

Senior Director
Spectrum Licensing and Auction Operations
Innovation, Science and Economic Development Canada
ic.spectrumbauctions-encheresduspectre.ic@canada.ca

Re: Gazette Notice SLPB-004-18 – Consultation on Revisions to the 3500 MHz Band to Accommodate Flexible Use and Preliminary Consultation on Changes to the 3800 MHz Band

Introduction

1. ABC Communications (“ABC”) is a telecommunications service provider based in Quesnel BC, serving markets throughout the interior of British Columbia. ABC has offices in Burns Lake, Vanderhoof, Prince George, Quesnel, 100 Mile House, Kelowna, Penticton and Vancouver.
2. Throughout our trading area, ABC provides broadband services to customers in remote and rural areas using fixed wireless access using LTE technology. These networks are built on ABC’s 3500 MHz FWA and 3650 MHz WBS spectrum licences.
3. In the past decade, ISED committed to, and delivered, significant support for rural connectivity through funding programs. The CRTC has set an objective for basic universal service, and has committed funding to achieve this goal in rural Canada. Recently, the Standing Committee on Industry, Science and Technology has published a report describing measures that would improve rural broadband connectivity.
4. The reduction of spectrum holdings, and in particular the adoption of Option 1, would be a significant step that is contrary to all of these initiatives.
5. The single most effective measure that the Government of Canada can take to promote rural broadband connectivity is to make spectrum available to small, regional, and rural service providers.
6. By reducing the spectrum holdings of licensees who are serving rural markets, ISED would damage rural connectivity services as well as future investment, innovation, and competition in the Canadian telecommunications market. Even if this spectrum is redistributed in subsequent processes, the years of lost investment will further increase the gap between rural and urban connectivity.
7. Small, rural, and regional carriers and WISPs play a key role in investment, innovation, and competition across Canada, bringing better services and consumer choice to rural communities.
8. Both Option 1 and Option 2 will disproportionately affect small, rural, and regional carriers with limited spectrum holdings outside of the 3500 MHz band. ISED should seek other options which do not harm rural consumers.



9. As of 2017, 31% of rural households have access to broadband internet via fixed wireless services, but not through fibre, cable, or DSL (CRTC Telecom Rpt 2017). These households will suffer disrupted, degraded, and potentially terminated services if ISED reduces the spectrum holdings of any fixed wireless carrier serving rural markets. Carriers will not be able to maintain current service levels with reduced spectrum holdings.
10. Spectrum can be made available to small, regional, and rural service providers through more lightly-licensed and FCFS allocations, through the use of service areas that are smaller than Tier-4 sizes, and through auction processes that are less complex.
11. ABC encourages ISED to assign of an additional 50 MHz to the 3650-3700 MHz WBS band, adjacent to the existing band (i.e. 3700-3750 MHz) prior to the transition of 3500 MHz licences to flexible use, and prior to any auction process. This will enable existing licensees to continue to invest and grow their networks during the transition period.
12. ABC encourages ISED to address the 3400-4200 MHz bands in a way that will build a connected future for rural Canadians, and foster a telecommunications market characterized by innovation, investment, and competition.
13. In order to provide the longest possible transition period, and certainty for operators, the new allocations should be announced, and new fixed-use licences should be issued, immediately following the conclusion of this consultation process. Protection in the existing operating bands should be extended during the transition period of 3 years.
14. These fixed-use licenses should be converted to flexible use licences immediately following the auction, for all licensees. Small, rural, and regional carriers should have the option to convert these licenses to flexible use at any time prior to the auction, in order to foster investment in rural mobile services.
15. Our responses to the questions posed in this consultation describe the steps that ISED can take in the context of the 3400-4200 MHz bands in order to fulfil the policy objectives to foster innovation and investment, support sustained competition, and facilitate the deployment of broadband networks in rural areas.

Responses to Questions

Q1 — ISED is seeking comments on its assessment of the timelines identified for the development of an equipment ecosystem for 5G technologies in the 3500 MHz and 3800 MHz bands, and whether the timelines will be the same in both bands.

16. ABC agrees with ISED's assessment that the development of technology and standards in the 3500 MHz bands are expected to support 5G services in the coming decade.
17. ABC expects that 5G equipment in the upper portion of the band (above 3700 MHz) will be slower to come to market than equipment in the lower portion of the band, since there is already an equipment ecosystem that supports the lower portion of the band.

Q2 — ISED is seeking comments on the proposals for:

- adding a primary mobile allocation to the 3450–3475 MHz band
 - removing the radiolocation allocation in the 3450–3500 MHz band
 - making the corresponding changes to the Canadian Table of Frequency Allocations
18. ABC supports the additional mobile allocation in the 3450-3475 MHz band, and the removal of the radiolocation allocation.

Q3 — ISED is seeking comments on the proposal to allow flexible use in the 3450–3475 MHz band.

19. The addition of spectrum to the 3500 MHz band will have a significant positive impact on rural connectivity in Canada if this spectrum is made available to rural and regional service providers for use in fixed wireless networks.
20. In conjunction with the flexible designation, ISED should introduce policies that enable the use of the band for the benefit of rural Canadians who depend on fixed wireless networks for broadband connectivity. These policies include the creation of an auction framework that permits small, regional, and rural carriers to win spectrum.
21. ABC supports the proposal to designate this spectrum for flexible use, to align with the rest of the band. If non-national, non-incumbent carriers are able to access this spectrum, then the market will drive both fixed and mobile use of this spectrum, to the benefit of all Canadians.

Q4 — ISED is seeking comments regarding interest in sharing spectrum between radiolocation and other services in the 3400–3450 MHz band, and options for doing so.

22. ABC supports the exploration of options that would enable small and regional carriers to offer broadband services in rural areas using spectrum in the 3400-3450 MHz band.



23. ABC supports a first-come-first-served licensing mechanism in non-urban service areas that would be licensed by hexagonal grid cell. Operation in certain bands and certain areas could be prohibited, in order to provide protection to existing users, using such a mechanism.
24. ABC would support other simple mechanisms, such as the light-licensing system used for the 3650-3700 MHz band, where operators register their frequency use. Operation in certain bands and certain areas could be prohibited, in order to provide protection to existing users, using such a mechanism.
25. Alternatively, if a lightly-licensed system is inadequate to provide protection to priority users, then a database system like that proposed for the TVWS bands could be put into place. Such a system should only be implemented following positive industry feedback and the success of the TVWS database. We note that the success of this database mechanism has not yet been widely demonstrated.
26. The availability of this spectrum to rural providers would support the realization of the basic service objective of the CRTC, as well as ISED's policy goal to facilitate the deployment and timely availability of services across the country, including rural areas.

Q5 — ISED is seeking comments on the expected impacts of the following options with regards to the continuation of existing services, competition in the Canadian marketplace and availability of new 5G services for Canadians?

Option 1: For each licence area, existing licensees would be issued flexible use licences for one third of their current spectrum holdings rounded to the nearest 10 MHz, with a minimum of 20 MHz.

Option 2: For each licence area, existing licensees would be issued flexible use licences for a fixed amount of spectrum. Any licensee that holds 50 MHz of spectrum or more would be licensed for 50 MHz, and all other licensees would be licensed for 20 MHz.

27. Both of these options will risk causing serious and lasting harm to rural consumers.
28. Contrary to the assertion of ISED, operators will not be able to maintain service levels with reduced spectrum holdings.
29. Option 1 will cause severe and irrecoverable harm to rural subscribers. Services will be degraded and terminated in rural communities across Canada.
30. Option 1 is only preferable to Option 2 for operators holding over 150 MHz of spectrum. This option places smaller spectrum holders at significant disadvantage in the telecommunications market.



31. Option 2 will cause significant damage to rural connectivity and to competition and innovation in the Canadian telecommunications market, however to a lesser extent than Option 1. ABC prefers Option 2 to Option 1.
32. ABC urges ISED to investigate alternative options, as discussed in our response to Question 6 below.
33. Both of these proposed options are contrary to ISED's policy objective to promote access in rural areas. By reducing the spectrum holdings of regional and rural service providers, ISED will counteract ongoing efforts to improve rural connectivity.
34. For the following reasons, the justifications for spectrum license reduction described by ISED in paragraphs 40-46 are not consistent with the realities of the rural telecommunications market.
35. ISED's assertion that operators will be able to maintain service levels with decreased spectrum holdings is not correct. ABC and other holders of these licences are already using the latest available LTE technology to meet customers' growing demands. A reduction in our spectrum holdings will result in severe service degradations across our serving area.
36. ISED's understanding that 5G will lead to greater connectivity speed is correct, but not to the extent described in the consultation document, in these allocations. The high speeds associated with 5G technology arise from large channels and channel aggregation. The gains in spectral efficiency will be incremental, and will not result in a sudden and substantial increase in capacity of the existing 3500 MHz allocations. As spectral efficiency increases, consumer demand will also increase. Operators with reduced spectrum holdings will not be able to maintain service levels, let alone keep pace with increasing consumer demand.
37. The observation that the value of the band has increased is not sufficient justification to reduce spectrum holdings. The reduction of spectrum holdings based on this increase in value discriminates unfairly against small carriers with limited spectrum holdings outside this band. Many spectrum bands have increased in value since the first cellular licences were issued for analog services in the 1980s, however, to our knowledge, no incumbent licence holder has ever been subject to an involuntary reduction in spectrum holdings.
38. The proposed reduction of spectrum holdings, particularly Option 1, has a disproportionate negative impact on small regional carriers. This will damage the confidence of investors into competitive regional and rural telecommunications services.
39. ISED acknowledges that current licensees "have been building their fixed wireless networks for over 10 years", but fails to recognize the significant investment that has gone into upgrading these networks to serve the growing demands of consumers.

40. By reducing spectrum holdings, ISED will discourage investment in regional telecommunications infrastructure from new competitors and small companies, by signaling that spectrum held by non-incumbent and non-national carriers is significantly more vulnerable to involuntary reduction than spectrum auctioned for national mobile networks.

Q6 — ISED is seeking comments on alternative options for licensees to return spectrum to the Department to make available for a future licensing process. Respondents are asked to provide a rationale for any alternative proposals, including how they would meet ISED's policy objectives as stated in section 3.

41. ABC encourages ISED to investigate alternative options that will not have significant impacts on rural consumers.
42. Both of the proposed spectrum return will have a devastating and disproportionate effect on small, rural, and regional licensees, and on their rural customers. The spectrum holdings of these small carriers should not be reduced.
43. Some of the carriers that would be affected by a reduction in spectrum, such as ABC, hold very few or no spectrum licences in other frequency bands. The effect of this spectrum holdings reduction will weaken competition, consumer choice, and service levels in rural communities.
44. In addition to affecting customers of existing licensees, the proposed measures would impact the customers of sub-licensees. ABC has sub-licensed spectrum to several regional and rural operators, who would be negatively impacted if these spectrum holdings are reduced. ABC also sub-licenses spectrum from other 3500 MHz licence holders. Licence holders who sub-lease spectrum to regional operators further support investment, innovation, and competition in rural Canada, and this contribution to Canada's telecommunications market should be recognized and encouraged.
45. A spectrum recovery policy that preserves the spectrum holdings of carriers who are offering services or sub-licensing spectrum in rural communities, and that preserves the spectrum holdings of carriers who have limited spectrum holdings outside this band, will support the policy objectives to foster innovation, competition, and broadband access in rural areas of Canada.

Q7 — ISED is seeking comments on a revised band plan using unpaired blocks of 10 MHz in the frequency range of 3450–3650 MHz.

46. ABC supports a revision of the band plan that replaces paired FDD-based licences to un-paired TDD-based licences. Most systems operating in the 3 GHz bands use TDD technology, so the un-paired band plan is appropriate.
47. For example, paired 25 MHz + 25 MHz licences should be replaced with licences of five contiguous 10 MHz blocks.



48. Most modern equipment for licensed bands, procured during the last 2 years or so, is frequency agile in the 3400-3700 MHz range. Some older equipment that is not frequency agile is still deployed. It would be appropriate for ISED to offer a long transition time frame, and information regarding new allocations well in advance of the transition period, so that operators with extensive rural networks can have time to finance and deploy newer equipment in networks that do not support the new allocation.

Q8 — ISED is seeking comments on whether any additional measures should be taken to limit potential interference issues with the proposed TDD band plan.

49. In the case where operators have adjacent frequency allocations, they should be responsible for working together to conduct frequency co-ordination to mitigate interference.
50. The potential for interference exists during the transition phase, especially where operators with legacy FDD equipment are not yet transitioned to TDD. Existing licensees should be given adequate time to transition out of their existing bands. In some cases, existing licensees may need to use additional spectrum during the transition period in order to de-commission legacy equipment. These users should be able to use spectrum recuperated by ISED, upon request, for a limited period of time before or immediately following the spectrum auction. Please see our response to Questions 11 and 12 for our position regarding these timelines.
51. The cost of transitioning will be prohibitive, particularly for networks serving remote and rural areas with that present a challenging business case to the operator. In particular, the cost of replacing customer equipment could present a negative ROI. Any ISED-administered funding programs should support the transition to new allocations, and should have funding available for customer equipment in remote and rural communities. Funding support would expedite the transition process and ensure that services are not terminated in rural communities.

Q9 — ISED is seeking comments on the proposal to align the timing of the issuance of flexible use licences to incumbents with the issuance of licences to those who acquire 3500 MHz flexible use licences in a future licensing process.

52. ISED should consider issuing fixed-use licences to existing licensees, as soon as the new band plan is announced, in the newly assigned frequency blocks. This would permit existing licensees to commence the transition process. The notification and transition process would proceed as described in our response to Questions 11 and 12 below.
53. These fixed-use licenses should be converted to flexible use licences immediately following the auction, for all licensees.

54. In addition, small, rural, and regional carriers should have the option to convert these licenses to flexible use at any time prior to the auction, in order to foster investment in rural mobile services.
55. Small, rural, and regional operators should be enabled to offer mobile services. This will support investment, innovation, and competition in Canada's rural communities, and will permit rural consumers to gain access 5G networks without excessive delay.
56. ABC notes that the spectrum held by large national carriers is generally designated as either fixed or mobile, and these carriers are able to compete with spectrum-poor small operators by offering fixed services (commonly called "hub" or "stick"). Holders of fixed licences should also be free to compete with mobile services if they are in a position to do so.
57. For greater business certainty, and to promote investment in rural networks, these flexible use licences should have 10-year terms.

Q10 — ISED is seeking preliminary comments on the importance of price discovery in a licensing process for flexible use licences in the 3500 MHz band.

58. ISED has provided very limited information regarding what form a price discovery process might take. This could be an internal study within ISED, a pre-auction process, or an additional auction phase.
59. ABC believes that the SMRA auction format is both simpler than the CCA format and provides better price discovery during the auction process. The CCA auction format obfuscates the values of individual licences, one of many challenges associated with this auction format.
60. Large bidders are advantaged by the CCA auction format, in three ways. Bidding on more licences results in lower prices paid, and the complicated nature of the auction format favours large bidders' with the ability to pay for the high cost of participation. Finally, bidders must have adequate cash reserves to pay for the clock price, since there is a risk that the final clock price will be the sale price.
61. The addition of a price discovery phase in a CCA spectrum auction will further increase the complexity of the auction and the cost of participating in the auction. This would further discourage small and regional carriers from participating in the auction.
62. In the past decade, spectrum auctions with spectrum caps and set-asides have served urban Canadians well, by fostering more spectrum and competition to urban markets. However, these auctions have succeeded at the expense of rural communities.
63. The use of complicated auction formats and large service areas have resulted in under-utilized spectrum in rural areas.



64. In order to serve rural Canadians, the spectrum auction format should recognize different market conditions in rural communities. Small service areas, and FCFS or light licensing, would facilitate the deployment of networks in rural areas, and ensure that rural Canadians benefit from the spectrum resource.

Q11 — ISED is seeking comments on the proposed protection and notification provisions for incumbent licensees as outlined below.

Protection period:

For Tier 4 service areas that include a population centre of 30,000 people or more:

- a minimum protection period of 6 months for sites within large urban population centres and the 10 km buffer zone surrounding those centres
- a minimum protection period of 2 years for all other sites

For all Tier 4 service areas that include a population centre of less than 30,000 people, a minimum protection period of 3 years.

Notification period:

- a minimum notification period of 6 months in large urban population centres and in the 10 km buffer zone surrounding those centres
- a minimum notification period of 1 year in all other areas

65. The proposed protection periods are too short in service areas near large urban population centres.
66. The proposed buffer of 10 km around large urban population centres is too large. Many urban centres have placed their municipal boundaries well beyond the reach of terrestrial broadband infrastructure (i.e. cable or ADSL). As a result, many residents within these boundaries are subscribers of fixed wireless broadband services. These households depend on fixed wireless services, and a 6-month protection and notification period would result in severe service disruptions for these clients. ISED should develop a transition process that will ensure that these subscribers will not be impacted negatively by the transition process.
67. In addition, rural broadband networks serve customers at distances up to 40 km from the access site. These access sites may be located within 10 km of these urban centres. In these cases, hundreds of rural subscribers would lose their services. In many cases, the loss of spectrum is irrecoverable; these subscribers would lose services permanently. Where an alternative site might be found to serve these subscribers, a 6-month notification period is not adequate to acquire and construct a new site.

68. The new allocations should be announced, and new fixed-use licences should be issued, immediately following the conclusion of this consultation process. Protection in the existing operating bands should be extended during the transition period of 3 years.
69. This transition period will then begin 2 years prior to the auction, and extend 1 year beyond the auction date.
70. Immediately following the auction, these fixed-use licences should be converted to flexible use, with small, rural, and regional carriers having the option to convert to flexible use at any time during the transition period.
71. By commencing the transition prior to the auction, additional spectrum blocks would be available to serve operators during the transition period.
72. To further encourage investment into telecommunications networks, and to enable a transition process with minimal service disruptions, ABC proposes that ISED make at least 50 MHz of additional spectrum available adjacent to the 3650-3700 MHz band (i.e. 3700-3750 MHz), either on a FCFS basis or using the same light-licensing mechanism as the current WBS band. This spectrum should be made available immediately following the conclusion of this consultation process. This additional spectrum will enable operators to manage the transition with minimal service disruption.

Q12 — ISED is seeking comments on alternative transition plans, or variations to the times proposed. Respondents are asked to provide a rationale for any alternative proposals.

73. As described in our response to Question 11 above, ABC proposes that the transition period commence immediately following the conclusion of this consultation process, and extend 3 years.
74. We re-iterate our proposal in response to Question 11 above, that ISED release additional WBS spectrum (i.e. 3700-3750 MHz) prior to the transition period, so that licensees can manage the transition with minimal service disruption.
75. We note that, if ISED chooses Option 1, severe service disruptions, and potential service termination, would occur. An extended notification and protection period would be necessary to enable existing licensees to mitigate, to the extent possible, these effects.

Q13 — ISED is seeking comments on whether the fixed and mobile equipment for LTE and 5G technologies will be able to operate with intermittent interference from radars, including cross-border interference, within the 3450–3650 MHz band and in adjacent bands.

76. Intermittent interference from radar systems would degrade the performance of LTE and 5G systems. Users of systems that are subject to such interference would experience poor or

interrupted service. Streaming video applications would be especially vulnerable to degradation, resulting in low customer satisfaction.

77. Licences in these bands would therefore be devalued. Licenses in areas vulnerable to interference from radar systems should be made available on a FCFS or lightly-licensed basis, by hexagonal grid cell. This would allow spectrum in these areas to be exploited by rural service providers, and excluded from licensing in areas that are heavily affected by radar systems.

Q14 — ISED is seeking preliminary comments on how to optimize the use of the 3650–3700 MHz band, including the potential use of a database access model.

78. The light-licensing regime has been highly successful for rural Canadian subscribers. Regional and local carriers have used the WBS (3650-3700 MHz) band extensively in order to deploy fixed wireless networks. These networks have brought high-speed connectivity to many otherwise un-served communities.
79. The 3650-3700 band has become a key band in the deployment of rural broadband networks. The availability of this spectrum has stimulated investment, innovation, widespread broadband deployment, and competition in rural communities across Canada.
80. ABC recommends continuing to licence this band in the same way, and adding more spectrum to this licensing mechanism to further support these vigorous regional telecommunications markets. This additional spectrum should be adjacent to the existing band, using 3700-3750 MHz.
81. ABC does not recommend adopting a database system that would have the capacity to analyse interference situations and instruct base stations to reduce power or move to a different channel in order to minimize interference. Such a database system would be a source of uncertainty for operators.
82. Further, we note that commercial uptake in bands currently administered by database has been slow. The database administration systems, while technically feasible, appear to be commercially unattractive. For this reason, we recommend against using database solutions for band management until these mechanisms gain wider success.
83. ABC does not recommend that ISED relocate this band. Much of the equipment deployed in this band is not frequency-agile, and small operators with limited capital resources would face high equipment replacement costs.
84. Finally, if ISED changes the licensing requirements of this band, and thus obliges operators to replace entire networks, ISED will damage the confidence of investors in competitive telecommunications services.

Q15 — ISED is seeking comments on the importance of the 3700–4200 MHz band to future FSS operations.

85. Given the tremendous impact of the 3650-3700 MHz band on rural connectivity, we encourage ISED to explore all possible avenues to make additional spectrum available to rural and regional carriers.

Q16 — ISED is seeking comments on whether unlicensed operators in the 3700–4200 MHz band should be required to submit their technical parameters to ISED to assist in frequency management.

86. ABC agrees that it would be reasonable for unlicensed operators to provide usage information to ISED, so that ISED is better equipped to make decisions regarding this band.

Q17 — ISED is seeking comments on which steps Canada should take to optimize the use of the 3700–4200 MHz band in consideration of the current services being provided and the developing technologies that would permit the use of new services in this band (e.g. exclusion zones).

87. ABC suggests that ISED issue licences to existing users of the band. These licences would be valid during a transition period.
88. ABC suggests that ISED make the band available to operators on a lightly-licensed basis (similar to the 3650-3700 MHz band), or using First-Come-First-Served licenses, using grid-cell hexagons, in areas outside of large urban population centres. Protection could be offered to TVRO operators using this licensing mechanism if necessary.
89. Immediately following the conclusion of this consultation, ISED should make the lower 50 MHz of this band (3700-3750 MHz) available.
90. Again, given the tremendous impact of the 3650-3700 MHz band on rural connectivity, we encourage ISED to explore all possible avenues to make additional spectrum available to rural and regional carriers.

Q18 — ISED is seeking comments on the challenges and considerations related to the coexistence of other services, such as mobile and/or fixed wireless access, in the 3700–4200 MHz band.

91. ABC believes that mobile and fixed wireless networks can coexist without causing interference, where co-operation between operators is mandated.
92. We note that co-operation is common amongst operators of similar sizes, but larger operators are often unwilling to co-operate with small local providers.



93. If the 3700-4200 MHz spectrum and recuperated 3500 MHz is auctioned in the same way as recent auctions – that is, using large service areas and a complicated spectrum auction format – then these bands will not support rural connectivity. The spectrum will be won by large national carriers, and these carriers will focus their investments on urban mobility projects. Rural Canadians will be left further behind.
94. These bands should be managed in a way that permits small, regional, and rural carriers to bring broadband and mobile services to rural communities.

ABC is pleased to see that ISED is undertaking this important consultation, and that ISED is considering the impact of this frequency band on rural Canadians.

ABC thanks ISED for the opportunity to provide these comments.

Kind regards,



Brenda Bouchette, P.Eng.
Regulatory Affairs
ABC Communications