



21 March 2019

Innovation, Science and Economic Development Canada
c/o Senior Director, Spectrum Operations
235 Queen Street, 6th Floor
Ottawa (Ontario) K1A 0H5

Email: ic.spectrumoperations-operationsduspectre.ic@canada.ca

Re: DGSO-002-18 – Consultation on a New Set of Service Areas for Spectrum Licensing, November 2018 – Reply Comments of BCBA, CanWisp, CCSA, ITPA, Cogeco Communications, ECOTEL, Sogetel and SSI Micro.

Dear Mr. Parsons,

In accordance with the procedures set out in the above-noted consultation, please find attached the reply comments of the British Columbia Broadband Association (BCBA), the Canadian Association of Wireless ISPs (Canwisp), the Canadian Communication Systems Alliance (CCSA), the Independent Telecommunications Providers Association (ITPA), Cogeco Communications Inc. (Cogeco), ECOTEL Inc. (ECOTEL), Sogetel Mobilité inc. (Sogetel) and SSI Micro Ltd. (SSi).

We thank ISED for the opportunity to submit comments in this proceeding.

Yours very truly

Signed by the following parties:

British Columbia Broadband Association

/s/ Bob Allen

Bob Allen
President

Cogeco Communications Inc.

/s/ Leonard D. Eichel

Leonard D. Eichel
Senior Director, Regulatory
Affairs

Canwisp

/s/ Jonathan Black

Jonathan Black
Executive Director

ECOTEL Inc.

/s/ Eric L'Heureux

Eric L'Heureux
CEO

**Independent
Telecommunications
Providers' Association**

/s/ Jonathan L. Holmes

Jonathan L. Holmes
Executive Director

Sogetel Mobilité Inc.

/s/ Richarch Biron

Richard Biron
Vice President

**Canadian Communication
Systems Alliance**

/s/ Chris Edwards

Chris Edwards
Vice President

SSI Micro Ltd.

/s/ Dean Proctor

Dean Proctor
Chief Development Officer

**Innovation, Science and Economic Development Canada
Spectrum Management and Telecommunications**

**Consultation on a New Set of Service Areas
for Spectrum Licensing**

**Canada Gazette: November 27 2018
Gazette Notice DGSO-002-18**

**Reply Comments of
British Columbia Broadband Association (BCBA), Canadian
Association of Wireless ISPs (Canwisp), Canadian
Communications Systems Alliance (CCSA), Independent
Telecommunications Providers Association (ITPA), Cogeco
Communications Inc., ECOTEL inc., Sogetel Mobilité inc.
and SSI Micro Ltd.**



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1. The BC Broadband Association (BCBA), the Canadian Association of Wireless ISPs (Canwisp), the Canadian Communications Systems Alliance (CCSA), the Independent Telecommunications Providers Association (ITPA), Cogeco Communications Inc. (Cogeco), ECOTEL Inc. (ECOTEL), Sogetel Mobilité inc. (Sogetel) and SSi Micro Ltd. (SSi), referred to herein as “BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi”, are please to submit these reply comments (the “Joint Reply”) in accordance with Innovation, Science and Economic Development Canada’s (ISED) *Consultation on a New Set of Service Areas for Spectrum Licensing*, Gazette Notice DGSO-002-18, 27 November 2018 (the “Consultation Document”).
2. There is a broad consensus among those who responded to the Consultation Document that the creation of a new set of Tier 5 service areas is necessary in order to achieve ISED’s policy objectives, and that ISED’s proposed design principles are appropriate. Few commenters, however, adopted either of ISED’s two proposed Options for the design of Tier 5 service areas without changes or reservations. Our Joint Proposal¹ for the design of Tier 5 service areas is designed to incorporate the strengths of ISED’s two options and to mitigate their shortcomings, as well as to address the needs of consumers and of both large and small operators in urban and non-urban regions of the country.
3. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi recommend therefore that ISED adopt and implement our Joint Proposal for the design of new Tier 5 service areas for spectrum licensing in Canada.

General Consensus

4. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi commend ISED for this initiative to define new, smaller service areas. The importance of this consultation is underlined by the fact that there is a broad consensus among commenters that new “Tier 5” service areas for spectrum licensing are required. While most commenters propose changes or alternatives to ISED’s proposals, they explicitly or implicitly acknowledge the need for Tier 5 service areas. Of the 31 parties who commented,² only Bell Mobility Inc. (Bell), Québecor Média inc. (Québecor) and Shaw Communications Inc. (Shaw) oppose ISED’s proposals.

¹ Paragraphs 78 to 135 of the Comments of BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi, filed 19 February 2019 in response to *Consultation on a new Set of Service Areas for Spectrum Licensing*, DGSO-002-18 (the “Joint Submission”).

² This includes BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi. As noted in par. 3 of our 19 February 2019 Joint Submission, the contributors to the Joint Submission are separate commenters and reserve the right to reply individually.

All others support the creation of Tier 5 service areas including the national incumbents Rogers Communications Inc. (Rogers) and Telus Communications Inc. (Telus). We agree in particular with Telus' perspective of:

*... viewing the creation of Tier 5 areas as an opportunity to better distinguish between urban and rural markets. Tier 4 service areas that contain both urban and rural areas by design can be segmented into Tier 5 service areas to allow for the differential treatment of dense population centres from sparse rural territory.*³

5. On the other hand, Bell submits that creating a new tier of smaller service areas is not necessary to ISED's goals of meeting future wireless needs, encouraging rural access to spectrum, and supporting new technologies and emerging use cases. Rather, according to Bell, *"the creation of Tier 5 service areas will lead to significant interference challenges, inefficient deployment, and an unnecessarily complex auction process"*⁴ and *"the absence of service areas smaller than Tier 4 has not prevented the deployment of networks in rural areas."*⁵
6. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI do not agree with Bell's position. The task of spectrum coordination and interference management may be affected by the creation of new, smaller Tier 5 service areas, but the scope of the task will vary by spectrum band, this task is not new to operators, and on the whole it is expected to be manageable. For example, the proximity of the Buffalo and Detroit markets has not prevented Canadian operators in the past from providing wireless services to their customers in the adjacent Niagara and Windsor markets. In addition, the primary interference concern of network operators, co-channel interference from within the same network, will not be materially affected by the use of smaller service areas. Further, as noted by ISED, new technologies are expected to help minimize potential interference (Consultation Document, par. 21).
7. Nor do we agree with the positions of Rogers,⁶ Shaw⁷ and Corridor Communications Inc. (CCI)⁸ that Tier 5 service areas should only be used for high-band or millimetre wave spectrum. As noted in our Joint Submission (par. 136-154), the U.S., Australia and Ireland are beginning to use smaller licence areas as tools to achieve their policy objectives for mid-band spectrum (in particular the 3.5 GHz band), including clearly separating urban from rural areas

³ Telus Comments, par. 10.

⁴ Bell Comments, par. 12.

⁵ Bell Comments, par. 13.

⁶ Rogers Comments, par. 19, 28 and 43.

⁷ Shaw Comments, par. 7.

⁸ CCI Comments, page 2.

and facilitating access to spectrum by smaller or regional operators. We also note that Austria recently completed an auction of the 3410-3800 MHz band using 6 licence areas for rural regions and 6 licence areas for densely-populated urban regions.⁹ ISED would significantly undermine its ability to achieve its policy objectives for smaller service areas (Consultation Document, par. 26) if it were to limit arbitrarily the application of Tier 5 service areas to spectrum bands above 6 GHz as proposed by Rogers, Shaw and CCI. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi urge ISED not to establish *a priori* limits on the application of Tier 5 service areas and to consult on this issue on a case-by-case basis as part of any future consultations on policy and licensing frameworks.

8. In the view of the eight contributors to the Joint Submission, the status quo, where rural and remote areas of this country remain unserved and underserved, is unacceptable. The benefits of small service areas – increased access by small and regional operators – will far outweigh any additional coordination and management work that these operators may have to undertake.
9. When designing licensing frameworks, though, ISED could also consider Bell's proposal that some blocks within a given spectrum band be auctioned at a different Tier level.¹⁰ As noted by Bell, ISED has already done this in the 2008 AWS-1 auction. The Radio Advisory Board of Canada (RABC) refers to a similar approach applied by the Swedish Post and Telecom Authority (PTS) to the 3.4-3.8 GHz band, where a portion will be assigned on the basis of large (national) licences and the rest assigned on the basis of small (regional) licences.¹¹ This would be another tool at ISED's disposal for accommodating national operators who may want to simplify coordination while accommodating smaller operators who may wish to serve a more local area.
10. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi also submit in disagreement with Bell that there is no evidence that the use of smaller service areas will hinder in any way the deployment of wireless spectrum. To the contrary, the existing large Tiers have resulted in deployment being concentrated in urban areas, leaving rural and remote areas behind. We agree with the Municipalité Régionale de Comté (MRC) de Témiscouata who states:

⁹ TKK, *Consultation on the Tender Conditions in the Procedure for Spectrum Award in the 3410 to 3800 MHz Range*, 21 February 2018, available at – https://www.rtr.at/en/inf/Konsult_5GAuktion2018_2/Consultation_3_4_to_3_8_GHz.pdf.

¹⁰ Bell Comments, par. 25.

¹¹ RABC Comments, par. 9. See also PTS, *The Swedish Post and Telecom Authority's intents for the assignment of frequencies for 5G*, following referral, 2 May 2018, page 8 – English version available at <https://pts.se/globalassets/startpage/dokument/icke-legala-dokument/rapporter/2018/radio/preliminary-study-consultation-pts-responses.pdf>.

*Le passé est souvent garant de l'avenir. Les grandes zones de services de niveau 1 à 4 utilisées depuis le début du développement du service cellulaire national n'ont pas réussi à combler l'écart entre le milieu urbain et rural. La création de petites zones de niveau 5, tel que défini par le SDR de 2016 pourront changer la donne.*¹² (emphasis added)

11. We also agree with Xplornet Communications Inc. (Xplornet), who submits the following:

Tier 4 licensing has specifically disadvantaged Canadians living in the many low-population-density, rural areas that are immediately adjacent to major urban centres.

...

*In creating a new set of tier 5 licensing areas, ISED has the opportunity to separate the licensing of high-population-density urban cores from adjacent low-population-density areas. By doing this, spectrum resources can be used to better meet the needs of all Canadians.*¹³

12. A properly designed set of smaller service areas will improve access to spectrum by licensees willing and able to use it in all parts of Canada. Further, the complexity of an auction process owes at least as much to the choice of its design as to the size of the service areas themselves and we have separately recommended that ISED examine this issue as well (see Joint Submission, par. 166-169).
13. It is also clear that the views of Québecor and Shaw to the effect that Tier 5 service areas are not needed¹⁴ or are premature¹⁵ fly in the face of the evidence that network and service deployment lags in rural areas. In general, Canadians in rural communities have access to fewer service providers offering lower speeds at higher prices. For example, the Canadian Radio-television and Telecommunications Commission (CRTC) noted in its *Communications Monitoring Report 2018*:

Rural and small centre populations continued to trail in the availability of advanced broadband services, with only 39% of rural

¹² MRC de Témiscouata Comments, par. 16.

¹³ Xplornet Comments, par. 3-4.

¹⁴ Québecor Comments, par. 7.

¹⁵ Shaw Comments, par. 17.

*households having access to services with download speeds of 50 Mbps or faster, and small population centres having 88% availability. This is in contrast to near-ubiquitous availability of such services in medium and large centres.*¹⁶

ISED's Design Principles

14. In addition to the general consensus noted above that ISED should introduce smaller Tier 5 service areas, BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi note that there is a general consensus among commenters that ISED's six proposed design principles (Consultation Document, par. 36) are reasonable.
15. Many of these commenters, though, propose changes or clarifications to some of the design principles, or propose additional design principles to address shortcomings in the design principles. Unfortunately, there is very little overlap or consistency among those various proposed additional design principles.
16. We note however that a couple of commenters focus on the number of Tier 5 service areas that would be created by one Option or the other. Bell, for example, suggests that 300 to 500 would be the appropriate number of Tier 5 service areas to implement across the country.¹⁷ Rogers calculates the appropriate number of Tier 5 service areas to be approximately 360, observing that this would be *"approximately 10 percent of the number of county-level licences in the U.S, which is in line with the total Canadian population being approximately 10% of the U.S."*¹⁸
17. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi submit that an approach which aims for a specific number of service areas is arbitrary and does not have a principled basis. We support ISED's approach of determining first the appropriate design principles, and then designing Tier 5 service areas accordingly. Our Joint Proposal is a reasoned approach based on a detailed review of how Statistics Canada addresses a country with a diverse geography and population, in which the number of service areas (1,500 to 1,600) flows from the application of the principles and not vice versa. Further, the number of Tier 5 service areas that emerges from the analysis in the Joint Proposal is reasonable and manageable. We note for example that the Federal Communications Commission (FCC) has determined that it can manage an auction of CBRS

¹⁶ CRTC, *Communications Monitoring Report 2018*, 27 February 2019, page 141.

¹⁷ Bell Comments, par. 35 and 53.

¹⁸ Rogers Comments, par. 70. Footnote omitted.

spectrum using 3,141 county-based licence areas, a number which is far greater than the one emerging from the Joint Proposal. We encourage ISED therefore to maintain its principled approach to the question of the design of Tier 5 service areas.

18. In our Joint Submission, BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI also propose two additional design principles in order to establish an effective set of new service areas:

- *Favour design rules which result in service areas that will be adapted to the reality of their environment; and*
- *Ensure the boundaries serve the needs of local communities.*

19. We note that Shaw proposes that ISED adopt an additional design principle focused on ensuring Tier 5 service areas take into account local geographic and topographic conditions:

*New service area boundaries must account for geographical and topographical characteristics. In designing service area boundaries, the Department must consider topographical features of the terrain. Propagation studies and prediction models should be used to verify that theoretical borders can be established in the field.*¹⁹

20. Similarly, Rogers proposes two additional design principles, “*considerations for bodies of water (coastal and inland)*” and “*considerations for terrain*”²⁰ to address these issues. The Radio Advisory Board of Canada (RABC) also recommends that ISED consider similar additional design principles.²¹

21. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI are not opposed to the Shaw, Rogers and RABC proposals. Indeed, they are subsumed in our two proposed additional design principles. We note however that the Shaw, Rogers and RABC proposals focus on geographic and topographic considerations alone. Our proposed additional design principles address local community and population needs as well as geographic and topographic considerations. Because our approach is more comprehensive, it is more likely to help ISED achieve its policy objectives. For this reason, we recommend ISED adopt our proposed additional design principles rather than the more limited ones proposed by Shaw, Rogers and the RABC.

¹⁹ Shaw Comments, par. 25.

²⁰ Rogers Comments, par. 50 and 53, respectively.

²¹ RABC Comments, par. 20.

Varied Views on ISED's Options

22. Opinion among commenters was also clearly divided on which of ISED's two Options was more appropriate. Of those service providers who expressed an opinion, including BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI, twice as many considered Option 1 over Option 2 as the better starting point for the design of Tier 5 service areas. It should be noted, however, that there was little support for either Option without reservations and most commenters proposed remedies to address the shortcomings of the original Options.
23. The reasons expressed by commenters for supporting one or the other Option vary considerably. For example, Saskatchewan Telecommunications (SaskTel) supports Option 1 because it includes well-defined boundaries. SaskTel²² and the Eastern Ontario Wardens' Caucus and Eastern Ontario Regional Network (EORN)²³ support Option 1 because, in their view, it sufficiently separates urban areas from rural areas, among other things. By contrast, CCI supports Option 1 because it *"best prevents service providers from cherry-picking the most densely populated, and therefore the most profitable, areas to serve,"*²⁴ presumably because it combines both urban and rural areas into one licence service area. As discussed above, this has clearly not been effective at encouraging network deployment in rural and remote areas in the past.
24. Xplornet considers the combination of urban and rural areas into one service area to be problematic. In its view, Tier 5 service areas based on Option 1 would perpetuate a key issue with the current Tier 4 service areas, namely that they combine urban and rural areas, and would therefore continue the current incentives to deploy in urban areas only. For this reason, Xplornet chooses to support ISED's Option 2.²⁵ We note, however, that our Joint Proposal fully addresses Xplornet's concerns by borrowing from Option 2 the use of population centre boundaries.
25. Others, such as Rogers, Telus and Québecor, oppose Option 1 in part because of concerns about the small size of many Census Subdivisions (CSDs)²⁶ or an excessive fragmentation of the Canadian territory.²⁷ We note that even SaskTel,

²² SaskTel Comments, par. 24.

²³ EORN Comments, par. 15.

²⁴ CCI Comments, page 2.

²⁵ Xplornet Comments, par. 33-34.

²⁶ See Rogers Comments, par. 63 and Telus Comments, par. 22.

²⁷ « *La deuxième option nous apparaît plus acceptable que la première, puisqu'elle n'entraînerait pas une hyperfragmentation géographique des zones de service.* » Québecor Comments, par. 28.

who supports Option 1, expresses concern about the small sizes of some CSDs.²⁸ Again, our Joint Proposal addresses these concerns by combining CSDs using Census Consolidated Subdivisions (CCSs) and Aggregate Dissemination Areas (ADAs), which aggregate the proposed Tier 5 service areas up to a reasonable size.

26. Conversely, Telus and EORN are concerned that Option 2 would result in an “other” service area that is unwieldy²⁹ or unaffordable.³⁰ Imperial Oil and Suncor Energy Services Inc. (Suncor) both state that Option 2 results in service areas in northern and rural areas which are substantially similar to existing Tier 4 service areas and therefore do not provide any advantage over the current situation.³¹ Our Joint Proposal addresses these concerns by dividing the Tier 4 service area using CDs in northern remote areas, and by dividing the “other” area using CCSs and ADAs in other parts of the country, to achieve manageable Tier 5 service areas of a coherent and consistent size across the country.
27. Bell’s concern with Option 2 includes the fact that a number of Tier 5 service areas based on population centres would be divided by existing Tier 4 service area boundaries, and therefore would not comply with ISSED’s fifth design principle.³² We share this concern and we discuss this issue extensively in our Joint Submission (par. 66-68). However, we consider this concern can be resolved in a manner that is consistent with our Joint Proposal.
28. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi do not disagree with many of these critiques or with the perceived advantages of the two Options. The issue is that neither Option, as described in the Consultation Document, fully meets ISSED’s design principles or fully supports achieving ISSED’s policy objectives for a new set of service areas (see Consultation Document, par. 26). In addition, as detailed above and in the Joint Submission, both have shortcomings which make each of them unsuitable for the creation of new service areas.

²⁸ SaskTel proposes merging CSDs smaller than 2 sq. km into the surrounding CSDs. SaskTel Comments, par. 29.

²⁹ Even though, of the two Options, Telus prefers Option 2. Telus Comments, par. 34. We agree with Telus that the “other” area as proposed under ISSED’s Option 2 is problematic but we agree only in part with Telus’ proposed solution (see below).

³⁰ EORN Comments, par. 32.

³¹ “Option 2 Specifically for Northern and Rural areas is geographically identical to existing Tier 4 areas. Therefore provides no economic value.” Imperial Oil Comments, page 2.

“Option 2 is not materially different from Tier 4 in northern and rural areas and will not help Suncor achieve what is needed. Based on this option 2 is not suitable.” Suncor Comments, page 2.

³² Bell Comments, par. 45-46.

29. Like BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI, the other commenters propose changes to ISED's Options to address these various concerns or shortcomings noted above. We note, however, their proposed solutions often do not address the shortcomings of their preferred solution. Further, in some cases, the proposed changes introduce new issues such as subjectivity or uncertainty which would make the task of defining Tier 5 service areas much more difficult and less likely to satisfy the third design principle of "technological and competitive neutrality."
30. For example, Québecor proposes that Tier 5 service areas encompass an ill-defined "community of economic interests" (*"communauté d'intérêts économiques"*).³³ Similarly, Shaw recommends that Tier 5 service areas be formed by clustering "areas of interest"³⁴ without, however, providing clear guidance on how ISED would define such "areas of interest." Shaw also proposes that ISED create Tier 5 service areas only "where necessary"³⁵ without, however, clearly specifying how ISED would determine when Tier 5 service areas would be necessary. Telus proposes that the minimum size of a Tier 5 service area be one which serves a "cluster of base stations,"³⁶ without however defining the term and without explaining how such an approach would be technologically and competitively neutral. The Joint Proposal, by contrast leverages the objectively-defined Statistics Canada census areas (CSDs, CDs, CCSs, and ADAs) to define Tier 5 service areas.
31. In summary, though, BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI submit that, while the commenters in this consultation may disagree on the details, they generally share similar views that ISED should:
- a. avoid spectrum service areas that are too big or too small or too numerous,
 - b. avoid having "communities" divided by service area boundaries,
 - c. create service areas which make sense for those communities and for operators, and
 - d. create service areas which respect local conditions.

³³ Québecor Comments, par. 33-34.

³⁴ Shaw Comments, par. 20.

³⁵ Shaw Comments, par. 40 and 43.

³⁶ Telus Comments, par. 30.

The Joint Proposal

32. We share these general concerns and our Joint Proposal is designed to address them by combining the advantages and addresses the shortcomings of the two Options. In developing our methodology for the design of Tier 5 service areas, we are guided by seven high-level principles:
1. *Population centres should be separated into their own Tier 5 service areas using Census Population Centres boundaries, as this provides the best distinction between urban and rural areas.*
 2. *Population centres below 5,000 in population should remain with their surrounding rural area because servicing these small communities often implies serving the adjacent rural areas at the same time.*
 3. *For extremely large population centres above half a million in population, the Tier 5 service area should not span more than the Census Division, and separate Tier 5 service areas should be created for any part of the population centre that spans beyond the Census Division that itself has a population of 15,000 or more.*
 4. *The target population of rural Tier 5 service areas should be 10,000, give or take 5,000 (i.e. a target range from 5,000 to 15,000). This implies grouping adjacent rural Census Subdivisions when the population is below this range or dividing large rural Census Subdivisions when the population is above it. This target population range is the optimal range for ISED to achieve its policy objectives of increasing accessibility to spectrum and enhancing service to rural Canadians.*
 5. *In northern remote areas, Tier 5 service areas should be based on Census Division boundaries, and Census Population Centres or small Census Subdivisions should not be separated into distinct Tier 5 service areas.*
 6. *The square grid cell centre can be used to define boundaries for rural and remote Tier 5 service areas, as these boundaries are in low population areas. However, where the Tier 5 service area boundary is near a population centre, any grid cell that overlaps the Census Population Centre should be included inside the Tier 5 service area boundary.*

7. *Tier 5 service areas should generally nest within existing Tier 4 service areas but, in those cases where Tier 4 service area boundaries bisect a population centre, preserving the territorial integrity of the population centre must take precedence over strict application of the “nesting” rule.*

(Joint Submission, par. 92)

33. We note that the submissions of the other commenters support elements of our Joint Proposal.

Use of Population Centres

34. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI propose a methodology to define Tier 5 service areas that, among other things, effectively separates urban from rural and remote areas of the country through the use of Census Population Centres (Joint Submission, par. 104). While we do not necessarily agree with all of their submissions, we note that several other operators share our objective to ensure a clear differentiation between urban and rural areas in Canada.
35. For example, Xplornet strongly agrees with our view that population centres should be separated into their own Tier 5 service areas using Census Population Centre boundaries, as this provides the best distinction between urban and rural areas and will best meet the first design principle:

*Indeed, ... Option 2 is effective in separating the high-population-density areas of the Hamilton core from the immediately adjacent low-population-density areas. In our view, this achieves the primary function that a new tier 5 needs to address.*³⁷

36. Irrespective of which of ISED's Options they supported, several operators recognised the usefulness of Census Population Centres for creating Tier 5 service areas which recognize the unique characteristics of urban and rural areas in Canada. For example, Shaw's methodology for defining Tier 5 service areas is based upon the use of Statistics Canada population centres.³⁸ TekSavvy Solutions Inc. (TekSavvy) proposes a methodology which would use “*population centres to distinguish rural from urban Tier 5*”.³⁹ While Telus ultimately proposes a methodology for creating Tier 5 service areas based on Census Consolidated Subdivisions (CCSs), Telus notes that it:

³⁷ Xplornet Comments, par. 42.

³⁸ Shaw Comments, par. 44.

³⁹ TekSavvy Comments, par. 43.

... supports the use of population centres as the basis for the definition of “urban” service areas.⁴⁰

Minimum Population Threshold

37. Rogers shares the position of the eight signatories of the Joint Submission that population centres below 5,000 should remain with their surrounding rural area.⁴¹ We also note that EORN proposes a 4,000 population threshold which is similar to our proposal,⁴² while TekSavvy proposes a 10,000 population threshold.⁴³ While we agree with TekSavvy that very small population centres should remain with the surrounding rural area, we consider that the higher threshold of 10,000 is inappropriate and would not allow ISED to achieve its policy objectives of improving access to spectrum and of addressing the unique geographical distribution of Canada’s population (see Consultation Document, par. 26) as it would exclude far too many population centres that should be Tier 5 service areas in their own right.
38. Xplornet goes even further than TekSavvy and proposes that Tier 5 service areas be created only for medium and large population centres,⁴⁴ which would in effect increase the minimum population threshold to 30,000. This would not satisfy the first design principle of recognizing geographic differences and would exclude too many population centres that should be Tier 5 service areas in their own right. We therefore encourage ISED to discard this proposal.
39. Conversely, the MRC de Témiscouata proposes that ISED lower the threshold for “small population centres” to 100.⁴⁵ This would result in an inordinate number of Tier 5 service areas, most of which would be unworkably small. We consider that the MRC’s concerns stem in part from the fact that the “other” area under Option 2 would be very similar to the existing Tier 4 service area in many cases and would therefore not improve access to spectrum in rural areas. We are of the view that our approach to dividing the rural “other” area, along with the 5,000 minimum population centre threshold, appropriately addresses this concern, and recommend that ISED not lower the threshold as proposed by the MRC.

Extremely Large Population Centres

40. In the case of extremely large population centres above half a million in population, BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI

⁴⁰ Telus Comments, par. 34.

⁴¹ Rogers Comments, par. 68.

⁴² EORN Comments, par. 34.

⁴³ TekSavvy Comments, par. 40.

⁴⁴ Xplornet Comments, par. 44.

⁴⁵ MRC de Témiscouata Comments, par. 28.

consider that the Tier 5 service area should not span more than the Census Division (CD), and that separate Tier 5 service areas should be created for any part of the population centre that spans beyond the CD that itself has a population of 15,000 or more.

41. We note that the position of the Toronto Police Service in respect of the City of Toronto and nearby Regional Municipalities is effectively the same as ours: “[i]n the case of the GTA, the boundaries should reflect the City of Toronto and the Golden Horseshoe Regional Municipalities such as Halton, Peel, York, Durham, etc.”⁴⁶ Each of these municipalities is represented by its own CD and the use of regional municipal boundaries is equivalent to our proposal to use CD boundaries. It should be noted that, while we agree with the Toronto Police Service proposal to use municipal boundaries to the extent that they are the same as CD boundaries, we disagree with the Toronto Police Service proposal not to convert them using ISED’s grid cells (see the discussion at paragraph 60 below).
42. Bell proposes that ISED use CDs⁴⁷ or, alternatively, merge CSDs to approximate large population centres⁴⁸ to define urban Tier 5 service areas. We agree that the CD is the appropriate maximum size for a Tier 5 service area in a very large urban area.⁴⁹ It is, however, not appropriate for smaller or rural communities, as it would splinter off portions of communities which have outgrown their CDs, such as Calgary, Moncton, Fredericton, Saint John and others (Joint Submission, par. 29). We disagree with Bell’s alternative proposal to merge CSDs to approximate large population centres, as this would incorporate extensive rural areas into a supposedly “urban” Tier 5 service area and, as a consequence, fail ISED’s first design principle. The approach adopted in our Joint Proposal, of using Census Population Centres to define urban Tier 5 service areas and of limiting them to CDs only in specific circumstances, satisfies ISED’s design principles and results in a consistent and coherent set of Tier 5 service areas across the country.
43. We disagree with other commenters, such as Rogers, Telus and Québecor, who propose different approaches to large urban areas. Rogers proposes that ISED merge population centres within 30 km of each other into the same Tier 5 service area.⁵⁰ Telus proposes to merge all CCSs overlapping with large and medium population centres into the same Tier 5 service area.⁵¹ Québecor proposes to merge population centres in the same community of economic interests

⁴⁶ Toronto Police Service Comments, page 6.

⁴⁷ Bell Comments, par. 35-38.

⁴⁸ Bell Comments, par. 43.

⁴⁹ As well as in northern remote areas. See the discussion at paragraph 50 below.

⁵⁰ Rogers Comments, par. 43.

⁵¹ Telus Comments, par. 47.

(“*communauté d'intérêts économiques*”) whether or not they are immediately adjacent to each other.⁵²

44. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI consider that the Rogers, Telus and Québecor proposals are fundamentally flawed. They would all incorporate extensive rural areas into a supposedly “urban” Tier 5 service area and, as a consequence, would fail ISED’s first design principle (recognize geographic differences). Furthermore, they would create oversized Tier 5 service areas that would perpetuate the issues of many Tier 4 service areas with a very high population count, such as 4-051 Montreal, 4-055 Ottawa and 4-077 Toronto, which would not increase accessibility to spectrum or increase competition. By creating excessively large urban Tier 5 service areas which would be out of reach of smaller operators, this approach would also fail ISED’s third design principle (competitive neutrality). We agree with Xplornet’s comment that boundaries need to be drawn as tightly to urban centres as interference management will allow⁵³ (although ISED also needs to consider how to smooth the Tier 5 service area boundaries and create an area into which the population centre can grow, for example, by applying the “all grid cell rule” proposed at par. 104 of the Joint Submission).
45. Our Joint Proposal is also superior to Québecor’s proposal because Québecor provides no clear definition for “*communities of economic interest*.” Their proposal would require ISED to make a subjective decision regarding the “community” for each population centre. This approach would not meet the third design principle (neutrality) and would greatly increase the administrative burden on ISED to define Tier 5 service areas.

Optimal Rural Tier Size

46. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI note that both Telus and Québecor adopt positions analogous to ours that the target population of rural Tier 5 service areas should be 10,000, give or take 5,000 (i.e. a target range from 5,000 to 15,000) as the optimal range for ISED to achieve its policy objectives of increasing accessibility to spectrum and enhancing service to rural Canadians. However, both of their proposals would need to be modified.
47. For example, Telus proposes the use of CCSs as a means to amalgamate smaller CSDs into surrounding or adjacent CSDs.⁵⁴ While this is a step in the right direction, we studied this approach at length and consider it is insufficient. CCS sizes vary considerably across the country and while the use of CCSs as

⁵² Québecor Comments, par. 33-34.

⁵³ Xplornet Comments, par. 26.

⁵⁴ Telus Comments, par. 47.

the basis for Tier 5 service areas might be reasonable in some parts of Canada, it is not in others. We consider our approach of target population size, which leads to use of both CCSs or ADAs, whichever is more appropriate in the circumstances, to be a superior approach as it results in a more consistent and coherent set of Tier 5 service areas across the country.

48. For example, in Southern Quebec and Prince Edward Island, ADAs are typically larger than CCSs and allow even more consolidation of CSDs while in many other provinces, the use of CCSs would form Tier 5 service areas that are excessively large. ADAs alone cannot be used because many CSDs that are referred to by some commenters as “nested” are also separate ADAs. The use of a combination of CCSs and ADAs allows ISED to merge these nested CSDs and at the same time obtain rural service areas of a more consistent size.
49. Further, our approach achieves the equivalent result as Quebecor’s proposal that all “landlocked” CSDs be amalgamated with the surrounding CSD, or Bell’s proposal that “nested” and contiguous CSDs be amalgamated up to a population of 30,000 or more,⁵⁵ but in a less arbitrary and mechanistic way and by leveraging Statistics Canada boundaries.

Northern Remote Areas

50. In northern remote areas, we consider that Tier 5 service areas should be based on CD boundaries, and that Census Population Centres or small CSDs should not be separated into distinct Tier 5 service areas. As we note in the Joint Submission (par. 79-80), a different approach to Tier 5 service areas is required in remote areas as compared to rural areas. We consider it important that ISED’s Tier 5 service area solution do so, if it is to fully meet the first design principle. In addition, given the unique characteristics of northern remote areas, ISED must not create separate Tier 5 service areas for population centres or apply a grid cell licensing approach instead of first auctioning the spectrum, if it is to fully meet the second design principle. Either of these would allow cherry-picking of a few small areas while the rest of the region would not be commercially viable and would be unlikely to see future network deployment (Joint Submission, par. 97).
51. Few other parties comment specifically on this issue. Those that do include TekSavvy, the Federation of Canadian Municipalities (FCM), the Canadian Electricity Association (CEA) and the MRC de Témiscouata.
52. TekSavvy submits that ISED must recognize the difference between rural and remote areas of Canada. The company proposes distinguishing rural areas from

⁵⁵ Bell Comments, par. 41-43.

remote areas based on population density or the size of the CSD or CCS,⁵⁶ noting that:

*Distinguishing between “rural” and “remote” service areas will give ISED additional flexibility in the design of its licensing frameworks in order to maximize the efficient use of spectrum.*⁵⁷

53. TekSavvy also expresses support for the approach we adopted in our Joint Proposal towards remote areas, stating:

*TSI believes that the Joint Proposal has significant advantages for the consumer, competition and innovation over either Option 1 or Option 2 in that it recognizes the existence in Canada of very different urban, rural and remote areas, and applies a three-step process to define service areas in each.*⁵⁸

54. The FCM agrees with our position that ISED must address specifically the needs of remote and northern communities and that a “one-size-fits-all” approach will not be effective at achieving the policy objectives for those communities (see Joint Submission, par. 26):

... For this reason, FCM has consistently called for the federal government to ensure licensing and auction processes are designed to incent and encourage an increase to broadband and wireless coverage in rural, remote and northern communities. ...

*FCM encourages the federal government to make available necessary spectrum for rural and remote communities to access wireless broadband, and in particular, 5G wireless technology. It is important to consider the diverse needs of rural, remote and northern communities; a one-size-fits-all approach will not help communities achieve the CRTC’s basic service objective. FCM supports the objective of ISED’s proposed new set of services areas to better reflect both urban and rural service provider requirements.*⁵⁹

55. The CEA and the MRC de Témiscouata both propose a maximum size for CSD-based Tier 5 service areas in remote areas (50,000 NTS grid units,⁶⁰ and

⁵⁶ TekSavvy Comments, par. 43.

⁵⁷ TekSavvy Comments, par. 42.

⁵⁸ TekSavvy Comments, par. 72.

⁵⁹ FCM Comments, page 1.

⁶⁰ CEA Comments, page 3. The CEA does not define “NTS” but we assume it refers to the National Topographic System of Natural Resources Canada.

1,000 km² in northern regions,⁶¹ respectively). However, these thresholds appear arbitrary and would be difficult to map to Statistics Canada information for market analysis and business planning purposes. Further, no additional value would be created by subdividing very large unpopulated areas, which would be contrary to ISED's second design principle. We consider our CD-based proposal to be superior in this respect for northern remote areas.

56. SaskTel proposes that ISED apply a grid cell licensing approach to areas classified by Statistics Canada as “unorganized divisions.”⁶² We note the issue of the appropriate licensing regime for remote or “unorganized” areas is distinct from the issue of defining service areas for spectrum licensing purposes. SaskTel's approach in effect would create areas within Tier 4 service areas which are not Tier 5 service areas but nest within the Tier 4 service area. It would also enable cherry-picking of a few small markets to the detriment of consumers in other areas. We consider it more appropriate that ISED define Tier 5 service areas for all parts of a Tier 4 service area, and address the question of the appropriate licensing approach in future spectrum band-specific consultations.

Use of Square Grid Cells

57. The square grid cell centre can be used to define boundaries for rural and remote Tier 5 service areas, as these boundaries are in low population areas. However, where the Tier 5 service area boundary is near a population centre, any grid cell that overlaps the Census Population Centre should be included inside the Tier 5 service area boundary.
58. Other commenters also raise the issue of how best to define boundaries near population centres. Rogers suggests that ISED “*consider, to the maximum extent possible, future development and population expansion*” when defining boundaries for populated areas.⁶³ Shaw suggests that ISED “*implement buffer zones around population centres to allow for population expansion [and] to address border irregularities and discontinuities.*”⁶⁴ TekSavvy submits that “*there is a need to smooth the boundaries of service areas to minimize inefficiency caused by odd contours [and] to consider the growth around population centers...*”⁶⁵ Telus proposes that ISED add buffers around population centres which “*would need to take into account both current population density and potential population growth / urban expansion.*”⁶⁶

⁶¹ MRC de Témiscouata Comments, par. 22.

⁶² SaskTel Comments, par. 32.

⁶³ Rogers Comments, par. 47 and 76.

⁶⁴ Shaw Comments, par. 24 and 39.

⁶⁵ TekSavvy Comments, par. 36.

⁶⁶ Telus Comments, par 38.

59. These comments are all similar to concerns we raised in our Joint Submission (par. 69-71 and 74) regarding population centre boundaries. The Joint Proposal effectively addresses these concerns by applying our proposed “all grid cell rule”, that is, by assigning the entire square grid cell to a Tier 5 service area if any portion of the grid cell falls within the population centre. Using the centre of square grid cells in conjunction with Census Population Centre boundaries is unacceptable as it results in entire neighborhoods of a population centre being excluded from the Tier 5 service area as, for example, in the case of Trois-Rivières and Nicolet (Joint Submission, par. 70-71).
60. We note that few commenters opposed the use of grid cells to define service area boundaries. The Toronto Police Service suggested that service area boundaries should be aligned with regional municipal boundaries without being converted into service area boundaries using ISED’s grid cells, in order to facilitate the use of municipal access agreements.⁶⁷ However, their approach on this specific point would introduce inconsistency in the management of spectrum between different Tiers, would not facilitate nesting of Tiers, and should not be adopted.⁶⁸

Nesting Within Tier 4 Service Areas

61. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi agree that Tier 5 service areas should generally nest within existing Tier 4 service areas. However, consistent with our proposed design principle to “*ensure the boundaries serve the needs of local communities*” (Joint Submission, par. 37), we consider that preserving the territorial integrity of a population centre must take precedence over the strict application of the “nesting” rule in those cases where Tier 4 service area boundaries bisect a population centre.
62. ISED’s existing service area boundaries already divide local communities, an issue that other commenters also raised. Bell for example expressed concern about Census Population Centres crossing Tier 4 service area boundaries.⁶⁹ While Bell does not propose a solution, this situation creates challenges for smaller operators today. As illustrated by the map included as Figure 6 in Bell’s submission, an operator who wishes to serve the entire population centre of approximately 30,000 people of Orangeville would have to acquire not only the licence for 4-078 Alliston (2016 population: 113,688) but also the licence for 4-077 Toronto (2016 population: 6,646,250). This is out of reach for smaller operators and effectively excludes them from markets such as Orangeville. We

⁶⁷ Toronto Police Service Comments, page 6.

⁶⁸ However, we do agree with the Toronto Police Service proposal to align Tier 5 service area boundaries with regional municipality boundaries, to the extent that these are the same as CD boundaries in large urban population centres. See the earlier discussion.

⁶⁹ Bell Comments, par. 46.

submit that this is an issue that ISED must address irrespective of its decision on Tier 5 service areas, although it can do so as part of this process of defining Tier 5 service areas.

63. In addition to the issue of Tier 4 service area boundaries dividing communities, some Tier 5 service area boundaries could divide communities, which is a concern that other commenters also share. Rogers in particular comments on CSD boundaries dividing some population centres.⁷⁰ The BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI Joint Proposal addresses this concern by separating population centres into their own Tier 5 service areas. However, as noted in the previous paragraph, the issue of population centres divided by Tier 4 service area boundaries must be addressed.

Additional Policy Measures

64. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSI also believe that if the introduction of new Tier 5 licence areas is to contribute to achieving ISED's objectives of "*encourag[ing] additional access to spectrum within rural areas*" and "*support[ing] new technologies and emerging use cases*" (Consultation Document, par. 1), ISED must complement this initiative with the additional measures we discussed in our Joint Submission (par. 155-174). We note that TekSavvy agrees with this position:

TSI believes that the creation of new Tier 5 service areas while necessary, is not sufficient to ensure to ensure ISED's objectives of spectrum efficiency, competitive prices, innovation in service offerings and consumer choice. Smaller facilities-based service providers have an essential role in delivering these objectives in rural areas and their long-term viability depends not only on service area definition but also on appropriate auction rules and CoLs. TSI recommends that ISED include in the auction rules key features including set-aside and/or spectrum caps and apply strict Conditions of Licence including rapid deployment, service availability and subordination requirements. These CoLs are necessary to dissuade national and/or regional operators, to speculatively acquire and warehouse spectrum in rural areas - thus

⁷⁰ Rogers Comments, par. 59.

*preventing access to spectrum for, and rapid rollout of broadband services by smaller rural facility-based service providers.*⁷¹

65. In combination with stronger subordination measures, as well as spectrum set-asides, alternative assignment methods, alternative auction formats, and rational spectrum use requirements, the introduction of Tier 5 licensing areas can encourage the development of a far healthier competitive environment in Canada. This healthier market would encourage players that do not need the economies of scale of a major, national licensee in order to introduce services that the market needs. Rather, new players could seek licences in targeted service areas, including areas, such as remote or rural locations, with needs that might foreseeably evolve over a short period of time.
66. We note, for instance, the frustration expressed by several of the resource companies which have participated directly in this consultation. Firms engaged in mineral exploration or exploitation have complained that spectrum is not being made available for them to develop the applications they need, including 5G-dependent Internet of Things applications. Imperial Oil suggests it is seeking an approach to service areas which “*will enable industries to obtain license spectrum specifically for the geographic area of their operations.*”⁷² Syncrude Canada Ltd. (Syncrude) notes:

*LTE wireless infrastructure is the current industry trend and product development area for utilization and provision of high-performance, high-reliability wireless infrastructure. It is readily being used for this purpose in the United States, but not available to industry in Canada. Company-owned LTE wireless infrastructure allows the implementation of a support model that is aligned with the company’s safety and production goals.*⁷³

67. Rogers suggests that these resource companies could use unlicensed spectrum for their purposes or rely on the spectrum of a commercial mobile provider.⁷⁴ However, these companies have often already exhausted the capacity of their unlicensed wireless networks or they require technologies which cannot be operated solely on unlicensed spectrum. As for the use of spectrum of a commercial mobile provider (either through the provision of services or the subordination of a spectrum licence), we note that the spectrum for the services that these companies require is “not available” because it is held by large operators which often have little interest in serving the areas where the resource

⁷¹ TekSavvy Comments, par. 76. See also TekSavvy Comments, par. 66-69.

⁷² Imperial Oil Comments, page 1. See also Suncor Comments, page 1.

⁷³ Syncrude Comments, page 1. See also Teck Resources, page 2.

⁷⁴ Rogers Comments, par. 12.

companies operate. Specialized wireless service providers that are eager to help these companies and to meet the needs of the people who live and work in the remote areas in which they operate, could benefit enormously from stronger subordination rules – rules, such as those we proposed, that put the onus on a licence holder to demonstrate to ISED’s satisfaction why it should not subordinate its licence to a smaller operator that has requested access to the spectrum and that is willing to meet customer needs. The “use it or share it” principle adopted by the FCC in its CBRS Band licensing arrangements expresses the kind of reversal of onus that we believe is necessary if the Canadian market is to make more efficient use of spectrum for the benefit of all Canadians.⁷⁵

Conclusion

68. BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi submit that, as they currently stand, neither Option is fully suitable for the design of Tier 5 service areas. Both Options, however, contain elements which are consistent with ISED’s design principles and which can be used to design effective Tier 5 service areas. The comments filed by respondents to the Consultation Document representing a broad range of interests similarly note the strengths and shortcomings of the two Options.
69. Our Joint Proposal takes the advantages of each Option and combines them in an alternative Option 3. The Joint Proposal provides a comprehensive and fair industry-wide solution for the definition of a new set of service areas for spectrum licensing. It differentiates among rural, remote, urban and urban-fringe areas to take into account the needs of consumers, the viability and commercial interests of service providers in both urban and non-urban areas, the efficient operation of wireless networks, and administrative efficiency.
70. The Joint Proposal, therefore, represents a reasonable way forward which is well-aligned with the positions of the other commenters, and which addresses the concerns expressed by the other commenters.

*** END OF DOCUMENT ***

⁷⁵ The FCC is also examining its spectrum partitioning, disaggregation and leasing rules generally, with a view to better achieving its objectives “to close the digital divide and to increase spectrum access by small and rural carriers.” FCC, *In the Matter of Partitioning, Disaggregation, and Leasing of Spectrum*, Notice of Proposed Rulemaking, WT Docket 19-38, FCC 19-22, 15 March 2019, available at – <https://docs.fcc.gov/public/attachments/FCC-19-22A1.pdf>