growth of these systems in Canada.”⁵

⁴ Boeing, para. 13.

⁵ Coalition, para. 13.

- Similar views were expressed or endorsed by GHGSat, Kepler, NorthStar, SpaceX, and OneWeb.⁶

8 Only MSCI endorsed setting a limit; but it did so without offering any reasons.⁷

Accordingly there is no reasoned opposition to the consensus view, which is shared by Telesat, that the Department should not preemptively set a limit on the number of licences per band.

9 The Consultation Document raises the possibility of an exemption from such a limit for data-gathering or non-commercial system. All but one of the parties who expressed a view on this point agreed that any such exemption should not permit such systems to offer commercial services in competition with commercial licensees.⁸ Telesat agrees with this consensus view.

⁶ GHGSat, para. 1.c.; Kepler at 1; NorthStar at 1; SpaceX at 2; OneWeb, para. 2.

⁷ MSCI at 1.

⁸ Coalition, para. 16; OneWeb, para. 2; Telesat, paras. 36-37. Only MSCI endorsed such an exemption (at p.1), again, with no supporting reasons.

B. CHANGES TO CANADIAN DIRECTION AND CONTROL REQUIREMENTS

ISED seeks comments on the following proposals:

1. Primary TT&C and network operations centre for all NGSO systems must be located within Canadian territory;
2. A description and planned location of the facilities must be included in licence applications;
3. Confirmation of the final location of these facilities will be included in the second implementation milestone as part of the conditions of licence; and
4. Construction of the facilities will be included in the milestone associated with the first satellite(s) being in operation.

The consensus supports flexibility

10 The comments demonstrate a consensus against prescriptive requirements for the location of TT&C and network operation centre (“NOC”) facilities. Only one commenter (NorthStar) endorsed an explicit requirement to locate TT&C or NOC facilities in Canada.⁹

11 All other commenters either took no position or noted that the proposal did not seem necessary or practical for NGSO systems. Some commenters focussed on technical reasons why the requirements was inconsistent with particular system architectures,¹⁰ while others instead noted that the proposal was an unnecessary regulatory burden which would not advance the Department’s policy objectives.¹¹ The common theme among these positions is a recognition that it would be unnecessary and inappropriate to restrict the design flexibility of operators that plan to build a global NGSO system.

⁹ NorthStar, para. B1.

¹⁰ Kepler, paras. 6-7; MSCI at 1-2; Telesat, para. 41.

¹¹ Coalition, paras. 17-18; Planet, paras 7-9.

12 Although Telesat plans to maintain its NOC and primary TT&C facilities in Canada, it sees no rational basis for mandating such a condition. As Telesat's comments indicate¹² the Department can ensure compliance with its obligations under the ITU Radio Regulations to ensure that a licensed space station conforms to its designated orbit and frequency parameters and to respond to the ITU's requests for information about a licensed space station, without regard to the physical location of the TT&C and NOC facilities of a Canadian licensee. The important question is whether a Canadian licensee can direct and control the space stations, not the location of the facilities it will use to do so.

¹² See para. 39-43 of Telesat's comments.

C. CHANGES TO CANADIAN COVERAGE AND CAPACITY REQUIREMENTS

ISED seeks comments on the following proposals on Canadian coverage:

1. All commercial NGSO FSS/BSS satellites must cover 100% of Canadian territory on a 24/7 basis;
2. There must be a sufficient number of gateway stations located in Canada to provide services throughout 100% of Canadian territory:
 - a. Two for LEO systems without ISL;
 - b. One for LEO systems with ISL; and
 - c. One for MEO and HEO systems;
3. A description and planned location of the gateway stations must be included in the licence application;
4. Confirmation of the final location of the gateway stations will be included in the second implementation milestone;
5. The completion of the gateway stations will be included in the milestone associated with the first satellite(s) being in operation; and
6. No waivers will be granted from the coverage requirement unless the applicant is already operating a constellation that provides coverage to 100% of Canadian territory.

Any system authorized to serve Canada should be required to demonstrate the capability to provide uninterrupted service anywhere in Canada

13 Unlike most of the commenters, Telesat remains of the view that an appropriately crafted Canadian coverage requirement would be an effective and appropriate step to achieve the Department's policy objectives. Telesat stands by its initial suggestion that the Department's requirement should be that an operator must be able to demonstrate that it will have the capability to provide uninterrupted service anywhere in Canada.¹³ The submissions of the commenters plainly demonstrate that, if the Department does not impose any territorial coverage

¹³ Telesat, para. 52.

requirement, some do not intend to serve all of Canada. They could choose, for example, to serve only more profitable southern Canadian markets, and ignore Northern markets.

14 The Coalition has, perhaps inadvertently, created some confusion on this issue by pointing out that Telesat's NGSO constellation is covered by more than one ITU filing.¹⁴ In fact, Telesat's planned system will clearly be capable of providing uninterrupted service to any location within Canadian territory (or, in fact, anywhere in the world). Telesat submits that it is entirely appropriate for the Department to demand the same from other operators seeking to serve the Canadian market, by means of an ISED licence or a foreign-licensed operator authorization.

D. CAPACITY RESERVATION

ISED seeks comments on the following proposals related to capacity for Canadian users:

1. Licensees of LEO systems must reserve 100% of capacity for the Canadian market while the satellites are over Canada, as described in section 6.3.2;
2. Such capacity must be reserved for the term of the licence;
3. Licensees of MEO and HEO systems must reserve, for each satellite, capacity for use by Canadians that is equal to the proportion of the Canadian territory covered vis-à-vis the total territory covered by that individual satellite; and
4. Such capacity must be reserved until time of launch.

There is a broad consensus view that a capacity reservation requirement makes no sense for NGSO systems.

15 Most comments (including Telesat's) took the position that a capacity reservation requirement is unnecessary to meet the Department's goals and that it will arbitrarily restrict the marketing flexibility and thus viability of Canadian-licensed systems.

¹⁴ Coalition, para. 26.

- The Coalition described the capacity reservation proposal as “punitive”, noting that it went well beyond current GEO-FSS requirements and that it would make licensed Canadian satellite operators less competitive than non-Canadian operators.¹⁵ The Coalition noted that it was “inconceivable” that the proposal would “support any Departmental efforts to ultimately serve more Canadians.”¹⁶
- Kepler similarly questioned whether the proposal was “necessary or conducive to what ISED is trying to achieve” and noted that the Department must carefully consider the impact such “artificial” supply and demand constraints would have on the market.¹⁷
- Planet noted that the proposals were “not commercially reasonable given Canada’s large geography and its relatively small population” and that the proposal would “undermine the development of NGSO systems in Canada and place Canada at a competitive disadvantage relative to other jurisdictions.”¹⁸

16 Telesat agrees with these submissions and reiterates its position that the Department must avoid imposing this kind of competitive disadvantage on Canadian licensees. Telesat strongly recommends that the Department not proceed with this proposal.

E. REMOVAL OF COEXISTENCE AS AN ASSESSMENT CRITERION

ISED seeks comments on the proposal to no longer assess coexistence with authorized and approved Canadian NGSO systems as part of the licence application process.

¹⁵ Coalition, paras. 34, 36.

¹⁶ *Ibid*, para. 35.

¹⁷ Kepler, para. 27.

¹⁸ Planet, paras. 14-16.

ITU Coordination should be adopted domestically

17 Telesat notes that there appears to be a general consensus in favour of abandoning the coexistence requirement. However, there is less agreement on what to replace it with. Although different views were expressed in the comments, Telesat submits that only one practical alternative has been suggested:

- Telesat recommends the use of ITU coordination procedures to resolve domestic coexistence and coordination issues, and Kepler, the Coalition, and OneWeb seem to at least support considering this approach;¹⁹
- NorthStar, and Planet make no suggestion for any alternative;²⁰
- GHGSat and MSCI suggest that coexistence should be retained for some special cases;²¹ and
- Boeing suggests mandatory spectrum sharing if voluntary coordination is unsuccessful.²²

18 The problems that would arise from mandated spectrum sharing are addressed under Section H, below. For present purposes, it is sufficient to note that even Boeing recognizes that coordination is the better mechanism from a commercial perspective; Boeing proposes mandatory spectrum sharing as an “incentive” to facilitate coordination.²³

¹⁹ Telesat paras. 76-79; Kepler, para. 28; Coalition, para. 40; OneWeb, para. 11.

²⁰ NorthStar, para. E; Planet, paras. 17-18.

²¹ GHGSat, para. 4b; MSCI at 2.

²² Boeing, para. 18.

²³ Boeing, para. 23.

19 Accordingly, Telesat submits that there is no real disagreement that coordination is a reasonable alternative to the coexistence criterion. Furthermore, most of the commenters who took a position, including all of the parties that have made any significant investment in a proposed NGSO system, agree that ITU rules are the best backstop for resolving disputes. This will be addressed further in Section H, below.

F. CLARIFICATION OF IMPLEMENTATION MILESTONES

ISED seeks comments on the following proposals to modify the implementation milestones for large NGSO systems to require that:

1. One-third of the authorized constellation be deployed by Year 6; and
2. The full constellation be deployed by Year 9.

Milestones should be flexible enough to reflect the diversity of system proposals

20 The diversity of suggestions for modifications to the Department's current implementation milestones confirms Telesat's observation in its initial comments that operators designing large NGSO constellations are contemplating a broad range of deployment models.²⁴ Telesat concurs with SpaceX's observation that a "one size fits all" approach may be not appropriate.²⁵ Instead, Telesat repeats its previous submission that a hybrid deployment model would offer the most flexibility in system implementation while also achieving certainty of minimum service commitments.²⁶

²⁴ Telesat, para. 81.

²⁵ SpaceX at 6. Similarly, see Telesat, para. 96.

²⁶ Telesat, para. 83.

21 Telesat notes OneWeb’s suggestion that equal treatment of all authorization-holders and applicants would somehow amount to a “windfall” for NGSO systems currently authorized by ISED.²⁷ This position suggests that currently authorized systems should be treated more restrictively than subsequently licensed ones. It would be unfair and even punitive to subject one party to a regulatory condition that the Department has expressly rejected for all others. The challenges of designing and launching an NGSO system are great enough for ISED-authorized operators without arbitrarily imposing restrictions on them that will not apply to their competitors. It would be unfair and inappropriate to selectively handicap one or more operators, but not others, in a competitive marketplace.

22 OneWeb also raises the spectre of speculative applications and spectrum warehousing.²⁸ Telesat agrees with SpaceX that a service-oriented commitment, such as Telesat’s proposal to require either a showing of substantial service consistent with the application or a minimum “safe harbour” standard for the number of satellites at the six-year mark,²⁹ is sufficient to demonstrate the “licensee’s commitment and intent to fully invest in its proposed system.”³⁰ Furthermore, Telesat also agrees with SpaceX that “beyond meeting the standard needed to allay fears of spectrum warehousing, further constraining the NGSO operators’ flexibility to deploy against shifting demands for capacity or coverage would not serve the public interest.”³¹

²⁷ OneWeb, para. 6.

²⁸ OneWeb, para. 9.

²⁹ Telesat, para. 83.

³⁰ SpaceX at 7.

³¹ SpaceX at 7.

G. DEFINITION OF “LARGE CONSTELLATION”

ISED seeks comments on the proposal to define large constellations as those with 30 or more satellites.

The distinction between large and small constellations is unnecessary

23 The consensus view among the commenters opposes the proposal to define a fixed threshold between “large” and “small” constellations. Only two commenters thought the proposed definition was workable, and neither offered a ringing endorsement of the concept underlying it.³² A majority of the commenters³³ agreed that, at least in the case of global NGSO systems, constellation size is not the appropriate determinant for implementation milestones. Telesat agrees with this view, and reiterates its position that there is no need for the Department to define such a threshold.

H. MEASURES TO ADDRESS COORDINATION DISPUTES

ISED seeks views on the following mechanisms that could be implemented in the event of unsuccessful domestic coordination:

1. The imposition of spectrum sharing during in-line interference events;
2. What would be an appropriate angle to define in-line events;
3. Whether the spectrum should be split on an equal basis or reflect the regulatory status (authorization) of the systems involved;
4. The mandated use of a third party dispute resolution process, prior to seeking the Department’s assistance in resolving a coordination dispute; and

³² Kepler accepted the definition for the limited purpose of milestone leniency, but not otherwise, and noted that it was unclear how non-operational or back-up satellites should be counted (at paras. 38-39) , while NorthStar described the choice as “somewhat arbitrary” (at para. G).

³³ O3B, the Coalition, MSCI, OneWeb, SpaceX, and Telesat.

5. Which of the two dispute resolution processes referenced in paragraph 46 should be adopted.

Spectrum sharing during in-line interference events is not a viable approach for NGSO constellations

24 Telesat demonstrated in its initial comments that required spectrum sharing is not the answer.³⁴ Among other defects, such an approach would deny those making enormous investments in their networks any certainty as to the spectrum that would be available for their operations at any given time or over time. Kepler’s suggestion that a higher priority system might be given 14 days to coordinate with a later built system or be reduced to 25% of available bandwidth³⁵ serves to demonstrate just how economically unfeasible such a sharing approach would be. Operators needing to invest potentially billions of dollars in their networks cannot reasonably be expected to do so with a Sword of Damocles existing over their future ability to operate.

25 It is worth noting that both OneWeb and Telesat, the two players whose large NGSO FSS constellations are the closest to commercial operation, agree that fixed avoidance angles will not work for large NGSO systems, and that ISED (and other regulators) should rely on ITU coordination procedures.³⁶ Moreover, the comments demonstrate that (as NorthStar pointed out) “There is not a single solution to mitigate frequency interference.”³⁷ In such a circumstance, it would be inappropriate for the Department to impose *a priori* rules that would, effectively, favour certain kinds of systems and operators over others.

³⁴ Telesat, paras. 94-104.

³⁵ Kepler, paras. 44-45.

³⁶ OneWeb, para. 11; Telesat paras. 94-104.

³⁷ NorthStar at 5.

The consensus rejects mandatory third party dispute resolution

26 Aside from GHGSat, which offered a very qualified endorsement³⁸ and Kepler, which acknowledged it had no practical experience with attempting to resolve a coordination dispute and wondered about the costs involved,³⁹ no commenter supported the imposition of third party dispute resolution as a regulatory obligation. The clear view of the overwhelming majority of experienced commercial operators was that third party dispute resolution would not be helpful and would be more likely to be an obstacle.

27 Telesat submits that there is a clear consensus that ISED is the appropriate authority to resolve domestic coordination disputes, in the unlikely event that external intervention may be needed. It would be inappropriate for ISED to delegate its regulatory responsibilities to resolve such disputes to third party arbitrators and it would be unhelpful to impose procedural barriers and attendant delays in reaching the ultimate decision maker. Furthermore, the comments clearly demonstrate that the parties have confidence in ISED's experience and expertise, which no other third party would be able to provide.

I. COORDINATION REQUIREMENTS FOR FOREIGN-LICENSED SYSTEMS SEEKING APPROVAL TO OPERATE IN CANADA

ISED seeks comments on its proposal to continue approving the use of foreign-licensed NGSO systems in Canada if coordination has been completed with Canadian networks, without requiring international coordination to be completed.

³⁸ GHGSat endorsed the proposed measures only for a subset of frequency bands and only if a limit was imposed on the number of licensees in those bands. In all other circumstances, it noted that the measures were not necessary. See paragraph 6c.

³⁹ Kepler, para. 48.

Foreign licensees should not have an advantage over Canadian licensees

28 Telesat notes that foreign operators support being granted access to the Canadian market without being required to complete international coordination (or, for that matter, any coordination at all). Canadian operators generally support a continued requirement to complete coordination in Canada before granting authorization, the same as would be required of Canadian operators.

29 Telesat submits that the question comes down to whether foreign operators should be given preferential treatment as to required coordination and that the answer to that question is “No”. Accordingly, the same coordination requirements that would apply to a Canadian applicant should also apply to a foreign operator seeking access to the Canadian market.

30 As discussed in Section E, Telesat’s view is that ITU coordination is the only viable alternative to the coexistence requirement. Accordingly, if ISED proceeds with its proposal to eliminate the coexistence requirement, it should instead apply ITU priority, both internationally and domestically.

No fixed time limit should be applied to coordination requests

31 Telesat notes that the Coalition has proposed that the Department should put a time limit on coordination requests.⁴⁰ Telesat recommends that the Department reject this proposal for two reasons.

⁴⁰ Coalition, para. 50.

32 First, coordination requests require highly fact-specific analyses for the same reasons that make *a priori* technical conditions such as fixed avoidance angles impractical. Every such request will be factually-dependent and different. It would be unrealistic to expect that such requests could always be resolved on the same fixed timelines.

33 Second, it is entirely unnecessary to impose any prescriptive timeline. The only consequence the Coalition proposes for not meeting its proposed 90 day schedule is that either operator would be entitled to refer the matter to the Department for resolution. However, an operator would be free to do so at any time, with or without such a time limit.

34 ITU regulations require operators to make good faith efforts to resolve coordination requests. Telesat fully supports this requirement and agrees that, if an existing operator fails to make such efforts, the party requesting coordination should have the right to seek assistance from ISED to resolve the matter. Nothing else is required.

J. CHANGES TO PROCEDURES AFFECTING REVOKED OR RETURNED AUTHORIZATIONS

ISED seeks comments on the following proposals:

1. ISED will publish a notice on its website indicating that spectrum has been returned; and
2. Spectrum that is returned to the Department will not be immediately available for re-assignment;
3. ISED will begin to receive applications for the returned spectrum 30 calendar days after the notice has been published on ISED's Spectrum Management and Telecommunications website.

The consensus accepts the Department's proposal

35 Telesat notes that there is a general consensus that the Department's procedural proposals relating to revoked or returned authorizations are acceptable. Telesat reiterates that it has no

objections to these proposals. Furthermore, Telesat agrees with the Department (and a majority of the other commenters who expressed a view)⁴¹ that 30 days is an appropriate duration for the stand-still period. Any further extension of that period would simply be an unnecessary delay in putting the spectrum to productive use and would be inconsistent with the Department's policy objectives.

All of which is respectfully submitted on behalf of TELESAT CANADA

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⁴¹ Boeing noted no opposition; GHGSat, Kepler, MSCI, NorthStar, and Telesat all endorsed the Department's proposal; O2B, Planet, and SpaceX took no position. Only the Coalition and OneWeb disagreed.