

CANADA GAZETTE NOTICE NO. DGSO-002-18

**CONSULTATION ON A NEW SET OF SERVICE AREAS FOR
SPECTRUM LICENSING**

**PUBLISHED IN THE *CANADA GAZETTE, PART I*
ON 27 NOVEMBER 2018**

**REPLY COMMENTS
OF
BELL MOBILITY INC.**

21 MARCH 2019

Table of Contents

	<u>Page</u>
1.0 EXECUTIVE SUMMARY	3
2.0 EXISTING TIER SIZES ARE APPROPRIATE FOR ISED'S GOALS	4
3.0 RESPONSES TO ISED'S PROPOSALS	5
3.1 Interference Mitigation	6
3.2 Unsuitability for low/mid-band spectrum	8
3.3 Geographic and demographic factors	9
3.4 Responses to Option 1	11
3.5 Responses to Option 2	13
4.0 BELL'S ALTERNATE PROPOSAL IS A SUITABLE SOLUTION	14
5.0 OUT OF SCOPE ISSUES	16
6.0 CONCLUSION	16

1.0 **EXECUTIVE SUMMARY**

1. In accordance with the procedure set out by Innovation, Science and Economic Development Canada (the Department or ISED) in Notice No. DGSO-002-18, *Consultation on a New Set of Service Areas for Spectrum Licensing*, dated 27 November 2018 (the Consultation), we are providing our Reply Comments on the proposal to create a new tier of smaller service areas for spectrum licensing (Tier 5) to complement ISED's existing suite of four spectrum licensing tiers.

2. We reiterate our position that the Department does not need to create a smaller tier size to achieve their stated goals, which was echoed by multiple other commenters. The creation of Tier 5 service areas will lead to significant interference challenges, inefficient deployment, and an unnecessarily complex auction process.

3. The overwhelming majority of commenters did not support either of the options proposed in the Consultation and instead put forward alternate proposals or modified versions of the existing Options. It is noteworthy that there is a great deal of commonality among the alternate proposals. The areas of consensus coalesce around a handful of key concerns with the existing proposals. These include the following:

- **Interference mitigation:** The majority of commenters expressed concerns about how to mitigate interference issues if Tier 5 licence areas are implemented. It is therefore imperative that the Department ensures that the new service areas: a) are sufficiently large, b) provide an appropriate buffer area to high traffic areas like large population centres and c) have logically shaped borders that reflect radio propagation characteristics.
- **Unsuitability for low/mid-band spectrum:** Even if the Department adopts the above recommendations and makes every attempt to minimize interference issues, Tier 5 areas will not be suitable for mid-to-low band spectrum. The Department should not assign this spectrum based on Tier 5 areas.
- **Geographic and demographic factors:** Commenters stressed the need for ISED to adjust the boundaries of the proposed Tier 5 service areas to account for a host of geographic and demographic factors not captured in either of the

Department's proposed options. These factors include: terrain features, the presence of bodies of water along borders, population growth, and proximity to major commuting corridors or other high traffic areas of interest.

4. Similarly, commenters generally agreed on the strengths and weaknesses of each proposed option. In the case of Option 1, many commenters agreed that the increased granularity in rural areas aligned with the Department's objectives, but expressed concern that the proposed service areas were far too numerous and that many were unmanageably small.

5. Commenters were favourable to the more reasonable number of service areas proposed in Option 2, but many indicated concerns about interference issues and the feasibility of the proposed "other" areas.

6. We prefer Option 1 over Option 2, but believe that census divisions would be a more appropriate basis for the service area boundaries than census subdivisions (CSDs). Option 1 is better-aligned with the Department's design principles and minimizes the number of occurrences where a Tier 5 service area is nested within another Tier 5 service area. Using census divisions rather than CSDs would result in service areas that are more manageable in number and more reasonable in size.

7. Finally, in the interest of ensuring that the boundaries of any adopted licence area accommodate local conditions, it may be necessary for the Department to further consult with stakeholders. Specifically, we request that the Department provide the opportunity for stakeholders to comment on any revised Tier 5 licence area proposal before it is adopted.

2.0 EXISTING TIER SIZES ARE APPROPRIATE FOR ISED'S GOALS

8. As discussed in our initial Comments, the Department does not need to create a new tier of smaller service areas to help meet future wireless needs, encourage rural access to spectrum, and support new technologies and emerging use cases.¹ This position was echoed by a number of commenters including Telus, Quebecor, and Shaw.

9. These commenters noted that the existing set of tools employed by the Department are sufficient for achieving the stated goals of the Consultation. Quebecor observed that there is

¹ Bell Comments, paragraphs 12 to 26.

nothing to indicate that the mechanisms currently in place to facilitate the acquisition of spectrum in rural and remote areas are not working.² Similarly, Shaw questioned the need "for the Department to establish a new set of nationwide service tiers at this time to achieve [the stated goals and policy objectives],"³ and noted that this solution was particularly unsuitable for mobile use.⁴ Our Comments showed that the absence of service areas smaller than Tier 4 has not prevented the deployment of networks in rural areas: our LTE network covers 99% of Canada's population while our LTE Advanced (LTE-A) network provides coverage to 91% of Canadians. We are also deploying wireless-to-the-home fixed wireless broadband Internet service to rural and underserved communities. The current framework of four service area tiers has successfully enabled the extensive deployment of networks in rural areas.

10. As Telus noted, if the Department nevertheless seeks to further facilitate the provision of service to rural communities, their "first recourse" does not need to be the introduction of new Tier 5 service areas: "Deployment requirements and other regulatory tools can be used to encourage any fallow spectrum getting put to use."⁵ Quebecor also highlighted recent decisions by the Department that placed emphasis on the promotion of rural connectivity (such the AWS-1 licence renewals and the 600 MHz Licensing Framework), and argued that these should be given time for the true impact to be observed before undertaking the proposed approach.⁶

11. Both Shaw and Quebecor expressed concerns that the negative outcomes of introducing a smaller service tier outweighed the potential benefits. Potential negative outcomes that they raised include: serious interference issues, inefficient spectrum usage and deployment, auction complexification and delaying the deployment of 5G networks.⁷ Given these significant drawbacks and the limited potential upside, we continue to recommend against the creation of a new set of smaller service areas for spectrum licensing.

3.0 RESPONSES TO ISED'S PROPOSALS

12. If the Department intends to create Tier 5 service areas, they should take note of the significant concerns raised by commenters about both options proposed in the Consultation. The overwhelming majority of commenters did not support either option proposed by the

² Quebecor Comments, paragraph 8.

³ Shaw Comments, paragraph 4.

⁴ Shaw Comments, paragraph 7.

⁵ Telus Comments, paragraph 3.

⁶ Quebecor Comments, paragraph 9.

⁷ See Quebecor Comments, paragraphs 11 to 14 and Shaw Comments, paragraphs 7 to 12.

Department, but instead put forward alternate proposals or modified versions of the existing options. Although on the surface these individual proposals vary considerably, there in fact exists a great deal of commonality between them. The areas of consensus coalesce around a handful of key concerns with the existing proposals. These concerns are detailed in the following section.

3.1 Interference Mitigation

13. The majority of commenters, whether or not they supported the existence of a Tier 5, expressed concerns about how to mitigate interference issues if implemented. We observed that operators already face interference challenges within the existing tiers and that dividing licences up into even smaller areas will exacerbate this issue.⁸ Rogers described "first-hand" experiences of interference within the current Tier 4 licensing of 3500 MHz spectrum, and stated this challenge would only "increase with the introduction of smaller service areas."⁹

14. Most commenters outlined concerns that the creation of an additional tier would increase the number of licence area borders and, therefore, the number of potential adjacent operators that may require coordination.¹⁰ Quebecor, for instance, highlighted the potential for extremely complex coordination challenges as a result of the multiplication of borders in urban areas.¹¹ Shaw illustrated how increased interference challenges would be "inherent" in a Tier 5 deployment for mobile services:

[D]ividing a hypothetically square Tier 4 service area into four equal Tier 5 service areas will double the total border length of the area and, in turn, multiply the likelihood of adjacent system interference and the coordination effort required to mitigate it.¹²

15. We note that although Shaw's Comments focused on the unsuitability of Tier 5 for mobile service, we know from experience that these interference issues are equally applicable to fixed systems in bands such as 3500 MHz, a reality which was also confirmed by the rurally-based Wireless Internet Service Provider CCI.¹³

⁸ Bell Comments, paragraph 17.

⁹ Rogers Comments, paragraph 14.

¹⁰ See Rogers Comments, paragraph 18; Quebecor Comments, paragraph 11; Shaw Comments, paragraph 6; Telus Comments, paragraph 21; SaskTel Comments, paragraph 15; TekSavvy Comments, paragraph 38; and RABC Comments, paragraph 15.

¹¹ Quebecor Comments, paragraph 11.

¹² Shaw Comments, paragraph 6.

¹³ See CCI's response to Question 1A, pages 1 to 2.

16. The smaller the licence area, the more significant the interference challenge becomes. Both Options 1 and 2 include many potential service areas that are so small that their size would present significant coordination challenges, not to mention difficulties limiting signal interference. TekSavvy, for instance, observed that many of the "small population centres" proposed in Option 2 would "require excessive coordination between stakeholders" to the point that it would impact their "commercial viability."¹⁴

17. Commenters also raised concerns about the lack of a buffer area around large population centres and the uneven edges of population centre borders as proposed in Option 2. The Comments provided by BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi (the Joint Submission) raised these issues, noting that "population centre boundaries are not particularly suitable for spectrum serving areas because they include odd shapes or narrow strips," and proposed to extend and smooth the boundaries to resolve this.¹⁵ TekSavvy and Shaw similarly noted that the population centre boundaries "do not reflect the reality of radio propagation,"¹⁶ and called for the "smoothing of border irregularities."¹⁷

18. Although the Department cited "advancements in technology and network design" such as Multiple Input, Multiple Output (MIMO) networks and Time Division Duplex (TDD) technology as coordination tools that can help minimize interference,¹⁸ these cannot be relied upon to solve the interference challenges that the Department's proposals would introduce. For example, as both our Comments and Rogers' Comments pointed out, different types of TDD technologies (such as TDD-LTE and WiMax) are not compatible and can only be synchronized under a narrow set of parameters.¹⁹ Further, even when operators are using the same technology, such as TDD-LTE or TDD-5G, they still need to synchronize their stations with one another through the use of a common time source and frame configuration. The more adjacent operators a service provider needs to coordinate with, the more complex this process becomes.

19. We are aligned with Telus that the Department should "seriously consider the cost of increased coordination when defining the size and location of Tier 5 service areas."²⁰ The cost

¹⁴ TekSavvy, paragraph 38.

¹⁵ Joint Submission, paragraph 70.

¹⁶ TekSavvy Comments, paragraph 33.

¹⁷ Shaw Comments, paragraph 39.

¹⁸ The Consultation, paragraph 21.

¹⁹ Bell Comments, paragraph 17 and Rogers Comments, paragraph 16.

²⁰ Telus Comments, paragraph 16.

of coordination and interference mitigation is not just to the operator, but is felt directly by potential customers, as CCI pointed out:

If a service provider purchases spectrum in a Tier 5 service area, it is in the best interest of the service provider and Canadians for the service provider to maximize their use of the resource, which the provider cannot effectively do if they are avoiding interference from other providers on the outer limits of their Tier 5 area.²¹

20. It is therefore imperative that the Department ensures that the new service areas are: a) sufficiently large, b) provide an appropriate amount of buffer area to high traffic areas like large population centres and c) have logically shaped borders that reflect radio propagation characteristics.

3.2 Unsuitability for low/mid-band spectrum

21. Even if Tier 5 licence areas can be defined to minimize interference issues, they will not be suitable for mid-to-low band spectrum. This view was shared by Rogers, Shaw, and CCI. As a result, Rogers recommended restricting Tier 5 service areas to "above 6 GHz, and likely millimetre wave," and Shaw and CCI argued that Tier 5 should be confined solely to millimetre wave (mmWave) spectrum.²² We believe that restricting Tier 5 service areas to the mmWave bands designated by 3GPP as FR2 (i.e., spectrum above 24 GHz) is preferable. As we demonstrated in Figure 1 of our initial Comments²³, radio frequency "spillage" would be inevitable in mid-band spectrum such as 3500 MHz.²⁴ As mentioned above, both we and Rogers have experienced interference using 3500 MHz in the existing Tier 4 service areas. Rogers stated that attempting to use this band in a Tier 5 service area would "overwhelm any coordination efforts using tools that exist today or significantly impair and limit normal operation of existing networks."²⁵

22. The Joint Submission expressed an opposing viewpoint when it argued that with the "technological and network design changes noted by ISED," smaller service areas would also be appropriate for mid-band spectrum.²⁶ However, as demonstrated above and in our initial Comments, the cited technologies are not a cure-all and will not become such a solution in the

²¹ CCI Comments, page 2.

²² Rogers Comments, paragraph 2; Shaw Comments, paragraph 7; and CCI Comments, pages 1 to 2.

²³ Bell Comments, paragraph 19.

²⁴ The problem is only exacerbated with low-band spectrum.

²⁵ Rogers Comments, paragraph 44.

²⁶ Joint Submission, paragraph 33.

near future. We agree with Shaw that it would be "premature and unwise"²⁷ to make policy decisions based on this optimistic vision.

23. Using technologies available today, the Department would need to establish spectrum segregation rules or adjust the technical specifications to enable the use of Tier 5 service areas for mid-band spectrum. These measures would prevent licensees from using their spectrum to its fullest extent, and therefore, as CCI observed, compromise the objectives of this initiative:

In paragraph 32 of the Consultation, ISED clarifies that maintaining neutrality in the Tier 5 service areas is intended to keep these areas as versatile as possible; however, leaving the Tier 5 service areas unrestricted will hinder the effective rollout of technology in these areas. CCI believes that ISED should support the utility of the spectrum resource within the new tier by limiting the range of spectrum that may [be] deployed to millimeter wave. Because of the specific propagation effects of low/mid-level bands, ISED should prevent the specific propagation effects of conflicting technologies, choosing to be technology agnostic with the stipulation that Tier 5 service areas are restricted to millimeter wave deployments.²⁸

3.3 Geographic and demographic factors

24. Another area around which there was broad consensus from commenters was the need to adjust the boundaries of the proposed service areas to account for a host of geographic and demographic factors not captured in either of the proposed methodologies.

25. The first of these considerations is terrain features and/or the presence of bodies of water. Many commenters observed that basing service area boundaries on Statistics Canada administrative areas may not best reflect the needs of a spectrum service operator. For instance, TekSavvy noted:

[B]oundaries developed by Statistics Canada for its own purposes are not always suitable for the purpose of defining spectrum licence service areas. For example, a number of Census Sub-Divisions (CSD) boundaries run down the bottom of valleys or along major highways through populated areas.²⁹

²⁷ Shaw Comments, paragraph 5.

²⁸ CCI Comments, pages 1 to 2.

²⁹ TekSavvy Comments, paragraph 22.

26. Rogers, Shaw, RABC and the Joint Submission made similar observations, and recommended that the service areas be adapted to the needs of service operators. Rogers and RABC specifically raised concerns about population centres with high or mountainous terrain where radio signals can propagate farther,³⁰ while Shaw and the Joint Submission observed that elevated areas used as transmission sites should not be separated from adjacent population areas.³¹ The RABC, Rogers, and the Joint Submission also suggested that areas which are bordered by a body of water should be adjusted because of the magnifying effect water has on radio wave propagation.³²

27. Commenters also recommended that service areas be designed with population growth trends in mind: Rogers, Telus, Shaw, TekSavvy, RABC and the Joint Submission all recommended the establishment of buffer areas around population centres to accommodate anticipated population expansion.³³ Both Rogers and the Joint Submission cited the example of the community of Milton, near Toronto, as one whose rapid expansion should be taken into account.³⁴

28. The community of Milton was also raised by Shaw as an example of why "areas of interest" such as "traffic corridors, major industrial areas, such as factories and power generation plants, airport complexes, large commercial centres, and shopping and outlet malls" should be grouped with the communities they serve despite being potentially low population density areas.³⁵ Highway 401 between Toronto and Milton is one of the busiest commuting routes in the world, and therefore, an area of high mobile traffic. Tier 5 boundaries should not run along or bisect such high traffic routes, or significant service degradation may result. Telus similarly argued that service areas should capture areas of economic value outside of population bases such as "mines, highway and rail corridors, ports, festivals and special events."³⁶ The Joint Submission acknowledged the particular importance of ensuring seamless mobile service along highways:

Residents in those remote and rural areas that are served by highways have emphasized to the Canadian Radio-television and Telecommunications Commission and other bodies the importance they attach to mobile service along

³⁰ Rogers Comments, paragraph 53 and RABC Comments, paragraph 20.

³¹ Shaw Comments, paragraph 26 and Joint Submission, paragraphs 44 to 45.

³² RABC Comments, paragraph 20; Rogers Comments, paragraph 50; and Joint Submission, paragraph 28.

³³ Rogers Comments, paragraph 47; Telus Comments, paragraph 38; Shaw Comments, paragraph 24; Joint Submission, paragraph 30; TekSavvy Comments, paragraph 36; and RABC Comments, paragraph 21.

³⁴ Rogers Comments, paragraph 48 and Joint Submission, paragraph 30.

³⁵ Shaw Comments, paragraphs 20 to 21.

³⁶ Telus Comments, paragraph 36.

highways for safety, security and commercial purposes. Establishing boundaries on highways could, paradoxically, delay the deployment of services that meet this need[...].³⁷

29. Given these concerns, we recommend that the Department establish a methodology to ensure that service area boundaries are placed in logical areas to facilitate the operation of wireless networks. This includes ensuring that Tier 5 areas around large urban centres are sufficiently large to capture population expansion, major commuting corridors, and other high traffic areas of interest.

3.4 Responses to Option 1

30. Commenters generally agreed on the primary strengths and weaknesses of each proposed option, with most recommending modifications to address the specific flaws of each proposal as well as the above general areas of concern. In the case of Option 1, commenters generally agreed that the increased granularity in rural areas aligned with the Department's objectives, but expressed concern that the proposed 5,162 service areas were far too numerous and that many were unmanageably small.

31. Telus, Quebecor, and Rogers, for instance, opposed Option 1 because the number of service areas it would create would be unfeasible.³⁸ Even commenters who favoured Option 1 over Option 2 expressed similar concerns – for example ourselves and the Joint Submission, who observed that the sizes of CSDs "range from the impractically small to the unacceptably large."³⁹ Their alternate proposal, like ours, attempted to reduce the amount of service areas to a "manageable number."⁴⁰ Others did not comment directly on the number of service areas but advocated for the amalgamation of CSDs up to a minimum size.⁴¹

32. Rogers observed, similar to our own Comments, that jumping from 172 Tier 4 areas to 5,162 Tier 5 areas is an increase of 2901%, which is not at all in keeping with the 192% increase from Tier 3 to Tier 4. They also noted that if the Department were to auction the proposed 3500 MHz band via Tier 5 licence areas it would result in 103,240 licences for this

³⁷ Joint Submission, paragraph 43.

³⁸ Telus Comments, paragraph 22; Quebecor Comments, paragraphs 18 to 19; and Rogers Comments, paragraphs 57 to 58.

³⁹ Joint Submission, paragraph 61.

⁴⁰ Joint Submission, paragraph 35.

⁴¹ Shaw Comments, paragraph 32; SaskTel Comments, paragraph 29; and TekSavvy Comments, paragraph 29.

band alone.⁴² The increased administrative burden and auction complexity of such a methodology would be enormous, with little, if any offsetting benefit. In fact, as discussed above, the smallest areas would likely be unusable due to interference issues.

33. Proposals for a more appropriate number of service areas were varied. Telus' alternate proposal to use Census Consolidated Subdivisions would result in well over 1,500 service areas,⁴³ while the Joint Submission proposed 1,298 areas.⁴⁴ On the lower end, Rogers' suggested that 360 was appropriate,⁴⁵ while our proposal to use Census Divisions would result in around 290 licence areas. Shaw argued that in the interest of simplicity and reduced administrative burden, the Department should simply create Tier 4 subdivisions where needed on a case-by-case basis.⁴⁶ Shaw's proposed system, however, would be overly complex and create regulatory uncertainty. We believe that if Tier 5 areas are to be created, they should be nation-wide and based on a consistent methodology. However, given the need to reduce complexity and ensure each area is a functional size, we continue to recommend that a maximum of 300 to 500 Tier 5 service areas would be a more reasonable objective.

34. Both Quebecor and the Joint Submission also noted the problem we highlighted of CSDs being nested within other CSDs, and recommended that any nested service areas be amalgamated into a larger area.⁴⁷ As we stated in our initial Comments, having Tier 5 service areas nested within one another would result in an unnecessarily complicated set of service areas with serious interference management challenges. We therefore reiterate our recommendation that the Department add a design principle specifying that no Tier 5 service area should nest within other Tier 5 service areas.

35. An area of significant disagreement related to Option 1 centred around the treatment of large population centres. Xplornet and the Joint Submission were not supportive of using CSDs or other Statistic Canada administrative boundaries to define service areas around large population centres, arguing that such boundaries do not follow the contours of a population centre tightly enough and therefore fail to adequately separate urban areas from rural.⁴⁸ We

⁴² Rogers Comments, paragraphs 57 to 58.

⁴³ There are 1,768 Census Consolidated Subdivisions, although Telus' proposal to amalgamate any that overlap with large or medium population centre boundaries would reduce the total number somewhat. See : https://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t1_1-eng.cfm

⁴⁴ Joint Submission, paragraph 120.

⁴⁵ Rogers Comments, paragraph 69.

⁴⁶ Shaw Comments, paragraph 40.

⁴⁷ Quebecor Comments, paragraph 21 and Joint Submissions, paragraph 53.

⁴⁸ Xplornet Comments, paragraph 34 and Joint Submission, paragraph 51.

note that Xplornet and the majority of the participants in the Joint Submission are providers of fixed wireless service, and may not be adequately considering the realities of mobile use in an urban setting, including future needs of mobile services in the millimeter wave bands. As highlighted in the above sections, tightly tailoring the boundaries of a service area to a population centre creates a host of issues, including increased interference, uneven boundary edges, lack of room for population growth, and the exclusion of high traffic commuting corridors and other areas of interest. These issues are the reason that, when contemplating service areas based on population centre boundaries, the vast majority of commenters (including the Joint Submission) recommended the institution of large buffer areas. We note also that the Joint Submission's model recommends amalgamating population centres with the surrounding CSD if it is sufficiently close in size.⁴⁹ We submit that this proposal should be rejected as it is overly complex and would ultimately result in an outcome similar to using existing census subdivisions. Therefore, we continue to support service area definitions based on census divisions or amalgamated CSDs.

36. Several smaller operators argued that the CSDs covering large population centres should not be amalgamated into larger service areas under Option 1.⁵⁰ However, this would introduce significant operational complexity and run counter to the Department's design principle to avoid placing boundaries in populated areas. As Xplornet argued, licensing urban areas on a separate basis "would not provide additional benefits to Canadians" and would hinder "the effective and efficient contiguous deployment of spectrum" and introduce "unnecessary administrative burden."⁵¹ In addition, interference coordination along a border that runs through a very highly populated area – for instance between Toronto and Mississauga – would be extremely difficult, if not impossible to accomplish. Practically, this would create an area where a sizable population would receive a lesser level of service, or no service at all. To avoid this outcome, an operator would need to acquire all of the areas that cover the population centre to ensure an acceptable quality of service, which essentially renders their separation redundant and comes at the expense of licensing complication and uncertainty.

3.5 Responses to Option 2

37. There were several broad areas of concern expressed by Commenters with respect to Option 2. Most importantly, many commenters stated that the proposal to create "other" areas

⁴⁹ Joint Submission, paragraph 107.

⁵⁰ Joint Submission, paragraph 108; CCI Comments, page 2; and TekSavvy Comments, paragraph 31.

⁵¹ Xplornet Comments, paragraph 36.

was unfeasible in its current form. The Joint Submission, for example, stated that these areas would be "large and unwieldy" and would not "improve the availability of spectrum to smaller regional or rural operators."⁵² This view was supported by the Municipality of Témiscouata, as well as the Eastern Ontario Wardens Caucus and Eastern Ontario Regional Network (EOWC/EORN), who noted that the "other" areas are nearly as large as Tier 4 areas but lack the economic centres that would make such an area profitable to serve.⁵³ As SaskTel observed, this would result in the residents of "other" areas being left out of any deployments to small population centres rather than benefitting from the nearby network investment.⁵⁴

38. Not only would "other" areas be of minimal use to operators who wish to deploy in a contained rural area, they would also present significant operational challenges. As we noted in our Comments, this methodology would result in instances where Tier 5 service areas are nested within other Tier 5 service areas. This could result in a licensee having a non-contiguous network within a single licence area, potentially resulting in service gaps along major transportation corridors. Xplornet raised this issue, explaining that licensing small population centres separately from the rest of their region would "reduce the efficient use of spectrum by preventing service providers from deploying networks in a contiguous manner," among other issues.⁵⁵

39. As Rogers, Quebecor, and TekSavvy observed, interference coordination between "other" areas and small population centres would be extremely challenging and in some cases insurmountable.⁵⁶ In light of these concerns, SaskTel, Rogers, and Telus proposed alternate methods of dividing the remaining areas should the Department choose Option 2.⁵⁷

4.0 BELL'S ALTERNATE PROPOSAL IS A SUITABLE SOLUTION

40. The consensus from interveners was that the Department should not move forward with either of its proposed options as currently defined. The modified version of Option 1 proposed in our Comments is a suitable solution to many of the issues raised and we continue to recommend its adoption. Namely, we recommend that the Department modify Option 1 to base the service area boundaries on census divisions instead of CSDs. Census divisions are

⁵² Joint Submission, paragraph 72.

⁵³ MRC de Témiscouata Comments, paragraph 26 and EOWC/EORN Comments, paragraph 32.

⁵⁴ SaskTel Comments, paragraph 34.

⁵⁵ Xplornet Comments, paragraph 46.

⁵⁶ Quebecor Comments, paragraph 31; TekSavvy Comments, paragraph 38; and Rogers Comments, paragraph 68.

⁵⁷ SaskTel Comments, paragraph 38; Telus Comments, paragraph 34; and Rogers Comments, paragraph 74.

"intermediate geographic areas between the province/territory level and the municipality (census subdivision)."⁵⁸ Similar to CSDs, census divisions are well defined areas that are used for statistical purposes by Statistics Canada.

41. This proposal would address most of the major areas of concern raised by commenters. First, relying on census divisions would result in a maximum of 293 service areas, which would achieve the Department's objective of significantly increasing the number of licence areas over Tier 4, while limiting the operational burden on carriers and the administrative burden on the Department. Census divisions also are generally large enough to ensure that interference issues would be manageable as long as low-to-mid band spectrum is not assigned and urban areas are amalgamated. The areas are also generally large enough to provide a buffer area to capture population expansion, major commuting corridors, and other high traffic areas of interest.

42. Second, census division boundaries are not characterized by the same operational challenges as population centre boundaries. Their edges are not jagged or unusually shaped. They naturally nest well into Tier 4 areas, since their boundaries are also based on CSDs, and they satisfy our additional proposed design principle that Tier 5 service areas do not nest within other Tier 5 service areas.

43. Third, census divisions offer a much more desirable outcome for rural areas outside of population centres. Unlike the proposed "other areas" of option 2, service areas will be smaller than Tier 4 but not so small that they are plagued with interference coordination issues. In addition, they will not be divorced from small population centres that will be the draw of most deployment investments.

44. If the Department does not adopt census divisions, then we recommend reducing the number of Tier 5 service areas by amalgamating CSDs into larger groupings. Reducing the number of Tier 5 service areas, e.g., to a level closer to 500, can be facilitated by using an amalgamation process similar to the following:

- Step 1: Amalgamate CSDs that are contained within another CSD such that there will be no Tier 5 service area contained within another Tier 5 service area;
- Step 2: Amalgamate CSDs until they approximately replicate the area of a large

⁵⁸ Statistics Canada, see <https://www150.statcan.gc.ca/n1/pub/92-195-x/2011001/geo/cd-dr/def-eng.htm>.

population centre;

Step 3: Amalgamate contiguous CSDs with a population of less than 30,000 until the combined population is approximately 30,000, or to a maximum of the population of the corresponding Tier 4 service area. CSDs with a population over 30,000 do not need to be amalgamated; and

Step 4: Ensure that Tier 5 service areas are contained within a Tier 4 service area such that a Tier 5 service area is not included in more than one Tier 4 service area.

45. While we believe our proposal is the most suitable of the options presented by the Department and commenters, we acknowledge that it may not sufficiently address issues related to topographical characteristics. In these cases, ISED may need to make further adjustments to account for terrain characteristics and borders drawn along bodies of water. In the interest of ensuring that service area boundaries take into account local factors, it may be necessary for the Department to further consult with stakeholders. We therefore support the Joint Submission's call for the Department provide stakeholders with the opportunity to comment on ISED's proposed Tier 5 licence areas once it has refined its approach to accommodate the comments received in this consultation.⁵⁹

5.0 OUT OF SCOPE ISSUES

46. We note that many commenters raised additional issues in their interventions that are beyond the scope of the current proceeding, including on such topics as auction formats, set-asides, deployment conditions, and mandatory subordination requirements. We disagree with many of the expressed views but since the issues raised are out of scope we have not provided any comment.

6.0 CONCLUSION

47. If ISED intends to create Tier 5 service areas, they should take note of the significant concerns raised by commenters about the proposed options. In particular, the Department should take steps to mitigate interference issues and account for the topographic and demographic conditions of each area. Additionally, Tier 5 service areas should not be used for any spectrum band below 24 GHz. To accommodate these concerns and others raised by

⁵⁹ Joint Submissions, paragraph 48.

interveners, we recommend that the Department adopt a modified version of Option 1 that bases the service area boundaries on census divisions instead of CSDs. Once the Department has established their chosen methodology they should undertake a follow-up consultation to provide stakeholders with the opportunity to comment on a more specific proposal.

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