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# TekSavvy Solutions Inc.

Reply Comments

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

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## A. INTRODUCTION

1. TekSavvy Solutions Inc. ("TekSavvy") is submitting its reply comments on ISED's "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".

2. TekSavvy reasserts its position in favour of Option 1 in that Consultation document, and its strong opposition to Option 2, as expressed in its original submission. TekSavvy rejects Option 2 as disastrous both for WBS service providers' ongoing viability and availability of broadband service to rural subscribers.

3. TekSavvy supports Option 1, wherein WBS Licensees would be allowed to continue to operate in the band of 3650 to 3700 MHz indefinitely as the only option that enables continued investment in rural broadband networks and continued improvement of broadband services to rural subscribers.

4. TekSavvy also proposes improvements to the current regulatory framework for the 3650 MHz band ("Option 1 improved") that would improve viability and broadband service availability. This includes the adoption of an Ofcom-style co-management of the spectrum between ISED and WBS licensees and the addition of 30 MHz to the existing 50 MHz of WBS spectrum in order to constitute a full 80 MHz of dedicated spectrum for WBS licensees (3650 to 3730 MHz).

5. TekSavvy opposes the moratorium imposed by ISED on new licenses and deployments in the 3650 MHz band.

6. TekSavvy is in favour of the inclusion of pro-competitive measures in the upcoming ISED 3800 MHz auction: set-aside spectrum of 120 MHz and a spectrum cap of 40 MHz within the set-aside. TekSavvy submits that ISED apply differential tiering in the auction: Tier-4 in the open and Tier-5 in the set aside.

7. The key arguments for TekSavvy's position are organized according to the type of issues (technological, business operations, viability, subscriber impacts) considered in the text below. Where other parties have indicated agreement with TekSavvy's position, these are noted in the text.

## B. ARGUMENTS FOR OPTION 1 AND AGAINST OPTION 2

### a. Contiguity

8. In their arguments for displacement of WBS spectrum users to the 3900 MHz band, the major carriers have suggested in their submissions that continuity of spectrum from 3450 to 3900 MHz as the "best option" as there are "benefits that cannot be achieved through carrier aggregation."

9. However, there is no technological or cost savings reasons for contiguity, as it will not generate any extra spectral efficiency or network performance for the carriers.

10. TekSavvy remains skeptical about the promises of contiguous spectrum, since it is not certain that any major Mobile Network Operator (MNO) would have the correct amount

of spectrum following the proposed auctioning of both 3500 MHz and 3800 MHz bands. As outlined in the initial comments of Radio Advisory Board of Canada, a carrier would need to hold the correct blocks of spectrum on either side of the 3650 MHz space within the same service tier at the end of two distinct auction processes.[1]

11. TekSavvy also notes that Cogeco, Xplornet, Iristel, and CanWISP agreed that contiguity was unnecessary in their submissions.

12. Additionally, in a 2015 study published in IEEE proceedings by Carnegie Mellon University in Pittsburgh, PA, performance was compared between carriers using aggregated spectrum and equal contiguous bandwidth.[2] That study showed throughput and latency were the same given users' density and inter-site distance.

13. In Figure 1 below, based on the location of radios on the same site (a typical case in Canada)—and even in exceptional circumstances up to 3 km away—the throughput of aggregated bandwidth and contiguous bandwidth is the same. The blue line with solid dots represents contiguous channels while the red line with solid dots represents the aggregated channels with the same size of bandwidth.

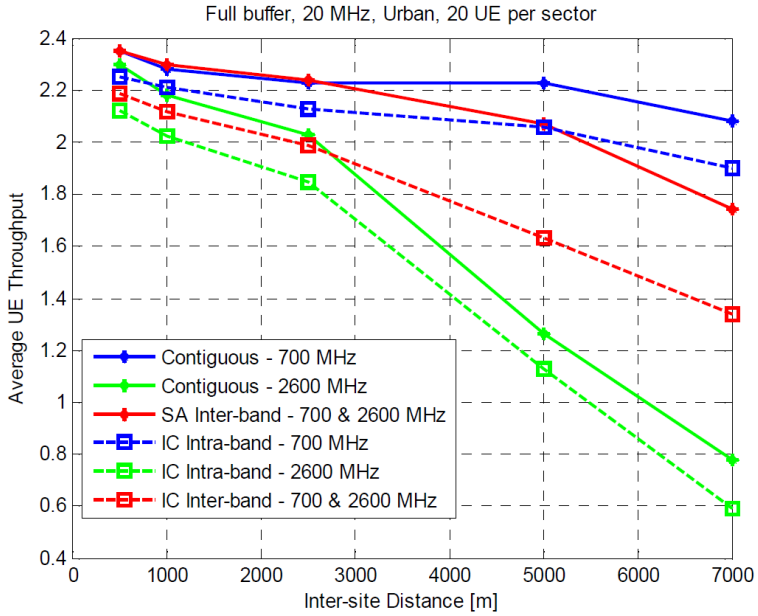


*Figure 1: Performance comparison between contiguous and aggregated channels[1]*

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1 Radio Advisory Board of Canada, Comments in Response to SLPB-002-20, 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, 26 October 2020, at para 8.

2 M. Alotaibi, M. Sirbu and J. Peha, "Impact of spectrum aggregation technology and frequency on cellular networks performance," 2015 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), Stockholm, 2015, pp. 326-335, doi: 10.1109/DySPAN.2015.7343928.

**b. Availability of ecosystem in the 3900 and impacts on viability**

14. With consideration of Option 2's displacement to 3900-3980 MHz, it is expected that a carrier-grade ecosystem will be ready by mid to late 2023. However, in the interim 2020 to 2023 period, it would be irrational for TekSavvy to continue to invest in its current 3650 MHz network. Consequently, broadband service to existing rural subscribers would suffer and overall, long-term viability of its wireless operations would be compromised. TekSavvy's current carrier-grade gear would in effect would become a "stranded asset". This would have a severe financial impact on TekSavvy's wireless operations and its ability to serve the broadband needs of its rural subscribers.

15. TekSavvy would need to invest in new equipment (RAN, CPEs, software) in order to continue operations beyond the 3800 MHz auction date proposed by ISED.

16. TekSavvy is the exception to most WISPs in that it employs carrier grade equipment in its current 3650 MHz operations. Almost all other WBS users, and in particular those WISPs serving rural subscribers, use proprietary gear rather than carrier-based gear. Proprietary solutions vendors are expected to have this ecosystem available by 2024.

17. These WISPs, and the rural subscribers they serve, would be placed in an even worse situation than TekSavvy, since it would be again irrational to invest in new equipment for the current 3650 MHz networks during the interim period. This would also cause broadband service to rural subscribers to degrade. Not only is there a longer delay for propriety equipment, the relevant equipment for 3900 MHz networks will only be available after the proposed 2023 auction date.

18. In addition, the limited financial capacity of WISPs will make it difficult to finance the required investment in new gear for operations in the 3900 MHz band. Consequently, many WISPs will simply cease operations and thousands of rural subscribers will be left without service.

19. TekSavvy notes that the Regional Municipality of Durham, operators of an fixed wireless broadband service in the WBS band, has estimated the cost of migration to the 3900 MHz band under option 2 would be between $1,500,000 to $2,000,000 to account for new software and hardware upgrades.[3] Additionally, the Municipality indicated there would be significant service disruptions for subscribers for an indeterminate period.

20. In short, forcing TekSavvy into a three-year expansion hiatus, followed by significant investment requirements for a new 3900 MHz network, would compromise the viability of TekSavvy's wireless operations. Consequences would include terminating service for thousands of rural broadband customers.

21. We note that in their submissions, Bragg Communications Inc., Cogeco, the Region of Durham, and Ecotel agree that the costs encountered encountering by WBS users in

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[3] The Regional Municipality of Durham, 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 SLPB-002-20, 26 Oct 2020, answer to Q15 at p 2.

the displacement to 3900-3980 MHz (radios, CPEs, software) would compromise the viability of WBS spectrum users, in particular those serving rural subscribers.

**c. No moratorium on new WBS deployments**

22. TekSavvy opposes the current moratorium imposed by ISED on licences and deployment by WBS service providers in the 22 license areas designated as "urban". This measure has resulted in WBS service providers halting investments in their current 3650 MHz networks that would assist in improving broadband service to rural subscribers and this result is inconsistent with ISED's policy objective of bridging the digital divide.

23. TekSavvy notes that Cogeco also takes a position against enforcing a moratorium on new stations for existing licensees. The British Columbia Broadband Association (BCBA) found the moratorium to be damaging to subscribers in rural and urban areas, as the business model of current WBS licenses would be compromised and correspondingly, plans to continue to grow and sustain their services would be abandoned. The comments submitted by CanWISP, Iristel, and Bragg Communications share TekSavvy's position against the moratorium on new deployment. Iristel suggested that the definition of urban areas be limited to Tier-5 configurations, to limit the areas requiring power restriction around cities and satellite-dependent areas and to limit unnecessary coordination with FSS users where fiber is available.

**d. Improvements to Option 1**

24. The 3650 MHz band provides the best option to ensure the viability of service providers and availability of broadband services to rural subscribers. TekSavvy suggests that Option 1 could be improved by the adoption of the following changes to the regulatory framework.

    a. Improved Coordination Management: As indicated in its submission, TekSavvy proposes that current coordination and interference issues in the 3650 MHz band could be resolved through the adoption of an approach similar to Ofcom's co-management of the spectrum with WBS spectrum users.

    b. Spectrum allocation: TekSavvy submits that the allocation of WBS spectrum in the 3650 MHz band should be fixed for WBS usage for 20 years where this spectrum is dedicated and cannot be changed. This is a vital element for TekSavvy and WISPs to secure the required investment and funding to continue serving residents of rural and remote areas. CanWISP, Iristel, and Cogeco support a proposal to fix the allocation of the 3650 MHz band for WBS usage for 15 to 20 years.

25. TekSavvy submits that an additional 30MHz of spectrum is added to the WBS band. Once Telesat has evacuated the 3700 to 3900 MHz band, the upper limit of the WBS band should be added from 3700 to 3730 MHz to provide the required capacity and scalability.

26. It is critical for TekSavvy and other WISPs to have the additional 30 MHz to deliver the CRTC's 50/10 Mbps basic service objective to bridge the digital divide. WBS licensees

operate in more than 5,000 sectors from cell sites across Canada. The minimum channel bandwidth needed per sector is 20 to 40 MHz per WBS licensee. With the existing 50 MHz, the additional 30 MHz would provide a combined 80 MHz as a dedicated band for shared WBS licences.

27. TekSavvy notes that ISED indicated in the Consultation document that it believes 80 MHz of spectrum is required to meet the long-term needs of the WBS users the Option 2 scenario. These needs are equally valid when proceeding with Option 1.

## C. 3800 MHZ AUCTION

### a. Value

28. TekSavvy views the acquisition, through auctioning, of secure spectrum in this band as an essential prerequisite to becoming a regional operator. More permanent spectrum licensing is an important intangible asset that will allow TekSavvy to attract investment and participate in bridging the digital divide.

29. Also, by 2023, WBS spectrum will not be sufficient to support availability of broadband services for Canadians in rural and remote areas with possible requirements of 1000 Mbps service.

30. The 3800 MHz spectrum offered in this auction will be in high demand by the three incumbent MNOs. Without the designation of spectrum as “set aside”, the adoption of spectrum caps, and the use of Tier 5 licensing for set-aside spectrum, the cost per MHz per POP will exceed the financial capacity of all participants other than major MNOs. Pro-competitive measures in the 3800 MHz are a necessity to the future viability of TekSavvy and regional WISPs.

31. Carriers have systematically ignored the deployment of broadband services for rural subscribers and indeed have allowed their current rural networks and services to degrade[4]. In contrast, WISPs that use WBS spectrum have demonstrated their ability to provide and continuously improve broadband services to subscribers in rural areas. WISPs need secure spectrum to ensure their ability to finance future investments in their networks and their eventual migration to 5G technology and services.

32. For these reasons, TekSavvy proposes that ISED conduct the auction for 250 MHz from 3730 to 3980 MHz no later than Mid 2023 based on the key principles of pro-competitive measures through Tier 5 licensing areas for set aside lots.

### b. Procompetitive Measures

33. Set-Aside: Out of the 250 MHz discussed above, 120 MHz should be assigned as a set-aside for current WBS spectrum licensees. As precedents for the proposed magnitude of set-aside, TekSavvy notes that between 40 and 60% of the available spectrum was

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4 Canadian Internet Registration Authority, “New internet performance data shows urban speeds improving while rural speeds plateau”, 12 Aug 2020, https://www.cira.ca/newsroom/state-internet/new-internet-performance-data-shows-urban-speeds-improving-while-rural.

reserved for eligible bidders in previous auctions like the 2008 AWS-1 auction, in the 2015 AWS-3 auction, and in the 2019 600 MHz auction.

34. Spectrum Cap: Within the set-aside spectrum, a spectrum cap of 40 MHz per bidder should be set. The cap within the set-aside spectrum would ensure the fairness between the WISPs bidding in the same area and ensure spectrum efficiency utilization by not allowing any single player to acquire more than 40 MHz.

### c. Tier 4 and 5 Licensing Area

35. TekSavvy proposes that the 3800 MHz auction be conducted based on dual tiering: Tier 4 and Tier 5 licensing areas. Historically, ISED has conducted auctions using two tiers in a single auction event to optimize the demand and supply in each region: Tier-2 and Tier-4 in 600 MHz auction and Tier-2 and Tier-3 in AWS auction. As a result, TekSavvy recommends that this auction to be conducted at Tier-4 and Tier-5.

36. TekSavvy notes that CanWISP, Iristel, and Cogeco support its proposal to use Tier 5 licensing in the 3800 MHz auction.

37. TekSavvy opposes any implementation of CBRS-type (PAL, GAA) prioritization of spectrum utilization in any format in Canada. We note that TekSavvy's position is supported by CanWISP, Iristel, and Cogeco.