Canadian Association of Wireless Internet Service Providers (CanWISP)

Reply Comments – *Technical and Policy Framework for the 3650-4200 MHz Band and Changes to the Frequency Allocation of the 3500-3650 MHz Band*

November 27, 2020

Executive Summary

A. EXECUTIVE SUMMARY

E1. CanWISP is submitting its reply comments on ISED consultation "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" in this document.

E2. CanWISP aligns its position in favour of option 1 and opposition to option 2 - as a refinement of its argumentation expressed in its original submission. CanWISP rejects option 2 as injurious both for WBS service providers' viability and availability of broadband service to rural subscribers.

E3. CanWISP supports the option 1 wherein WBS Licensees would be allowed to continue to operate in the band of 3650 – 3700 MHz indefinitely as the only option that would enable continued investment in rural broadband networks and continued improvement of services to rural subscribers.

E4. CanWISP also proposes improvements to the current regulatory framework for the 3650 band i.e. 'Option 1 improved' that would improve viability and broadband service availability. This includes the adoption of an Ofcom-type co-management of the spectrum between ISED and WBS licensees and the addition of 30 MHz to the current 50 MHz of WBS spectrum in order to provide a 80 MHz of dedicated spectrum for WBS licensees (3650 – 3730 MHz).

E5. CanWISP opposes the moratorium imposed by ISED on new licenses and deployments in the 3650 band as financially ruinous to WISPs as well as being fundamentally unfair.

E6. CanWISP is in favour of the inclusion of pro-competitive measures in the upcoming ISED 3800 auction: set-aside spectrum of 120 MHz and a spectrum cap of 40 MHz within the set-aside. CanWISP submits that ISED apply Tier-5 for the lots designated as 'set aside' in the auction.

E7. The key arguments for CanWISP'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 CanWISP's position, these are noted in the text.

B. ARGUMENTS FOR OPTION 1 AND AGAINST OPTION 2

a. Contiguity

E8. In their arguments for displacement of WBS spectrum users to the 3900 band, the carriers have suggested in their submissions that continuity of spectrum from 3450-3900 is the "best option", as there are "benefits that cannot be achieved through carrier aggregation". However, we believe that 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. Carrier aggregation has been a standard technological application by carriers in Canada and globally, since 2011 (3GPP Release 10). In addition, following the proposed auctioning of the 3800 band, only one licensee per licence area would be able to leverage this contiguity between 3500 MHz and 3800 MHz bands. RABC indicated in their response that only one MNO will be able to benefit from this contiguity. We note that Cogeco, Xplornet, Iristel and TSI agreed in their submissions that contiguity was unnecessary for efficient operations by wireless service providers.

E9. In a study published in IEEE proceedings by Carnegie Mellon University, Pittsburgh, PA, USA in 2015, carrier performance using aggregated spectrum was compared to that using an equal contiguous bandwidth[1]. The throughput and latency were exactly the same for a wide range of values for users' density and inter-site distance as illustrated in Figure 1 below. Thus, for radios located on the same site (typical in Canada) and ranging up to 3 KM away, carrier throughput for aggregated spectrum versus contiguous bandwidth is virtually 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.

[1] 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.

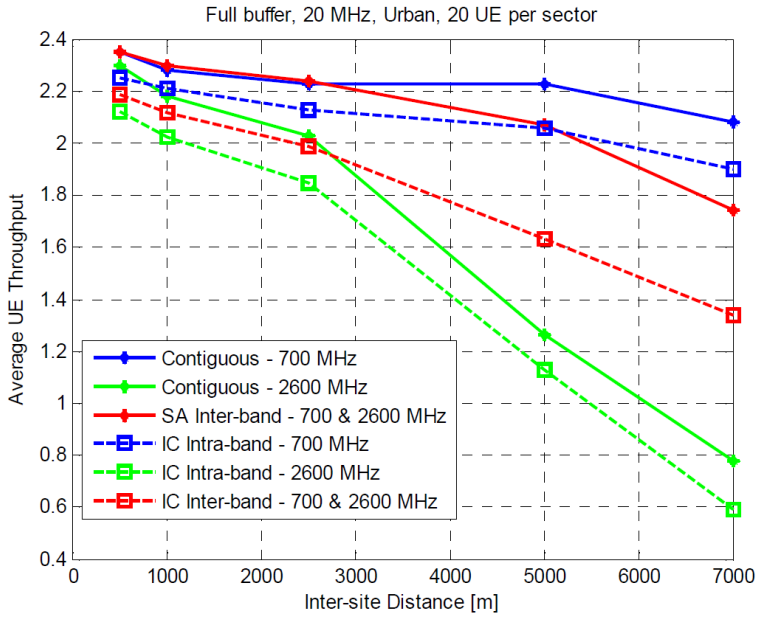

Figure 1: Performance comparison between contiguous and aggregated channels[1]

b. Availability of ecosystem in the 3900 – impacts on viability

E10. CanWISP members would need to invest in new equipment (radios, CPEs, software) in order to continue operations beyond the 3800 MHz auction date proposed by ISED.

E11. Almost all WBS users, and in particular, those serving rural subscribers, use proprietary gear rather than carrier-grade gear. Various vendors indicate that a ecosystem of proprietary solutions will be commercially available by 2024. Displacement to the 3900 band would place these WISPs - and the rural subscribers they serve, in an even worse situation than WISPs using carrier-grade equipment. Thus, under option 2 in the 2020-2024 period, it would be illogical for WISPs to invest in new gear for their current 3650 networks and consequently, broadband service to rural subscribers will degrade. In addition, as the financial capacity of the WBS service providers is generally limited by the relatively small size of their rural subscriber base, it is probable that many WISPs among the WBS users would not be able to finance the investment in new gear for the operations in the 3900 band and simply cease operations leaving thousands of rural subscribers without any service. CanWISP notes that the Regional Municipality of Durham which operates a FWA service in the 3650 band, has estimated the cost of migration to the 3900 band under option would be $2,000,000 including new network hardware and software and indicated there would be significant service disruptions for subscribers for an indeterminate period.

E12. In short, forcing CanWISP members into a 4-year hiatus - followed by significant investment requirements for a new 3900 network, would compromise the viability of CanWISP members' wireless operations and they would have to cease operations with the result that its rural subscribers would lose their broadband service.

E13. We note that in their submissions, TSI, Bragg, Cogeco, Durham Municipality, Ecotel agree that the costs encountered by WBS users in the displacement to 3900 – 3980 MHz (radios,

CPEs, software) would compromise the viability of WBS spectrum users – in particular, those serving rural subscribers. While Iristel did not specifically say that cost of relocating WBS users to the 3900 MHz band would compromise their viability or would cause significant service disruptions, it quantified those relocation costs and arguments on the absence of an ecosystem in the 3900 MHz band that support these claims. (Paragraphs 41 and 52-65 of Iristel's submission)

E14. We note that in their submissions, TSI, Bragg, Cogeco, Durham Municipality and Ecotel agree that if option 2 is retained and service providers are displaced to the 3900 band, there will be significant service disruptions to their rural customers.

c. Moratorium

E15. CanWISP opposes the current moratorium imposed by ISED on licences and deployment by WBS service providers in the 22 license areas designated as 'urban'. These 'urban' designated areas include significant rural areas and subscribers. CanWISP submits that this measure has resulted in WBS service providers halting investments in their current 3650 networks that would improve broadband service to rural subscribers. This result is inconsistent with ISED's policy objective of bridging the digital divide. It will also prevent new entry in the wireless market which would provide innovative new services and lower prices for subscribers over the next 3 to 5 years – a negative result which also contradicts with ISED and CRTC goals of bridging the rural digital divide.

E16. We note that Cogeco is against enforcing a moratorium on new stations for existing licensees. Also, we note that the British Columbia Broadband Association (BCBA) in its submission, found the moratorium to be damaging to subscribers in rural areas and in urban areas, the business model of current WBS licenses would be compromised and correspondingly, plans to continue to grow and sustain their services, would be abandoned. We also noticed that TSI, Iristel and Bragg Communications share CanWISP's view in opposing the moratorium on deployment. Iristel referred to tier 5 for the definition of urban areas to limit the area requiring power restriction around cities and satellite dependent areas to limit unnecessary coordination with FSS users where fiber is indeed available.

d. Arguments for Improvements to Option 1

E17. The 3650 band provides the best option to ensure the viability of service providers and availability of broadband services to rural subscribers. CanWISP suggests that option 1 could be improved by the adoption by ISED of the following changes to the regulatory framework.

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

b. Spectrum allocation:

1) CanWISP submits that the allocation of WBS spectrum in the 3650 band should be reserved for WBS usage for a period of 15 to 20 years. This is vital element for the viability of CanWISP members and WISPs in general, and a pre-requisite for WISPs to be able to secure the required investment and funding to continue serving the Canadians in remote and rural areas. CanWISP notes that TSI, Iristel, and Cogeco supports its proposal to fix the allocation of the 3650 band for WBS usage for a period of 15 to 20 years.

2) CanWISP submits that an additional 30MHz of spectrum be allocated to the WBS band once Telesat has evacuated the 3700-3900 band. Thus, the upper limit of the WBS band would be expanded from 3700 to 3730 MHz based on the following arguments:

1. Capacity and scalability: It is fundamental for CanWISP members and other WISPs to have the extra 30 MHz - in order to be able to deliver the 50/10 Mbps bandwidth speeds and associated services necessary to bridge the digital divide. WBS licensees operate in more than 6,500 sectors from cell sites across Canada. The minimum channel BW needed per sector is 20 to 40 MHz per WBS licensee. The 30 MHz - combined with the existing 50MHz, would provide a combined 80 MHz as a dedicated band for shared WBS licences - needed to meet the requirements of WBS users going forward.

2. CanWISP notes that ISED indicated in the Consultation document that it believes 80MHz of spectrum is required to meet the long-term needs of the WBS users under option 2 - 3900 band scenario. These bandwidth needs of WBS users are equally valid in option 1 - 3650 band.

C. 3800 MHZ AUCTION

a. Value

E18. CanWISP views the acquisition of secure spectrum in this band through auctioning as an essential pre-requisite to becoming a regional operator and an important intangible asset that will allow CanWISP members to attract investment and be able to serve Canadians in remote and rural areas and hence, participate in bridging the digital gap.

E19. Also, by 2023, WBS spectrum will not be sufficient to support the availability of broadband services for Canadians in rural and remote areas with scalability in next phase requirements of up to 1000 Mbps for new services and applications.

E20. The 3800MHz spectrum offered in this auction will be in high demand by the 3 incumbent national carriers (MNOs) and as a result, without the adoption of pro-competitive measures including designation of 'set aside' spectrum, adoption of spectrum caps and use of Tier 5 licensing for set aside lots, the cost per MHz per Pop will exceed the financial capacity of WBS service providers with the result that the 'spectrum poor' service providers will be shut out..

E21. Carriers have systematically ignored the provision of broadband services for rural subscribers and indeed have allowed their rural networks and services to degrade. In contrast, FWA service providers that use WBS spectrum have demonstrated their ability to provide and continuously improve broadband services to subscribers in rural areas. FWA service providers need secure spectrum to ensure their ability to finance future investments in their networks and migration to 5G technology and services.

E22. For the reasons above, CanWISP proposes that ISED conduct the auction for 250 MHz in the 3730 – 3980 MHz band no later than Mid 2023 based on the key principles of pro-competitive measures and Tier 5 licensing areas for set aside lots.

b. Procompetitive Measures

a. Set-Aside: CanWISP proposes that 120 MHz out of 250 MHz be assigned as a set-aside for current WBS spectrum licensees. As precedents for the proposed magnitude of set aside, CanWISP notes that between 40-60% of the available spectrum was reserved for eligible bidders in previous auctions: the 2008 AWS-1 auction, in the 2015 AWS-3 auction, and in the 2019 600 MHz auction.

b. Spectrum Cap: CanWISP proposes that within the set-aside spectrum, a spectrum cap of 40 MHz per bidder be set. The cap within the set-aside spectrum would ensure the fairness between the WISPs bidding in the same area and ensure the equitable spectrum access by not allowing any WISP player to acquire more than 40MHz.

c. Tier 4 and 5 Licensing Area

E23. CanWISP 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. CanWISP recommends that the 3800 MHz auction be conducted at Tier-4 and Tier-5.

E24. CanWISP notes that TSI, Bragg and Cogeco support its proposal to use Tier 5 licensing in the future 3800MHz auction.

E25. CanWISP opposes any implementation of CBRS-type (PAL, GAA) prioritization of spectrum utilization in any format in Canada. We note that CanWISP's position is supported by TSI and Cogeco.