TekSavvy WE'RE DIFFERENT. IN A GOOD WAY.

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October 26, 2020

RE: Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band, Canada Gazette, Part I, August 2020 (Notice No. SLPB-002-20)

To whom it concerns:

It is with pleasure that TekSavvy Solutions Inc. (TekSavvy) submits these comments in response to ISED's Consultation on Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band.

Yours truly,

[transmitted electronically]

Andy Kaplan-Myrth
VP, Regulatory and Carrier Affairs

cc: Marc Gaudrault, CEO
Charlie Burns, CTO

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TekSavvy Solutions Inc.

comments and responses
in

Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band

Canada Gazette, Part I,
August 2020, Notice No. SLPB-002-20

October 26, 2020

Introduction

1. TekSavvy Solutions Inc. (TekSavvy) was incorporated in Chatham Ontario in 1998 and has offices in Chatham, Gatineau and Toronto. With over 400,000 business and residential subscribers nationwide, TekSavvy is the largest competitive TSP in Canada.

2. Since 2013, TekSavvy has consistently invested to increase the size of wireless and wireline facility-based network infrastructure to better service its clientele. Wireless technologies are increasingly a key component of its network deployment strategy. TekSavvy's fixed wireless access network now uses LTE technology to deliver broadband access to a growing number of its over 2,000 rural households.

3. In 2018, TekSavvy celebrated its twentieth year in business and continues its commitment to building on a national reputation for fair play, excellent customer service and strong measures to protect consumer privacy. Values such as open access and net neutrality are at the heart of the TekSavvy model. TekSavvy's approach is heavily consumer-focused, which led to nominations and awards as Toronto's and Chatham's best ISP for years running.

Overview

4. In August 2020, the Department issued a consultation letter titled *"Comments on Consultation on the Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band"* ("the Consultation Letter"). In the Consultation Letter, the department has initiated a consultation on the technical and policy framework for the 3650-4200 MHz band (referred to as the 3800 MHz band) to accommodate flexible use for fixed and mobile services. Proposed changes to the 3500-3650 MHz frequency allocation related to the status of fixed satellite service in the Canadian Table of Frequency Allocations (CTFA) are also included in this consultation. This letter also announced moratoria on certain licensing processes. The Department has invited interested parties to submit comments regarding these proposals.

5. The 59 questions posed in the Consultation do not fully explore the impact of the options laid out in the Consultation and the Telesat proposal. There are issues of cost and technological viability facing WISPs, corresponding impacts on rural subscriber accessibility, and finally the possibility of other long-term spectrum allocation solutions for rural connectivity. In this submission, TekSavvy discusses the issues of disruption of service to subscribers and technical and ecosystem limitations.

6. Next, TekSavvy proposes the following framework to address the goals identified by the Department in the Consultation, as well as the concerns identified by TekSavvy and other WISPs:

    - Option 1 as described in the Consultation, allowing WBS licensees to remain in 3650-3700 MHz;
    - Manage that WBS spectrum using the shared local licensing arrangement used by Ofcom;

- Auction the 3650-3700 MHz band, as well as an additional 30 MHz above 3700, using a pro-competitive auction that would allow WISPs to transition their lightly licensed usage to fully licensed usage, providing 80 MHz for WISPs;
- Apply pro-competitive measures in that 3650 MHz auction such as set-asides for WISPs in rural areas and licensing spectrum in Tier 5 serving areas; and
- Do that 3650 MHz auction at the same time as the 3800 MHz auction.

7. Finally, later in this submission provides detailed responses to the Department's 59 questions.

ISED Policy Objectives for 3800 MHz band

8. ISED's policy objectives that set the framework for this consultation, are expressed in Section 3, point 16 as follows:

    1. *"foster investment and the evolution of wireless networks by enabling the development of high quality 5G networks and technology*
    2. *support sustained competition in the provision of wireless services so that all consumers and businesses benefit from greater choice and competitive prices*
    3. *facilitate the deployment and timely availability of services across the country, including in rural, remote, and Northern regions"*

9. ISED's designation of the 22 Tier 4 urban areas for evacuation by WISPs by 2023 and correspondingly, priority access for carriers would indicate that ISED is concerned that carriers need the 50MHz in the 3.65-3.7GHz band as additional spectrum in urban areas.

Moving WISPs from 3650 MHz to new spectrum above 3800 MHz is not feasible

Disruption of service to rural subscribers

10. Subscribers in rural areas generally have very few options for service provision. Thus, in the scenario that TekSavvy and WISPs in general are not able to provide service, the urban-rural connectivity divide would increase further.

11. WISPs have demonstrated their ability to successfully provide innovative broadband services at a reason cost to rural subscribers who have been left behind by carriers.

12. Migration of WISPs out of the 3650-3700MHz band without adequate provision for the development of a commercial ecosystem in the 3900-3980 band would result in disruption of service to TekSavvy's existing rural subscribers.

13. ISED is proposing a 3- and 5-year transition plan - for urban and rural Tier 4 licence areas respectively, which is considerably faster than the transition period applied in other best practice jurisdictions.

14. The FCC process for shared licensing in the CBRS band was initiated approximately 15 years ago with the 1st consultation process and recently concluded with the June/July 2020 auction event – see Figure 1 below. This enabled all the industry stakeholders: carriers, WISPs and industry users to adequately plan their migration strategy and to obtain adequate spectrum at affordable prices.

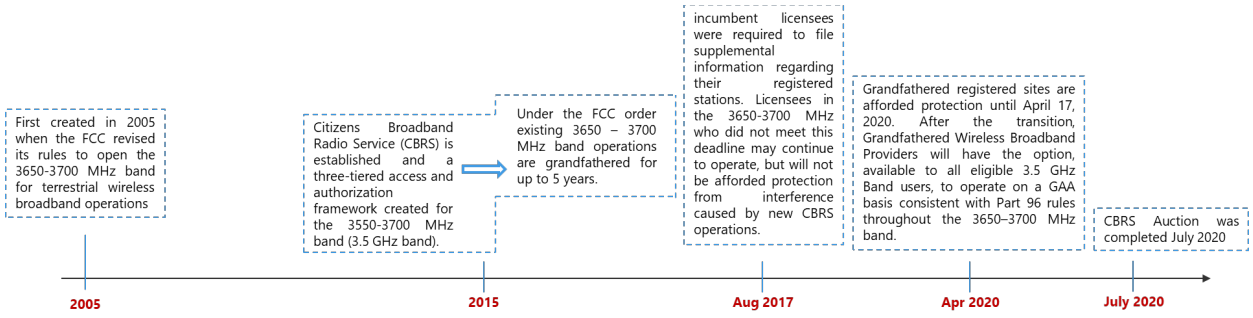

Figure 1 FCC Share Band Licensing Process

15. The absence of a commercial ecosystem would not only compromise the viability of TekSavvy but that of all WISPs – which is the one category of service providers which has demonstrated its ability to provide innovative, dependable broadband service to rural subscribers at a reasonable cost.

Technical and ecosystem limitations

16. Currently, there is no commercial ecosystem for either proprietary or standard based OEM equipment in the 3900-3980 MHz band.

17. The timetable for availability of the 3900-3980 band is subject to decisions by the 3rd party operator Telesat and ISED. While Telesat has proposed evacuation by 2025 - subject to its conditions being accepted by ISED. ISED on the other hand, has indicated a 2023 date for evacuation. Presumably, some negotiations would be required, and an intermediate date (2024?) would be determined.

18. Only 1 of the 3 national carriers could conceivably win spectrum both in the 3500 and the 3800 auction events and thus have contiguous spectrum. The other 2 national carriers would be required to use spectrum aggregation - which can aggregate up to 5 different bands and 150MHz (re. 3GPP standards).

19. The design and commercial launch by standards-based OEMs of new equipment designed specifically for the 3900-3980MHz band, and limited to the Canadian marketplace, would likely require 2-3 years post clearance of the band by Telesat and licensing by ISED. WISPs would require a further 1½ to 2 years for design and build out of their new 3900-3980MHz networks.

20. Overall, under the most optimistic scenario for the factors described above (*i.e.* assuming the 2023 evacuation by Telesat and rapid response by standards-based OEMs), the earliest deployment of equipment by TekSavvy in the 3900-3980 band would be 2027. This is well beyond the dates set by ISED of 2023 and 2025 for urban and rural service areas. In effect, ISED's proposal would leave not only TekSavvy but WISPs - as a whole category of rural service providers, stranded without a viable alternative.

21. In addition, the replacement of existing LTE network equipment with new components would be prohibitively expensive, including core upgrades, baseband replacement, remote radio access network equipment, and CPEs in the 3900-3980 band. This will compromise the viability of TekSavvy's wireless operations and correspondingly and result in TekSavvy inability to provide innovative broadband services to its customers.

The overall viability of WISPs as rural broadband service providers would be similarly compromised.

22. In short, making the proposed changes would make it impossible for WISPs to operate, and would accordingly rely on large carriers to resolve the future gaps in broadband services to rural subscribers. That has not been a successful strategy to date, which is why WISPs exist today.

TekSavvy's proposed solution

Status quo in licensing in the short term

23. In consideration that the 3900-3980MHz band is not a practical solution for WISP operations due to the long lead time (2027 being the optimistic scenario) required to develop and deploy the commercial ecosystem, therefore all WBS licensees, including TekSavvy, should be allowed to continue to maintain and improve operations in the 3650–3700 MHz band. Correspondingly, there should be no moratorium on deployment of equipment for current licensees.

24. The 3650 MHz- 3980 MHz is the last midband available that fits into WISPs business model. The next available bands are all above 6 GHz which means the coverage and range shrinks about 30% to 35% and correspondingly, more equipment and sites would be needed.

25. Other best practice regulators such as FCC and Ofcom have adopted shared-protected licence approach to bridge the digital divide.

26. TekSavvy proposes that the coordination of shared licences in the 3650-3700MHz band should be modeled on the proven, low-cost approach currently used by Ofcom (Please refer to Annex 1).

27. Under this approach, ISED's role would be focused in setting the rules framework and technical guidelines to govern the process of onboarding a new licensee into the area and coordinating deployment, and dispute resolution. The coordination tasks would be devolved to a 3rd party technical committee whose role would be to apply the rules and technical guidelines. ISED might consider the FSCA which already has a spectrum coordination role or alternatively CIRA.

Auction 3.8 GHz with pro-competitive measures

28. In lieu of using 3800-3980MHz as a replacement band for lightly licensed spectrum, TekSavvy proposes the early auctioning of the 3650-3700MHz band concurrent with the auction for the 3800MHz band.

29. Further, in light of ISEDs proposal to allow WISPs 80MHz in the 3900-3980MHz band in order to allow for future development of broadband services, TekSavvy proposes a similar approach by which 30MHz would be added to the current 50MHz in the 3650-3700 MHz (from 3700-3730 MHz). This would provide a full 80 MHz for WISPs and allow the 3650-3730 MHz band to auctioned concurrently with the 3800 MHz band.

30. TekSavvy proposes that the auction rules for the concurrent auction contain key pro-competitive measures including a set-aside comprising 50% of available spectrum and the use of Tier 5 licensing areas.

31. The set aside and Tier 5 provisions are necessary pro-competitive measures to enable WISPs to access secure spectrum at an affordable cost. There are many precedents, from previous ISED auctions as well as best practice used by other global regulators in order to allow 'spectrum poor' categories of service providers to access spectrum.

32. TekSavvy considers Tier 5 licensing area as an efficient mechanism to resolve the issue of significant rural areas being included in the 22 Tier 4 licences designated as 'urban'. TekSavvy notes that the census block (a block is similar to a US county) licensing areas employed by FCC in the CBRS auction are smaller than the Tier 5 licence areas proposed by TekSavvy.

Advantages of TekSavvy's Proposed Industry Solution

33. Under the proposed solution, there would be no disruption in the continuity and quality of subscriber services provided by WISPs. This would enable WISPs to attract new investment to design, implement and deliver new and innovative services.

34. Retention of this scenario by ISED would enable TekSavvy to continue to work with its current technology partner and supplier, to continue delivery of its premium FWA services utilizing 4G LTE technologies on this shared band.

35. In addition, this solution would enable TekSavvy to exercise the option of becoming a regional mobility player utilizing LTE 4G and future 5G equipment.

36. With the exception of the proposed 3650-3730 MHz band for WISPs, carriers would still access over 85% of the spectrum in the 3450-3980 MHz band and benefit from early resolution of issues related to the allocation and rules for utilization of mid band spectrum.

37. In closing, option 1 with spectrum management and auctioning provisions as described would best ensure the following ISED goals:

- accelerating the roll out of connectivity to rural subscribers,
- viability of service providers and,
- competitive goals of choice of services and service providers and lower prices for rural subscribers.

TekSavvy's Responses to Enumerated Questions

Q1. ISED is seeking comments on the timelines for the development of an equipment ecosystem using 5G technologies in the 3800 MHz band. In particular:

a) the ecosystem maturity level and readiness of equipment under band classes n77 or n78 for the Canadian market.
b) the ability of existing or future base station radios to handle multiple technologies and band classes at the same time (i.e. whether all four band classes (B42, B43, n77 and n78) or a subset of these band classes are able to operate on the same base station radio) and how it may affect the adoption of 5G technologies in the 3800 MHz band.

A1.

a) The **ecosystem** is fairly mature and ready for n77 and n78 bands for Canadian markets from all carrier-grade OEMs such as Nokia, Huawei, Ericsson, Samsung and ZTE. All these OEMs have deployed on these bands world-wide and they are in compliance with all Canadian applicable codes such as safety code 6.
b) These bands can coexist and operate on the very same site as long as there is a special spacing, i.e. sectorizing, or spectrum spacing, i.e. frequency channels separation.

Q2. ISED is seeking comments on the potential linkages between the equipment ecosystems using 5G technologies in the 3500 MHz and 3800 MHz bands. In particular:

a) whether contiguity between the 3500 MHz band and 3800 MHz band is preferred given that 3GPP specifications allows for non-contiguous carrier aggregation
b) whether there are any technical or operational impediments (e.g. equipment limitations/challenges to support aggregated use of spectrum, or requirements for additional base station radios) that would be incurred if operators have a large frequency separation between frequency blocks in one or both bands, and at what point (i.e. how wide the frequency separation) such impediments would become significant
c) whether the equipment ecosystem deployed for the 3500 MHz band will be able to operate in the 3800 MHz band, and whether this equipment could easily be extended to 3800 MHz after being deployed

A2.

a) **Contiguity** is not preferred since all technologies, including 3gpp-based, IEEE-based and proprietary technologies, support carrier aggregation. Linkage is not providing any foreseen value to the performance of the service provided.

b) The is no such impediments, carrier aggregation is signalling-based process. The ecosystem of the bands implies that OEMs covers the entire band with the same

equipment. when you move from low to mid or high band, then the effect will be only on the number of sites, as it will require higher number of sites for higher frequency bands.

c) TekSavvy's deployment on band 43 uses Ericsson as the equipment vendor. This equipment operates from 3600-3800 MHz and does not operate above that. As such, significant aspects of TekSavvy's platform deployed to utilize WBS spectrum would need to be replaced if we were required to move to 3800-4000 MHz. At a minimum, it is clear that the RAN and the CPE would need to be replaced.

Q3. ISED is seeking comments on how the difference in technical rules between the U.S. and EU could impact Canada's ability to leverage the economies of scale from the global 3800 MHz ecosystem. In particular:

a) would the difference in technical rules (such as out-of-band-emission (OOBE) power limits) result in two distinct region-specific equipment ecosystems
b) which equipment ecosystem would be more suitable in the Canadian environment (noting that Canada has, for the most part, aligned with the U.S. on low- and high-band spectrum for 5G but in the mid-band, Canada is more aligned with the EU in the 3500 MHz band (3450-3650 MHz)) and specifically, whether Canada should generally align its technical rules with the U.S. or the EU in the 3800 MHz band.

A3.

a) TekSavvy believes that the differences in technical rules would not affect the ecosystem efficiency, as OEMs will incorporate these rules at the time of manufacturing of both network and User Equipment (UE).
b) Alignment with the EU has proven to be more efficient than with the US, as their requirements tend to be stricter and as a result, OEMs ecosystems developed for markets outside the US, will become the de facto global standard and thus, more available for Canadian WISPs.

Q4. ISED is seeking comments on the proposal to add a primary mobile service, except aeronautical mobile, allocation in the 3700-4000 MHz band to the CTFA and the specific changes shown in annex B.

A4.

TekSavvy believes that the addition primary mobile service in band of 3700 - 4000MHz would be aligned with the world-wide deployment and utilization of the band and will provide more services to the public. Consistent with TekSavvy's proposal that an

additional 30 MHz to be added to the existing WBS band from 3650 - 3700 MHz, TekSavvy recommends that the band in effect, be revised to 3730 - 4000 MHz.

Q5. ISED is seeking comments on developing a flexible use licensing model for fixed and mobile services in the 3650-4000 MHz band.

A5.

TekSavvy favours this model, as it would allow TekSavvy to become a regional mobile operator that could enhance competition and deliver better value to the public and local communities.

Q6. Given the proposal in section 7.2 on developing a flexible use licensing model for fixed and mobile services in the 3650-4000 MHz band, ISED is seeking comments on the proposal that no new FSS earth stations be authorized in the 3700-4000 MHz band in the future and that the authorization of new FSS earth station licences be limited to the 4000-4200 MHz band.

A6.

TekSavvy favours migration of all FSS stations, current and future, to 4000-4200 MHz. This would enable ISED to make available the entire revised band from 3730-4000 MHz for auctioning.

Q7. ISED is seeking comments on the proposal to implement a 20 MHz guard band between 3980-4000 MHz to protect FSS operations in 4000-4200 MHz band from proposed flexible use operations in the 3700-3980 MHz band.

A7.

TekSavvy finds this a proper measure to isolate the FSS operations from terrestrial operations as it corresponds to best regulatory practices in the US and the UK.

Q8. ISED is seeking comments on the proposal to maintain a primary allocation to FSS in the entire 3700-4200 MHz band and the proposal that existing FSS earth stations in satellite-dependent areas remain licensed in the entire 3700-4200 MHz band.

A8.

TekSavvy believes that this proposal would kill the ecosystem for n77 and n78 bands in Canada and will deter incumbents and WISPs from being part of future developments in this band.

Q9. ISED is seeking comments on the future demand for C-band in rural and remote areas such as the North, including the following:

a) the trend towards using higher frequencies by FSS operations to provide broadband connectivity
b) the ability of using higher frequencies to replace current C-band capacity and the potential timelines
c) the possibility of a trend towards using 4000-4200 MHz in combination with other connectivity options (e.g. higher frequencies satellites or wireline solutions) and when it would be expected to be available for satellite-dependent areas.

A9.

a) TekSavvy agrees that most FSS operators are moving rapidly to LEOs which requires operating on higher frequency bands to have precise coverage and higher throughputs in the legs which is the case of YahSat and SpaceX.
b) The C-band is being cleared in the US and started in Europe which will be done by 2025.
c) TekSavvy is of the view that a global B2B model is being develop with LEO technology in band 4000-4200 and this will enable delivery of “transport” to WISPs in Rural communities in cost effective way.

Q10. In addition to capacity requirements, ISED is seeking comments on other issues that should be considered in maintaining broadband connectivity in satellite-dependent areas.

A10.

The availability of a successful commercial ecosystem will depend on the development of earth equipment capable of serving both B2B and B2C segments as well as the availability of mandatory Landing Station and PoPs.

Q11. ISED is seeking comments on its proposal to remove the FSS allocation in the 3500-3650 MHz band and to suppress Canadian footnote C20 in the CTFA as detailed in annex B. In addition, ISED is seeking comments on the proposed grandfathering of the existing earth station operations listed in annex C, such that fixed

or mobile stations in the 3500-3650 MHz band will be required to coordinate with these earth stations as specified in SRSP-520.

A11.

TekSavvy is in favour of removing the FSS allocation in this band. The grandfathering process, in our point of view should be an intermediate phase to remove them completely by no later than 2022. This would enable more efficient operations by WISPs in this band.

Q12. ISED is seeking comments on its proposal to remove the primary FSS allocation from 3650-3700 MHz and suppress Canadian footnote C33 in the CTFA as detailed in annex B.

A12.

TekSavvy is in favour of this proposal since it will allow better QoS to be delivered by TekSavvy.

Q13. ISED is seeking comments on:

a) establishing unpaired blocks of 10 MHz for the 3650-3700 MHz band
b) establishing unpaired blocks of 10 MHz for the 3700-3980 MHz band

A13.

a) We are in favour of this method, as it will be matching the block sizing in the principal telecoms markets: US, Europe, Japan, China and Arab World and South Asia. This method would also ensure compatibility with all 5G, 4G and TDD-based technologies.
b) The same comment in (a) applies.

Q14. Subsequent to changes to the spectrum utilization described in section 7 and recognizing the need to change the current WBS licensing model, ISED is seeking comments on its proposal to displace the existing WBS licensees and designate 80 MHz of spectrum available for the development of a new shared licensing process in the 3900-3980 MHz band as described in Option 2. Specifically, ISED is seeking comments on:

a) the amount of spectrum proposed (80 MHz) under a shared spectrum licensing process
b) whether there should be a provision that allows certain users (e.g. existing WBS licensees) priority licensing (e.g. an initial application window before accepting applications from others)

Preliminary comments on a future shared spectrum licensing process are being sought in section 9.1.4 below.

A14.

a) With the development of quad play and 5G applications, WISPs will need both the ability to retain control of any currently in-use portions of the 50MHz in the 3650MHz as well as 80MHz in another, new WBS band. As a more practical and expeditious alternative to accommodate WISPs' requirements for bandwidth, TekSavvy recommends allocating 80MHz to WISPS from 3650 to 3730 MHz.
b) TekSavvy agrees that the highest priority should be given to current WBS licensees as public service providers in this band. TekSavvy also believes that measures should be adopted 1) specifying how to enforce coordination with existing licensees and 2) prioritizing existing licensees for acquisition of new licences in beyond current service areas.

Q15. Given the proposal to implement Option 2, ISED is seeking information on potential costs such as upgrading equipment, which may be incurred by WISPs that are displaced from 3650-3700 MHz to provide services using the 3900-3980 MHz band.

A15.

The costs of upgrading will be substantial for TekSavvy in terms of operational costs, civil construction, hardware, and software. TekSavvy would need to swap out substantial portions of its network and correspondingly assume the cost of new equipment. Since hardware and software is not available from our vendor to acquire in the 3800 MHz band, the costs to migrate are unknowable. Estimated costs will jeopardize TekSavvy's (and overall WISPs') business model and would jeopardize the WISPs existence as service providers to rural subscribers.

Q16. Based on the proposal to implement Option 2, ISED is seeking comments on the proposed displacement deadlines, with WBS operations in urban areas being displaced by December 2023 and all others by December 2025. Respondents are invited to propose other protection and displacement options for consideration, provided they include a strong rationale.

A16.

December 2023 is definitely too short a period to implement the displacement of WBS operations and would jeopardize both services to subscribers and the viability of WISPs as a category of service providers in rural areas. From a logistics point of view, given their size and rural customer profile, WISPs would not be in position to complete the change-over in three years. Even if a commercial ecosystem were to be developed in 3 years, equipment costs for Canadian WISPs would be at a premium in the absence of WISP buyers in the US for the same equipment.

WISPs would need at a minimum, a period of 5 years from ISEDs decision in order to cover the costs incurred in migration to the new band. If the Dec 2023 date has to be met, WISPs ask ISED to make UBF decision and payment available starting from July 2022.

Q17. ISED is seeking comments on the Tier 4 service areas that would be considered urban as defined above and as listed in annex D.

A17.

TekSavvy believes that urban Tier 4 areas in some cases cover broad rural areas, such as London/Woodstock/St. Thomas (4-086-0). Urban areas will be better defined with the higher level of granularity that Tier 5 serving areas provide.

Q18. ISED is seeking comments on whether the moratorium should be extended to include all Tier 4 service areas.

A18.

TekSavvy is opposed to the moratorium on roll out by existing licensees in all Tier 4 service areas, as it has no added value to the process. This measure will make it impossible for WISPs to attract new investments, result in stranded investment in current networks, and impede TekSavvy's ability to bridge the rural and remote divide for subscribers (which incumbents have ignored due to the weak business case in these areas).

Q19. ISED is seeking preliminary comments on the future spectrum licensing process for 3900-3980 MHz, including the following:

a) what type of applications are envisioned for this spectrum

b) what type of shared licensing process ISED should consider (e.g. database approach, licensee to licensee coordination)
c) what additional measures ISED should consider employing to manage access to the band in high demand areas, such as major metropolitan centres
d) what technical restrictions should be considered (e.g. technical rules similar to adjacent 3500 MHz flexible use band with reduced power levels, a guard band between new flexible use systems below 3900 MHz, shared use above 3900 MHz, etc.)
e) what type of eligibility criteria, if any, should be established

A19.

a) Licensing priority in the 3900-3980 should be given to fixed wireless internet (FWA) public networks with a flexibility option at a later date for WISP players only. Incumbents should be excluded from this band.
b) TekSavvy suggests an approach similar to that employed by OFCOM (UK), wherein ISED plays a central role in hosting a central database with a detailed predefined matrix of parameters. These are communicated to licensees in the particular licence area so when implemented, an initial preapproval is granted. In the case that licence is rejected, ISED would intervene with a predefined procedure to decide on the deployment (see flow chart).
c) TekSavvy recommends that ISED devolve the coordination of deployment to a specially constituted WISP committee. Coordination activities would ensure safe separation distance & power output. The committee would consult with the OEMs to ensure the solutions were tailored to the specific deployments. Funding for the committee's technical coordination activities would be funded from ISED and/or new licensees.
d) TekSavvy suggests technical rules similar to those adopted by OFCOM (see table attached).
e) Similar to the FCC hierarchy used for CBRS, we suggest that WISPs - as public networks, be given the highest licensing priority for the shared spectrum and protection from interference. Private commercial networks and private individuals would be given secondary and tertiary priority respectively.

Q20. ISED is seeking comments on its proposal that existing FSS earth stations licensed in 3650-3700 MHz after June 11, 2009, be permitted to continue to operate on a no-protection basis with respect to proposed new flexible use operations.

A20.

TekSavvy believes that it is better to clear this band completely from the existing FSS earth stations, as operating with no protection will only lead to degraded services on the long run which will affect ultimately the quality of transport service that satellite service providers would be potentially providing to WISPs.

Q21. ISED is seeking comments on whether the Tier 4 service areas identified for exemption of certain provisions in GL-10 for mmWave bands as listed in annex E would be appropriate to apply for FSS operations in the 3700-4200 MHz band. ISED invites alternative proposals for areas that would be considered satellite-dependent (e.g. based on Tier 5 categories).

A21.

TekSavvy agrees that FSS operations in the 3700-4200 MHz band - as defined by ISED, should be able to operate in Tier 4 service areas - with one caveat. That is to say, a small amount of spectrum should be assigned to act as a gating factor to enable the definition of “Remote Communities” in certain areas. This would enable WISPs to provide private networks for mining and other remote sites with the help of satellite players for backhaul.

Q22. ISED is seeking comments on whether certain remote industry operations, for example offshore oil drilling platforms, should be included in the definition of satellite-dependent areas.

A22.

Yes, TekSavvy believes ISED’s proposal would allow some WISPs to specialize in this market segment.

Q23. ISED is seeking comments on its proposal to modify the existing FSS satellite authorizations to limit FSS operations in 3700-4000 MHz in non-satellite-dependent areas of Canada to a no-interference basis. ISED is also seeking comments on the proposal to adjust the conditions of licence for FSS operations to reflect the proposals as of the FSS transition deadline, including the possible removal of a high expectation of renewal for the 3700-4000 MHz portion of the band.

A23.

TekSavvy agrees with the proposed transition process.

Q24. ISED is seeking comments on its proposed date of December 2023 as the Canadian FSS transition deadline.

A24.

To the best of our understanding, TekSavvy agrees with this date as reasonable. This date would be particularly important in the event that option 2 is imposed

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Q25. ISED is seeking comments on how the U.S. transition will impact the availability of FSS capacity in Canada.

A25.

TekSavvy believes that US transition would not affect FSS capacity in Canada, as FCC is moving FSS to 4000-4200 band. The current capacity in this band is more than sufficient i.e. it would deliver 10 Gbps per leg, for satellite service providers such as Telesat and SpaceX.

Q26. ISED is requesting information to assist with the consequent decision following this consultation. This information includes satellite transponder migration plans, frequencies, and how satellite operators serving the Canadian market will accommodate all Canadian customers, and on which frequencies. Requested information could include, but is not limited to:

- the names and number of satellites that will need to migrate to the 4000-4200 MHz band
- the number of new satellites that may be required to serve the Canadian market
- the locations of earth stations communicating with these satellites
- the number of antennas and locations of associated earth stations that will need to be retuned and/or repointed
- the flexibility of existing satellites to modify operations according to the different areas of Canada

A26.

TekSavvy can not advise on this matter.

Q27. ISED is seeking comments on its proposed transition deadline of December 2023 for FSS earth stations, in which existing FSS earth station licences would be modified to 4000-4200 MHz in the relevant areas.

A27.

TekSavvy finds this date reasonable and aligned with our proposal of delaying any deadline for existing WBS licensee if option 2 is imposed

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Q28. ISED is seeking comments on making amendments to the relevant conditions of licence and technical rules in the 3700-4200 MHz band as well as the 3450-3700 MHz band in order to implement the following proposals with respect to protection from interference:

a) **prior to the transition deadline**, existing licensed FSS earth stations may operate in the entire 3700-4200 MHz band in all areas and be protected from interference from flexible use operations both in-band (3700-3980 MHz) and the adjacent 3450-3700 MHz band
b) **after the transition deadline**, existing licensed FSS earth stations may continue to operate in the entire 3700-4200 MHz band in satellite-dependent areas and be protected from interference from in-band flexible use operations in 3700-3980 MHz, but would not be protected from flexible use operations in the adjacent 3450-3700 MHz band; however, ISED also proposes that flexible use licensees deploying stations in the 3450-3700 MHz band within 25 km of an existing licensed FSS earth station in the 3700-4200 MHz band be required to provide a notification to these operators, one year prior to the deployment of fixed or mobile stations
c) **after the transition deadline**, FSS earth stations would only be licensed to operate in the 4000-4200 MHz band in non-satellite-dependent areas and would be protected from flexible use operations in the adjacent 3700-3980 MHz band
d) **after the transition deadline**, FSS earth stations operating in 3700-4000 MHz, in all areas, which are not eligible for licensing could continue to operate as a licence-exempt station without protection from flexible use operations both in-band and adjacent band(s)

A28.

a) TekSavvy believes that the proposal to protect FSS operations from interference could have a negative impact on WBS operations in the band 3650-3700. Therefore, TekSavvy is of the view that the FSS operation in the 3650-3700MHz band should be restricted.
b) We are in favour of this proposal.
c) We are in favour of this proposal.
d) We are in favour of this proposal.

Q29. ISED is seeking comments on the proposed change to the CTFA to add the new footnote CZZ proposed above and shown in annex B.

A29.

TekSavvy agrees with the intent of footnote CZZ: “As of [Transition deadline], FSS earth station operations in the band 3700-4000 MHz will operate on a no-protection basis, except for in satellite-dependent areas, as per [future decision paper].”

Q30. ISED is seeking comments on how to ensure the continued operation of gateways that support the provision of services in satellite-dependent areas, specifically:

a) how much spectrum would be required at these gateway sites
b) if these stations could be consolidated into two sites, away from major population centres, and where the best locations for those sites would be

A30.

The most important technical and operational challenges for new mobile satellite services (MSSs) in low and medium earth orbits (LEOs, MEOs) currently being proposed and expected to be operational by the end of the decade, (often referred to as the ‘Space Segment’) are as follows:

- The business viability of launching, maintaining in orbit and replacing failed units for such a large number of satellites remains to be demonstrated, especially, in a competitive FSS marketplace.
- The Ground Segment, and in particular, to fixed earth stations acting as “gateways” to the terrestrial network deserve careful consideration because of their significant impact on the overall FSS economics.

In the specific case of Globalstar:

a) We have seen that 200 MHz is the maximum BW that is allocated to gateways to provide premium next generation services to both consumers and businesses.
b) It would be to the advantage of all Canadian service providers that the gateways be located in proximity to major network-to-network interconnection (NNI) points in the east and west of Canada.

Q31. ISED is seeking comments on its proposal to issue interim authorizations for certain existing licence-exempt earth stations in the 3700-4200 MHz band.

A31.

TekSavvy views interim authorizations as a minor source of interference that would have no impact on WISPs provided option 1 is retained. If option 2 is retained, it would cause intermittent interference issues and thus, TekSavvy would oppose this authorization to be given to any licence-exempt earth station.

Q32. ISED is seeking comments on the proposed deadline of up to 90 days after the publication of a decision for submitting applications for these interim authorizations of existing licence-exempt FSS earth stations in the 3700-4200 MHz band.

A32.

TekSavvy is of the view that a 90-day deadline after publication is a reasonable period to submit applications.

Q33. ISED is seeking comments on its proposal that receive-only earth stations that are not eligible for an interim authorization or whose operators do not seek authorization, could continue to operate as a licence-exempt earth station on a no-protection basis.

A33.

TekSavvy opposes this approach as these stations would cause interference with WISP operations. From an administrative viewpoint, this would result in a backlog of complaints from consumers and ultimately lead to the regulator being overwhelmed and intervention on a case-by-case basis. In that case, any dispute resolution process would be very difficult.

Q34. ISED is seeking comments on its proposal that in non-satellite-dependent areas, existing earth stations that operate under interim authorizations receive in-band protection from flexible use operations in the 3700-3980 MHz band until the transition deadline.

A34.

Such a protection in these areas would mean that WISPs would not be able to guarantee the delivery of reliable services to its rural subscribers. This would not be an issue if option 1 is retained or small rural WISPs current investments are protected.

Q35. ISED is seeking comments on its proposal that in satellite-dependent areas, existing earth stations that operate under an interim authorization receive in-band protection from flexible use operations in the 3700-3980 MHz band before and after the transition deadline.

A35.

TekSavvy supports this proposal in the case that option 1 is retained, as it offers smooth and easy transition for satellite-dependent areas and thus, would not affect WISPs operations. In the case of option 2, TekSavvy rejects this proposal.

Q36. ISED is seeking comments on its proposal that in all areas, existing licence-exempt earth stations that operate under an interim authorization receive no protection from adjacent band WBS stations and flexible use stations operating below 3700 MHz before and after the transition deadline.

A36.

TekSavvy is in favour of this proposal, as it will allow all WISPs to provide reliable services to their rural subscribers.

Q37. ISED is seeking comments on whether the interim authorization process should also apply to new receive-only FSS earth stations in the 4000-4200 MHz band.

A37.

TekSavvy agrees with this approach and see it meeting all parties' requirements for providing services.

Q38. ISED is seeking comments on the proposed conditions for interim authorizations for licence-exempt FSS earth stations in 3700-4200 MHz and new receive-only FSS earth stations in the 4000-4200 MHz portion of the band as detailed in annex G.

A38.

TekSavvy is in favour of all the conditions that are detailed in annex G; G1 to G9.

Q39. ISED is seeking comments on the proposed eligibility of licence-exempt stations that could apply for an interim authorization.

A39.

TekSavvy is view that in satellite-dependent areas this would have no impact. In non-satellite dependent areas, the eligibility should be tied to:

1) Received Power
2) Availability of alternatives for the service
3) Proximity to serving WBS sites

Q40. ISED is seeking comments on its proposal to no longer issue new licences for fixed services to operate fixed point-to-point applications in the 3700-4000 MHz band.

A40.

TekSavvy proposes that current WBS licensees be licenced in the band 3700-4000 MHz in addition to current 3650-3700 MHz band for fixed point to point applications.

Q41. ISED is seeking comments on whether to allow new licences for fixed services to operate fixed point-to-point applications in the 4000-4200 MHz band.

A41.

TekSavvy is in favor of giving current WBS licensees licences in the band from 3900 to 4080 provided Telesat's proposal is accepted. If Telesat's proposal not accepted, then TekSavvy would not support the coexistence.

Q42. ISED is seeking comments on the proposal to grandfather existing point-to-point operations in the 3700-4000 MHz band under existing licences for fixed service (as identified in annex A), such that flexible use systems in these two tiers may not claim protection from, nor cause interference to these fixed service stations.

A42.

TekSavvy is in favour of this proposal since it protects these links that mostly act as backhauling service.

Q43. ISED is seeking comments on the proposal to rely on technical limits and coordination procedures rather than mandate specific technology solutions (e.g. TDD synchronization between systems) to address interference issues between TDD flexible use systems in the 3650-3980 MHz band.

A43.

TekSavvy strongly supports this approach, as it gives WISPs the flexibility to deploy the most effective solutions that fit their both budget and customers needs

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Q44. ISED is seeking comments on whether any additional measures should be taken to limit potential interference issues between flexible use systems in the 3650-3980 MHz band.

A44.

For WBS service providers in the scenario of shared spectrum, TekSavvy recommends an approach similar to that of Ofcom (see Q.19).

In the case of exclusive licences, we believe migrating FSS to 4000 - 4200 would be acceptable.

TekSavvy's preference consistent with Telesat's proposal, that it operate on 4100 - 4200 MHz band.

This would be more than enough for Telesat operation and correspondingly, eliminate potential interference. This is consistent with our proposal to not grandfather any stations or give any satellite-related operations an extension to coexist with terrestrial services.

Q45. ISED is seeking comments on whether specific technical measures should be adopted to address potential interference issues between flexible use systems and WBS systems until the displacement deadline.

a) **For co-channel flexible use and WBS operations in the 3650-3700 MHz band**, what specific measures may be needed to protect WBS? For example, should new flexible use stations be required to coordinate with WBS stations within a specified distance prior to deployment? Alternatively, should a technical parameter such as a power flux density (pfd) trigger for coordination measured at the WBS receive antenna be adopted? Are there other more appropriate measures that ISED should consider? Should multiple measures, such as a combination of distance and pfd trigger for coordination, be adopted? How would these requirements impact the deployment of new flexible use stations?
b) **For adjacent band flexible use systems**, is there a need to adopt any additional measures, beyond what is currently specified in RSS-192 and SRSP-520, to further address coexistence between these flexible use and WBS systems? If so, what should they be? How many flexible use frequency blocks (or MHz) immediately adjacent to the 3650-3700MHz band could potentially

affect WBS systems? How would these requirements impact the deployment of flexible use stations?

A45.

a) We suggest to following the same approach TekSavvy suggested in our answer to Q.19.
b) We believe that RSS-192 and SRSPs-520 are sufficient and no further measures are needed.

Q46. **Until the transition deadline, in all areas for flexible use in the 3650-3700 MHz band:** ISED is seeking comments on the proposal that until the transition deadline, those flexible use licensees deploying stations in 3650-3700 MHz within 25 km of a licensed FSS earth station (not including interim FSS authorization) in the 3700-4200 MHz band will be required to coordinate with the operators in these earth stations.

A46.

TekSavvy strongly supports this process as a mean of releasing 3800 spectrum. It will give the opportunity for both incumbents and WISPs to participate and extend their services to Canadians

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Q47. **After the transition deadline, in all areas for flexible use in the 3450-3650 MHz band:** ISED is seeking comments on its proposal that the current SRSP-520 coexistence requirements for flexible use operations in the 3450-3650 MHz band to protect FSS operations in the adjacent band 3700-4200 MHz be removed.

A47.

TekSavvy supports this proposal as, it has proven its efficient utilization of spectrum in its current operations.

Q48. **For FSS earth stations licensed in the 4000-4200 MHz band and flexible use in the 3800 MHz band, in all areas:** ISED is seeking comments on adjacent band coexistence measures, taking into account the coexistence measures adopted by the EU (i.e. a stringent OOBE limit) and the U.S. (i.e. a combination of guard band, a typical OOBE limit, pfd limits, and baseline minimum filter specifications for earth station operations) and the current Canadian requirements (i.e. a typical OOBE limit and coordination distance):

A48.

TekSavvy finds the EU technical requirements are the most comprehensive. However, in recognition of border coordination issues, we would support implementation of the alternative US specifications.

Q49. ISED is seeking comments on what technical requirements should be imposed to ensure co-channel protection of FSS earth stations from flexible use systems, in the relevant scenarios and timeline as stated in sections 9.5 and 9.6. For example, could the pfd limit of -124 dBW/m2/MHz measured at the earth station antenna proposed by FCC above be used to protect co-channel FSS earth station? Alternatively, should other measures be adopted, such as a separation distance as described in section 7.3? Or should a combination of measures be adopted? If applicable, what are the specific values that should be adopted?

a) What are the benefits and technical limitations associated with the above coexistence measures?
b) Which set of coexistence measures above (i.e. EU, U.S., Canada) is preferred? If applicable, comments are sought on the values of the limits in relation to the supported measures.
c) Given the proposal in section 9.1 to displace WBS in 3650-3700 MHz and identify 3900-3980 MHz for shared use, are there any additional considerations that may impact the response to a) and b) above?
d) Which portion of the 3800 MHz band should the above measures be applied to in order to protect FSS in the 4000-4200 MHz band (i.e. how many frequency blocks or MHz)?

A49.

TekSavvy sees the hybrid approach using the parameters of power and separation distance, as the best approach to cover all the scenarios such as the one in the remote and rural areas or special areas where there is an industrial venue near an urban area.

a) The key benefit from the co-existence measures would be better services from both satellite and terrestrial services providers and more efficient utilization of the spectrum.
b) Although the EU approach is preferable due to the more comprehensive restrictions, we see the US approach as more practical for implementation given potential interference issues on the border.
c) TekSavvy is not aware of other considerations, beyond those presented already for option 1.
d) TekSavvy agrees that the best practice would be the implementation of 20 MHz channel guard band.

Q50. ISED is seeking comments on whether the assumptions made by the FCC about earth stations, including baseline minimum filter specifications for earth station operations as stated above, are applicable to Canadian operations. Is there any additional information that ISED should consider in the development of appropriate technical rules to enable coexistence both co-channel and in adjacent bands?

A50.

TekSavvy has no comments on this matter.

Q51. ISED is seeking comments on its proposal to not implement any technical requirements for the coexistence between flexible use operation in the 3650-3980 MHz band and radionavigation operations in the 4200-4400 MHz band, noting the 220 MHz frequency separation between the bands of operation. If this is not sufficient for coexistence, what other measures would be appropriate?

A51.

TekSavvy finds this separation of bands is more than sufficient for the coexistence between these two operations and no further technical requirements are needed.

Q52. ISED is seeking comments on the use of an auction as the licensing process for the flexible use spectrum that would be considered as the 3800 MHz band, noting a separate consultation process would be issued, if required, to determine the licensing framework for the range 3900-3980 MHz.

A52.

TekSavvy strongly supports this process as a means of releasing 3800 spectrum. It will give the opportunity for both incumbents and WISPs to participate and extend their services to Canadians. However, given the relative commercial power of the incumbents, the interests of the WISPs as a public service providers targeting rural areas, should be protected by the use of set asides as a key pro-competitive measure, etc. and this in turn, would ensure access to affordable, secure spectrum.

Q53. **In providing comments for the following questions, respondents are requested to include supporting arguments and rationale, taking into consideration of ecosystems for 5G services and the adjacent WBS operations in**

the 3650-3700 MHz band.

ISED is seeking general comments on the proposal submitted by Telesat found in annex H, including whether such an approach would be in the best interest of Canadians and more specifically, whether it would result in the faster deployment of 5G services in the affected frequencies; more efficient use of spectrum and what the implications of this repurposing plan would be for other users of the band.

A53.

TekSavvy agrees that Telesat's proposal would serve the best interest of Canadians and allow Canada to be aligned with international telecom markets with the same band capacity. Ofcom and FCC have adopted similar measures for FSS firms operating in their territory.

Telesat's proposal would allow Canada to advance towards the 3GPP band upper limit, 4200, by proposing clearing the band to 4100 instead of 4000. The other users of the band, provided option 1 is retained, will be satisfied, as WBS licensees would keep their band from 3650 to 3700 MHz and preferably, would be accorded a further 30 MHz between 3650 - 3730 MHz for a total of 80 MHz. It would also provide 370 MHz for flexible use by incumbents along with procompetitive measures for new entrants. TekSavvy believes that Telesat's proposal aligns with the key arguments advanced by TekSavvy in its own proposal.

Q54. ISED is seeking comments on whether the Telesat proposal meets ISED's policy objectives outlined in section 3, including:

a) supporting rural/remote connectivity
b) promoting competition in mobile services
c) making more mid-band spectrum available to support 5G services

A54.

a) TekSavvy views Telesat's proposal as being aligned the key ISED objective of supporting rural and remote connectivity. However, Telesat's proposal for auctioning spectrum does not address the issue of procompetitive measures in auctioning of the 3800 MHz spectrum. Also, TekSavvy views the 3800 MHz spectrum as integral to 3700 to 4100 MHz and as a result, this 400 MHz of spectrum should be auctioned as a single event and not to be divided into two separate blocks of 200 MHz as Telesat has proposed.
b) TekSavvy believes that Telesat's proposal, combined with TekSavvy's answer in (a), if adopted by ISED, would stimulate significant new competition and investment in the wireless industry.

c) TekSavvy believes that Telesat's proposal - when combined with TekSavvy's answer in (a) would enable clearance of the core bands required for 5G in the midband spectrum.

Q55. ISED is seeking comments on what elements from sections 7 to 10 of this consultation would still apply or need to change if ISED were to implement the Telesat proposal, in particular:

a) the proposal for maintaining the primary allocation for FSS in the 3700-4200 MHz band
b) the proposed implementation of an exemption to transition for satellite-dependent areas and the proposed changes to satellite licenses to apply it
c) the proposal for treatment of WBS incumbents
d) the proposal to issue interim authorizations for certain existing licence-exempt earth stations in the 3700-4200 MHz band
e) technical considerations for coexistence between FSS and flexible use
f) technical considerations for coexistence between flexible use and aeronautical radionavigation systems
g) the overall impact on existing users in the 3700-4200 MHz band

A55.

a) TekSavvy supports Telesat's proposal (point 61 page 27) that the primary allocation for FSS be in band 4100-4200.
With regards to band 3700 - 4100, it is TekSavvy's view that the FSS receive-only and earth stations should be allocated on a 'no-protection' basis. Only the gateway earth station should be protected from terrestrial operations.
b) TekSavvy views Telesat proposal to be aligned with the WISPs point of view - with the exception of expediting the transition date with the help and facilitation provided by ISED.
c) TekSavvy strongly supports maintaining WBS licenses in 3650-3700 along with adoption of Telesat's proposal. Furthermore, TekSavvy recommends that the licensees be accorded a further 30 MHz in the 3700 - 3730 which would provide the 80 MHz total in 3650 - 3730 MHz band. TekSavvy supports the aspect of Telesat's proposal dealing with early evacuation of the 3700 - 3900 MHz band/
d) TekSavvy believes this interim authorization measure to be necessary; however, it should be subject to a limited focus and timeframe.
e) TekSavvy supports Telesat proposal for co-existence between US FSS and Canadian terrestrial services in border areas as this would provide the technical parameters for managing coexistence between FSS and flexible use.
f) TekSavvy supports ISED proposal on this point as it serves the objective of delivering the best service to Canadians in rural and remote areas.
g) TekSavvy believes that the impact would be minimal - subject to the adoption of option1 along with procompetitive measures, and would in fact, provide an

opportunity for WISPs to substantially increase their ability to attract new investment and extend services to more rural and remote communities across Canada.

Q56. If ISED were to implement the Telesat proposal, ISED would need to consider the licensing framework for the 3700-3900 MHz band. Thus, ISED is seeking comments on:

a) whether it should, as proposed by Telesat, issue flexible licences in the 3700-3900 MHz band using the same conditions of licence as those contained in annex H of the 3500 MHz Framework, noting that some conditions may need to be adjusted to reflect the differences in the two bands and the decisions resulting from this consultation process
b) whether it should issue a single Tier 1 flexible use licence as proposed by Telesat or align with the 3500 MHz band and issue Tier 4 licences
c) what deployment conditions should apply to these licences including Telesat's proposal that the deployment requirements would only come into force after the Minister approves a transfer
d) any additional conditions of licence that should apply given the nature of the proposal.

A56.

a) TekSavvy views this proposal serves the best interest of Canadians by ensuring the best use of the spectrum. We support Telesat proposal on this matter.
b) TekSavvy believe Tier 4 licence is preferable to Tier 1 for WISPs. However, it is TekSavvy's position that ISED should adopt Tier 5 as the basis for licensing of the 3500 - 3800MHz bands as it is necessary for WISPs to access affordable spectrum.
c) TekSavvy views at this point holistically and as a result, it is heavily dependent on the final decision of the Minister on the entire licencing and management of this band. Accordingly, we are aligned with the view that the deployment requirements should come into force after Minister approves the entire framework not just the transfer.
d) TekSavvy would like to see set aside as the key pro-competitive measure for both the 3500 MHz and 3800 MHz licensing. TekSavvy agrees with the 50% set-aside proposal.

Q57. In its proposal, Telesat indicates that it takes no position on ISED imposing a pro-competitive measure such as a spectrum cap or set-aside on the 3700-3900 MHz licences. ISED would review any request for transfer in accordance with provisions related to commercial mobile spectrum through section 5.6 of CPC-2-1-23, Licensing

Procedure for Spectrum Licences for Terrestrial Services. However, ISED would also consider the competitive implications on the 3500 MHz and 3800 MHz bands and consider pro-competitive measures in accordance with the Framework for Spectrum Auctions in Canada. As such, ISED is seeking comments on:

a) the need for a pro-competitive measure (e.g. spectrum cap or set-aside)
b) the type of competitive measure that should be applied
c) the amount of spectrum that should be considered under any such competitive measure

A57.

a) TekSavvy believes that pro-competitive measures are vital to the success of auctioning in the 3700-4100 band, as these would give WISPs the opportunity to participate and seek investments to deploy more 5G standardized equipment and ecosystem.
b) TekSavvy strongly recommends that ISED adopt a set-aside provision of 50% of the spectrum for WISPs as the key pro-competitive measure in the auction framework rather than the adoption of a spectrum cap.
c) As stated above, 50% of available spectrum in each Tier-4 licence area should be incorporated into the set aside provision.

Q58. ISED is seeking comments on Telesat's proposals for the transition of FSS earth stations and whether any additional measures are required to ensure a smooth transition.

A58.

TekSavvy supports Telesat's proposal for transition FSS earth stations as an innovative approach that would hasten clearance of the earth stations' spectrum and thus, allow WISPs to expand their services in rural and remote areas.

Q59. TekSavvy supports Telesat's proposal for transition FSS earth stations as an innovative approach that would hasten clearance of the earth stations' spectrum and thus, allow WISPs to expand their services in rural and remote areas.

A59.

a) TekSavvy believes that standardized 5G equipment will be available in the next 1-2 years at latest. This would be consistent with previous experience whereby, once consensus has been reached through the 3GPP consultation process - including OEMs, operators, regulators, ITU and research institutes, the global

ecosystem responds very quickly to develop commercial equipment for service providers.

b) TekSavvy believes FSS filters will be commercially available, as the technology which enables the manufacturing of FSS filters - tailored to different markets and bands, has become a standard commodity in the industry.
c) TekSavvy believes that 100MHz of spectrum will be more than sufficient - from capacity perspective, for satellite service providers in light of the multiplexing technology and orbital arrangements.
d) TekSavvy is of the view that receiving-only stations in border areas would have a minimal or no impact on the flexible use stations. Furthermore, with an exception of a very low power units, there will be no transmitting FSS stations located in the immediate vicinity of the border. TekSavvy believes that there will be no impact on the value of the spectrum to either WISPs and/or mobile operators as they can switch stations and UEs to other spectrum to continue their 5G services.

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