



**WE'RE DIFFERENT.  
IN A GOOD WAY.**

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February 19<sup>th</sup>, 2019

**RE: Consultation on a New Set of Service Areas for Spectrum Licensing  
(DGSO-002-18)**

Dear Mr. Parson:

It is with pleasure that we are submitting these comments in response to ISED's Consultation on a New Set of Service Areas for Spectrum Licensing on behalf of TekSavvy Solutions Inc (TSI).

We are hoping that TSI's input will contribute to ISED ongoing efforts to ensure adequate and affordable spectrum is made available to the full range of service providers in rural and remote areas so that all Canadians have access to innovative, affordable broadband services from a diversity of service providers.

Yours truly,

*[transmitted electronically]*

Andy Kaplan-Myrth  
VP, Regulatory and Carrier Affairs

cc: Marc Gaudrault, CEO  
Charlie Burns, VP Technology



***TekSavvy Solutions Inc.***

**Comments for**

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

DGSO-002-18  
November 2018  
Spectrum Management and Telecommunications

**February 19<sup>th</sup>, 2019**

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## Introduction

1. TekSavvy Solutions Inc. (TSI) was incorporated in Chatham Ontario in 1998 and has offices in Chatham, Gatineau, Ottawa, and Toronto. With over 300,000 business and residential subscribers nationwide, TSI is the largest independent ISP in Canada.
2. Since 2013, TSI has consistently invested to increase the size of wireless and wireline facility-based network infrastructure to better service its clientele. Wireless technologies are increasingly a key component of its network deployment strategy. In Southwestern Ontario, TSI initiated its fixed wireless access strategy by rolling out broadband access to more than 2,000 rural households.
3. In 2018, TSI celebrated its twentieth year in business and continues its commitment to building on a national reputation for fair play, excellent customer service and strong measures to protect consumer privacy. Values such as open access and net neutrality are at the heart of the TSI model. TSI's approach is heavily consumer-focused, which led to nominations as Toronto's and Chatham's best ISP for years running.
4. Access to sufficient, affordable spectrum is a prerequisite for TSI to be able to provide a full range of affordable broadband services to its rural business and residential customers. The complexities of ISED's spectrum licensing process that translates into difficulties in accessing clean spectrum resources for small ISPs have always been obvious to TSI. Thus, TSI welcomes this initiative by ISED to consult on the establishment of a new set of smaller service areas for competitive licensing.
5. If properly designed, the new "Tier 5" service areas will help improve access by smaller, rural operators to critical spectrum resources in the areas they serve. This in turn should allow operators to deploy high quality wireless networks and innovative broadband services to the benefit of Canadians living in rural areas.
6. TSI notes however that the definition of smaller service areas in itself will not be sufficient to enable small operators' access to spectrum and allow ISED to meet its rural policy objectives.
7. TSI submits that ISED will need to simplify and adapt its spectrum licensing process in order to enable smaller entities to access the resource:
  - by selecting a type of auction that is simple and straightforward enough to allow smaller entities to participate which in effect, means that SMRA auction format is far better suited to attracting participation by smaller players than is CCA format;
  - by ensuring auction features such as package bidding are limited or eliminated to avoid situations in which larger well-funded bidders are permitted to include rural smaller population licences into larger packages, which results in making rural

licences inaccessible to small entities, even though the individual licence could be valued more by the small entity; and

- by ensuring pro-competitive measures such as set-aside, spectrum aggregation limits or service availability requirements are put in place to limit the ability of large players to acquire and hoard all available spectrum.
8. TSI will comment on ISED' questions and develop the above concepts further in subsequent sections of this submission.

## Design Principles

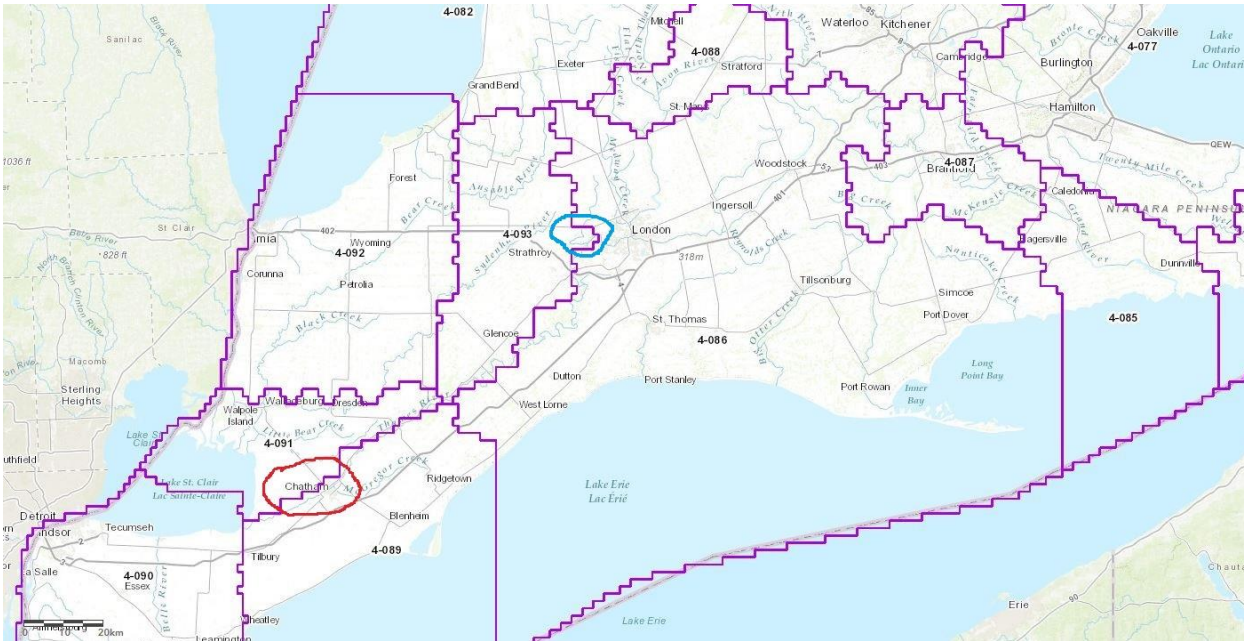
### **Question 1: Design principles**

**Q1A—ISED is seeking comments on the proposed design principles when providing responses, include supporting arguments for or against the proposed principles.**

**Q1B—ISED is seeking any suggestions on additional design principles that should be considered.**

9. In paragraph 36 of the Consultation Document, ISED lists the following design principles to be applied to the creation of Tier 5 service areas:
- Recognize geographic differences: consider the unique characteristics of urban and rural areas in Canada
  - Foster demand: areas should have either a population base or some economic value to support commercial viability
  - Maintain technological and competitive neutrality: not favoring or discriminating against one technology or group of stakeholders over another
  - Ensure boundaries are in low population areas to minimize potential interference issues.
  - Ensure areas nest within the existing Tier 4 service areas to maintain continuity with ISED's existing licensing structure.
  - Use the ISED's existing grid cells as constituent building blocks.
10. TSI generally agrees with all design principles listed by ISED in the Consultation Document but submits that existing ISED tiers of service areas do not necessarily abide to the principles listed.

11. For example, the map representing existing Tier 4 areas of South Western Ontario (see map below) where TSI's headquarters are located, the Tier 4 area border between licence areas 4-091 (Wallaceburg) and 4-089 (Chatham) passes directly through the town of Chatham (red circle) splitting in two the largest population center in the area.



**Existing Tier 4 boundaries in South Western Ontario**

12. Similarly, the city of London is almost entirely part of the 4-086 (London / Woodstock / St. Thomas) Tier 4 area except a neighborhood in the western part of the city located around Riverbend Park (blue circle), which is part of the 4-093 (Strathroy) Tier 4 area.

13. TSI argues that before it can fully support the nesting principle advocated by ISED for the creation of a Tier 5 layer, such inconsistencies need to be corrected for existing tiers. Alternatively, should ISED wish to maintain the 4 existing tiers as is, exceptions to the nesting principle should be allowed, as applicable, to correct similar inconsistencies at the Tier 5 level.

14. TSI further notes that the inconsistency highlighted above for the London area also appears at the Tier 3 level between 3-033 (Strathroy) and 3-030 (London / Woodstock / St. Thomas), as Tier 4 areas nest into Tier 3 and share a common boundary around the city of London.

15. It is TSI's view that the creation of a tier 5 service area should also aim at solving inconsistencies such as those listed above and facilitate ISED's job at ensuring that technical, policy and licensing frameworks are not creating unnecessary burden to wireless ISPs.
16. In particular, the creation of Tier 5 service areas provides an opportunity for ISED to eliminate inconsistencies in relation to the technical and licensing frameworks of the 3.65 GHz band.
17. As noted by TSI in SRSP 303-65 and CPC-2-1-26, the 3.65 GHz (WBS) licenses, currently assigned at the Tier 4 level in a non-exclusive manner, include power restrictions for Tier 4 areas featuring small cities or in ISED language congested areas (eirp of 1W per MHz permitted) while other Tier 4 areas deemed more rural do not feature such restrictions (eirp of 60W per MHz permitted).
18. The inconsistency noted above derives from the fact that the power restriction will apply to sites further away from the congested or urban area it is attempting to protect because part of the same Tier 4, while other sites, closer to the population center in question, will be exempted from the restriction since they are part of a different Tier 4 that does not include a small city.
19. This is a clear example of a situation that could have been easily solved by ISED if smaller service areas surrounding small cities or congested areas existed today, by ensuring Tier 5 areas around population centers of a certain size are protected by the application of the power restriction while more rural Tier 5 areas would allow for higher power to be used.
20. TSI understands that the relevance of the example discussed here might be lessened once ISED establishes a new Technical, Policy and Licensing Framework for the 3500 MHz and 3800 MHz bands, but in the meantime, the inconsistency exists and creates unnecessary burden to ISPs, increasing their capital costs to serve areas where the power restriction should not apply.
21. TSI therefore respectfully submits that providing ISED with increased flexibility in addressing weaknesses in the existing Technical, Policy and Licensing frameworks and mitigating their impacts on service providers should also be part of the design principles for the creation of smaller service areas.

## [Review of Option 1](#)

<b>Question 2: Option 1 - Boundaries based on Statistics Canada 2016 census subdivisions</b>
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**Q2A—ISED is seeking comments on the suitability of Option 1 in addressing the proposed design principles.**

**Q2B—ISED is seeking comments on whether adjacent urban CSDs should be combined into a single service area.**

**Q2C—ISED is seeking comments on whether there should be a minimum or maximum size for the service areas and if very small CSDs should be amalgamated into the larger surrounding or adjacent CSD.**

**Q2D—ISED is seeking comments to gauge if this option is suitable for northern and rural areas.**

22. TSI notes that boundaries 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. The bottom of valleys and major highways might be useful boundaries for census purposes, but they are unsuitable as boundaries for spectrum serving areas if they result in the division of a populated area or the division of a geographically confined area where topography and natural obstacles would naturally limit the propagation of radio waves.
23. In such circumstances, TSI deems it appropriate to shift the boundary of the Tier 5 service area away from the boundary generated by Statistics Canada to maintain consistency with the first, second and fourth principles listed by ISED in paragraph 36 of this Consultation Document, repeated here for convenience:
- Recognize geographic differences: consider the unique characteristics of urban and rural areas in Canada
  - Foster demand: areas should have either a population base or some economic value to support commercial viability
  - Ensure boundaries are in low population areas to minimize potential interference issues.
24. In fact, TSI argues that these principles were not even remotely considered by Statistics Canada when CSD were created and that the government agency certainly did not anticipate the type of use of CSD ISED is proposing in the Consultation Document.
25. TSI further submits that Statistics Canada Census Sub Divisions do not follow the same characteristics in terms of size or population across Canada (the size of CSD varies widely between province, with smaller CSD found in Quebec and PEI, and larger ones in Alberta and BC) and are unsuitable to serve as service area



boundaries in a “one type of administrative subdivision fits all” approach. The creation of a coherent and consistent set of Tier 5 service areas across the country is unlikely if ISED only applies a simple methodology involving one type of administrative subdivision.

26. Inconsistencies of CSD-based service areas would abound in all regions of Canada. For example, the CMA of Oshawa would be divided in 3 different Tier 5 areas, each including a significant portion of rural territory, while the city of Halifax, which represent a similar population, would be merged with its rural surroundings into a single Tier 5 area.
27. Having demonstrated that CSD were not designed to serve as spectrum licence service area boundaries, TSI argues that their utilization for that purpose would require either encroachment to design principles proposed by ISED or an excessive number of exceptions to comply with those principles.
28. TSI submits that if ISED wanted to maintain the use of Statistic Canada administrative subdivisions to serve as basis for the design of new service areas for spectrum licencing, be it Census Divisions (CD), Census Consolidated Subdivisions (CCS), Census Sub Divisions (CSD) or Census Aggregated Dissemination Areas (ADA), ISED could carefully review their variations in size and population across the country, establish desirable thresholds and select the proper administrative subdivision for each specific area. For example, the use of CSD might be appropriate in Alberta while ADA could be the most appropriate administrative subdivision for PEI.
29. Alternatively, ISED could maintain the use of CSD as a basis for the design of new service areas and implement it along with the idea discussed in paragraph 45 of the Consultation Document, but implement markers for both minimum population and minimum size (as opposed to only size) and ensure that service areas falling below these markers would be amalgamated into or combined with adjacent service areas until the population and size thresholds are met.
30. TSI therefore urges ISED, should it decide to adopt its proposed Option 1, to define appropriate minimum population and size thresholds and amalgamate adjacent CSD until these thresholds are met for both minimum population and minimum size to maintain consistency across the various regions of the country and adhere to the design principles listed at paragraph 36 and discussed further in paragraphs 5.1, 5.2 and 5.4 of the Consultation Document.
31. TSI opposes the possible variation of Option 1 where adjacent urban CSD would be combined into a single service area, discussed at paragraph 44 of the Consultation Document, because it would result in the creation of an urban service area unaffordable to smaller entities. A larger operator interested in acquiring spectrum in Toronto for example, could always acquire spectrum in the 10 or 12 CSD constituting the urban center.

## Review of Option 2

### **Question 3: Option 2- Boundaries based on population centres**

**Q3A—ISED is seeking comments on the suitability of Option 2 in addressing the proposed design principles.**

**Q3B—ISED is seeking comments on the proposed minimum population for small population centre service areas. A rationale should be provided if a different population is proposed.**

**Q3C—ISED is seeking comments on whether the “other” service areas (remainder areas in each Tier 4) should be licensed differently (e.g. on a shared or first-come, first-served basis).**

**Q3D—ISED is seeking comments on whether this option is suitable for northern or rural areas.**

**Q3E—ISED is seeking comments on whether population centres, which have adjacent boundaries, should be amalgamated to form a single service area.**

32. TSI, submits that ISED’s Proposed Option 2 would present significant network operation and business obstacles to service providers.
33. In general, population center boundaries from large, medium or small population centers proposed in ISED’s Option 2 do not reflect the reality of radio propagation. These population center boundaries often produce elongated arms that would result in coordination issues with neighbors due to interference and wasted capital from the part of ISPs as the wireless infrastructure deployed to cover these elongated areas would be used in a linear fashion rather than 360 degrees around radio sites.
34. Examples of these elongated areas can easily be seen on the maps proposed by ISED under section 6.2 of the Consultation Document: the key-shaped area north of Toronto, the T-shaped area north of Oshawa, the elongated arm east of Hamilton towards Niagara, the various arms around the Hamilton area, the odd shape of the Halifax metropolitan area, etc.
35. Additionally, TSI notes that such boundaries are in contradiction with ISED’s design principle discussed in section 5.4 of the Consultation Document stipulating that boundaries should be in low population areas whenever possible to minimize potential interference issues.

36. TSI submits that there is a need to smooth the boundaries of service areas to minimize inefficiency caused by odd contours. The requirement for smooth contours also presents an opportunity for ISED to consider the growth around population centers to determine how far beyond their boundaries the service area should be extended when population centers are surrounded by rural land. Perhaps smoothing contours using 1 to 3 grid cells beyond the population center boundary is sufficient in slow growth areas. In areas where population growth exceeds 5 % per year, ISED could choose to increase the number of grid cells used for the smoothing exercise to help ensure boundaries remain practical in years to come.
37. Additionally, TSI submits that the 2000-inhabitant population-based threshold for small population centers, proposed by ISED at paragraph 49 of the Consultation Document, would result in too many unreasonably small Tier 5 areas, increasing the administrative burden to ISED.
38. These smaller Tier 5 areas would also be at risk of violating the second design principle discussed by ISED at paragraph 5.2 of the Consultation Document where licence areas should have either a population base or some economic value to support commercial viability. Apart from size itself, unreasonably small services areas would require excessive coordination between stakeholders which also impedes on their commercial viability.
39. Similarly, large population centers such as Toronto or Montreal would result in areas that are unaffordable to smaller operators, circumventing the benefits of the creation of a Tier 5 layer in urban areas. A threshold varying between 200,000 and 300,000 inhabitants appears to achieve balance between affordability and size of urban service areas.
40. Therefore, should ISED adopt its proposed Option 2 for the creation of tier 5 service areas, TSI respectfully requests that ISED increases the population threshold to 10,000 inhabitants for population-based Tier 5 service areas around small population centers, implement an upper limit to the population of large population centers allowing them to be divided into smaller service areas, consider the growth rate of population centers in service areas design and establish rules to smooth the boundaries of service areas so they reflect the reality of radio propagation, thus enabling operators to maximize the benefits of their capital investments.

## Alternative Proposal

### **Question 4: Alternative proposals**

**ISED invites interested parties to submit alternative proposals for smaller service areas. All alternative service area proposals must be applicable to all of Canada and promote the federal government's policy objectives.**

**Submissions should include a rationale for the proposal, an explanation of how it satisfies ISED's policy objectives and how it meets each of the proposed design principles, and any other relevant information. One or more maps should also be included, preferably including one which covers all of Canada. Maps should be in a format that is readily accessible by ISED (e.g. in ArcGIS or MapInfo format, or publicly available on the Internet with a link provided). Submissions should adhere to the requirements listed above in order to allow other stakeholders sufficient information to provide informed comments.**

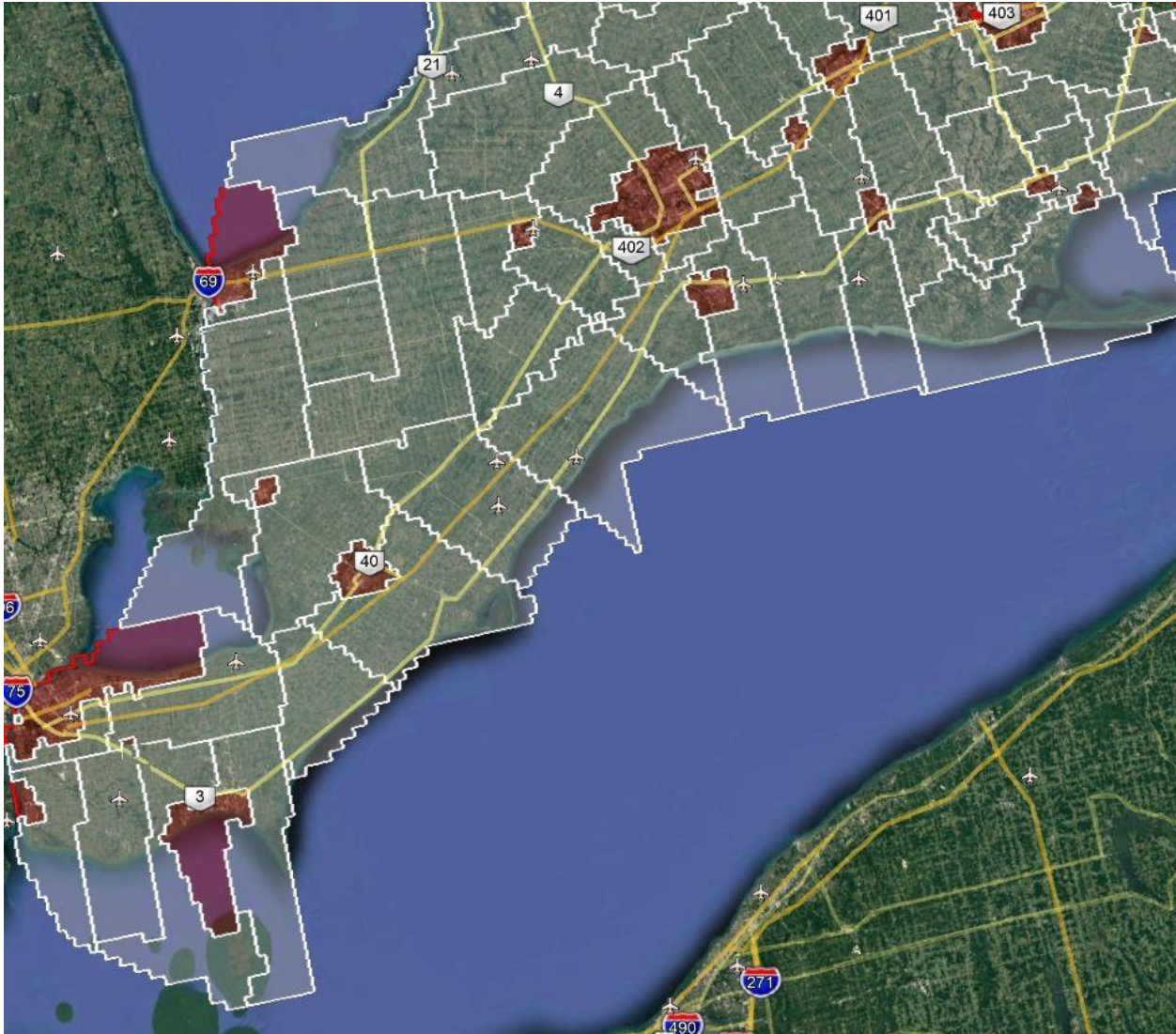
41. As demonstrated in previous sections of this submission, the review of ISED's proposed Options 1 and 2 highlighted obstacles that would prevent operators from benefitting fully from the creation of a new set of service areas for spectrum licensing. If ISED's proposed options were to be adopted without the required modifications, TSI also demonstrated that the proposed options would not be in line with several of the principles proposed by ISED in the Consultation Document.

42. However, TSI notes that several of the characteristics of Option 1 and Option 2 are viable, and if carefully combined into a third option (Option 3), would meet ISED's policy objectives, be in alignment with the proposed design principles, make sense for the various communities within the service areas and meet the needs of smaller operators across the country. Below is a summary of those desirable characteristics found in ISED's proposed Option 1 or 2:

- Ability to divide large urban centers into multiple service areas, ensuring affordability of Tier 5 service areas to smaller entities: Option 1
- Ability to separate population centers and their rural surroundings into different service areas, enabling rural entities operating around population centers to acquire spectrum without having to incur the cost of urban licences: Option 2
- Recognition of the difference between rural and remote areas in alignment with ISED's first proposed design principle. 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: Option 1
- Definition of tier 5 service areas where the practicality in terms of size and population would be optimized: Option 1 - conditional on the implementation of aggregation rules i.e. in the case where Statistics Canada administrative subdivisions are not sufficiently large or populated, these are merged until they meet the appropriate criteria.

43. TSI therefore submits that ISED should apply the following methodology, in line with its proposed design principles, to define a new set of service areas for spectrum licensing.

- Establish a distinction between rural and remote services areas based on population density, or size of CCS or CSDs. TSI argues that both approaches would generate similar results and notes that ISED would benefit from increased flexibility in the design of future licensing frameworks.
- Fix anomalies with existing Tiers of service areas or allow minor deviations to the nesting principle for the new set of service areas, in order to avoid the situation wherein population centers are divided by undesirable or unnecessary boundaries.
- Use population centers to distinguish rural from urban Tier 5. TSI submits that a minimum population threshold of 10,000 inhabitants should be used for non-remote areas. In remote areas, the minimum population threshold to carve out a population center should be set based on input from stakeholders operating in those areas.
- Ensure population center contours are smoothed out by adding grid cells at the periphery. The number of grid cell layers would depend on the growth rate at which the population center expands, ensuring that the new set of service areas will still be relevant in years to come.
- Ensure large population centers are divided into several service areas to increase affordability to smaller stakeholders. ISED should determine which Statistic Canada administrative boundaries are best suited to achieve the purpose. TSI submits that service areas based on populations in the range of 200,000 to 300,000 would provide an appropriate balance between size and affordability in large population centers.
- Finalize the division of the remaining rural and remote areas after the relevant population centers have been carved out into service areas that are sensible from a population and from a size perspective ensuring they nest into Tier 4 areas. TSI submits that those service areas should include at least 15,000 inhabitants whenever possible to abide by the commercial viability principle proposed. ISED could use the appropriate Statistics Canada administrative boundaries to determine the limits of the service areas.



**South Western Ontario Alternate proposal with 10K threshold for Population Centers**

[Other jurisdictions](#)

[CBRS licence areas to be used in the United States](#)

44. In the United States, the Federal Communications Commission (FCC) adopted the Spectrum Access System (SAS) enabling the CBRS Band (150 MHz between 3550 MHz and 3700 MHz) to be managed or assigned on a quasi-dynamic manner across three tiers of access:

- Tier 1 is comprised of incumbent users such as the federal government (Department of Defense, US Naval Radars) and fixed satellite users.

- Tier 2 is Priority Access License (PAL) users – licensed wireless users who acquire spectrum through an auction. PAL users must protect incumbent Tier 1 users from harmful interference. FCC is planning to allow up to 70 MHz of contiguous CBRS spectrum to be licensed at the PAL level, including a spectrum aggregation limit of 40 MHz per PAL licensee.
- Tier 3 is General Authorized Access (GAA) users who will deploy “lightly-licensed” devices. GAA users must protect both Tier 1 incumbents and Tier 2 PAL users from harmful interference. This would leave between 80 and 150 MHz of CBRS spectrum available at the GAA level.

45. In its *Report and Order* from October 23rd, 2018,<sup>1</sup> the FCC adopted “counties” as the geographic licence area for PAL licensing. This represented a compromise between the census tracts the FCC originally proposed in 2015<sup>2</sup> and the Partial Economic Areas (PEAs) requested by the CTIA and T-Mobile in 2017, as there are approximately 3,200 counties, 74,000 census tracts and 416 PEAs. The FCC noted in particular in the 2018 *Report and Order*:

*... increasing the PAL license area slightly from census tracts to counties strikes a more appropriate balance and will more effectively support next generation mobile network deployments, while still retaining the ability to support small, targeted uses, included fixed uses. (par. 20)*

*... we find that counties will service the needs of rural communities and will allow new and innovative services to reach underserved and unserved communities, consistent with the Act’s objectives. (par. 27)*

*Counties are sufficiently small to support the small cell deployments and localized types of service we anticipate will be an important part of this band. They are also small enough to allow licensees to target their deployments where they need capacity. At the same time, as the Commission and commenters have recognized, counties are the basic “building blocks” of many geographic areas, making them suitable for aggregation for licensees that wish to operate over larger areas. This flexibility makes counties an appropriate middle ground for this band, given that the characteristics of 3.5 GHz band spectrum are favorable to support both localized and wide-area deployments, and thus to entities wanting to provide a variety of innovative services—some more targeted than others—to the public. (par. 29)*

46. The FCC was therefore attempting to establish a spectrum licence service areas that would be flexible enough to both accommodate a wide variety of uses, users and technologies and promote the deployment of wireless services in rural areas. TSI

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<sup>1</sup> *In the Matter of Promoting Investment in the 3550-3700 MHz Band*, GN Docket No. 17-258, Report and Order, FCC 18-149, adopted 23 October 2018 – <https://docs.fcc.gov/public/attachments/FCC-18-149A1.pdf>

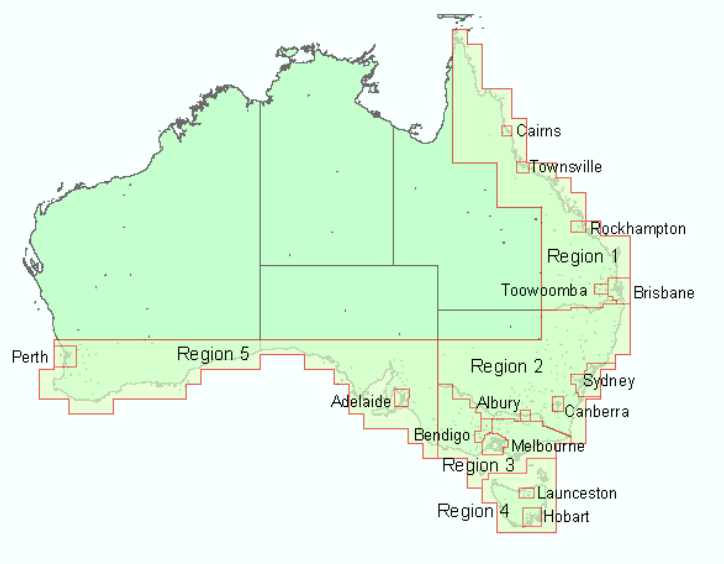
<sup>2</sup> *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 MHz Band*, GN Docket No. 12-354, Report and Order and Second Further Notice of Proposed Rulemaking, 30 FCC Rcd 3959 (2015) – <https://docs.fcc.gov/public/attachments/FCC-15-47A1.pdf>

submits that the creation of a fifth Tier of service areas for spectrum licencing contributes to addressing similar concerns in Canada.

## The Australian situation specific to C band spectrum

### The 3.4 GHz band

47. In 2000, following a consultation process, the then ACA (Australian Communications Authority - ACMA's predecessor), introduced spectrum licencing in the 3.4 GHz band<sup>3</sup>, making 35 MHz of spectrum available in 14 major cities and towns and 65 MHz of spectrum available in those same cities and towns as well as in regional (rural) areas.
48. The majority of the 3.4 GHz spectrum licences available were allocated during the October 2000 SMRA auction. However, a number of lots were unsold at auction and despite a re-offering of these lots in 2002, remained unsold. Licenced areas were located in the southern and eastern edges of the country where most of the population resides. A significant portion of the land mass of the country, corresponding to the less-densely populated north, centre and west, was excluded from the auction process (see map below).



Australian 3.4 GHz licence areas in 2000<sup>4</sup>

<sup>3</sup> [https://www.acma.gov.au/theACMA/spectrum-licensing-2ghz-and-3\\_4ghz](https://www.acma.gov.au/theACMA/spectrum-licensing-2ghz-and-3_4ghz)

<sup>4</sup> Map of 3.4 GHz licence areas from ACMA, *Draft spectrum reallocation recommendation for the 3.6 GHz band – Metropolitan and regional areas of Australia*, October 2017, page 32, available at – <https://www.acma.gov.au/theACMA/spectrum-reallocation-for-the-3-6-ghz-band>



49. The original spectrum licences were issued on a 15-year term.<sup>5</sup> The majority of spectrum licences were re-issued by ACMA (Australian Communications and Media authority) to the same licensees prior to expiry for another 15-year term, however a small amount of spectrum was not re-issued prior to expiry on December 13<sup>th</sup>, 2015.<sup>6</sup>
50. The Simple Clock Auction Format (SCA) was used to auction the resulting unallocated 3.4 GHz spectrum (unsold or not re-issued) in 2017 through a Multi-band residual lots auction. ACMA considered the SCA auction format as most effective when the lots are neither substitutes nor complements.<sup>7</sup> The term of the 3.4 GHz licences auctioned in 2017 was set to align with the spectrum licences re-issued to original licensees in 2015, i.e. December 13<sup>th</sup>, 2030. The same geographic division of the country was reprised for ACMA's auction of residual 3.4 GHz licences during the December 2017 multi-band residual lots auction.<sup>8</sup>

The 3.6 GHz band:

51. Prior to 2008, the 3.6 GHz band was mainly used by fixed point-to-point links and C-band fixed satellite services (FSS). In 2008, ACMA announced its intention to allow the use of the 3.6 GHz band to deploy site-based wireless broadband services authorized by apparatus licences in regional and remote areas of Australia as a short to medium term solution for the demand for Broadband Wireless Access (BWA) services in these areas. Capital cities (except Hobart) were not included in the BWA release to preserve future planning options within those areas.
52. Later on, ACMA noted that the band has been considered under WRC-15 agenda 1.1, resulting in the 3600–3700 MHz band being identified for international mobile telecommunications (IMT) in Canada, Colombia, Costa Rica, and the US. The 3.6 GHz band also forms a subset of the 3300–3800 MHz band, which since 2016 is being touted internationally as a pioneer band for 5G services.<sup>9</sup>

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<sup>5</sup> <https://www.acma.gov.au/Industry/Spectrum/Spectrum-planning/Current-APs-info-and-resources/3-4-ghz-auction-2000-applicant-information-package>

<sup>6</sup> Proposed designation of spectrum for spectrum licensing—2 GHz and 3.4 GHz bands - Consultation paper - DECEMBER 2016

<sup>7</sup> <https://www.acma.gov.au/Industry/Spectrum/Radiocomms-licensing/Spectrum-licences/the-acmas-auction-capability>

<sup>8</sup> This auction included a 3.4 GHz spectrum lots which had not been sold in 2000 as well as lots not renewed in 2015 when the original 3.4 GHz licences expired. The auction also included residual lots in the 1800 MHz, 2 GHz, and 2.3 GHz bands. See <https://www.acma.gov.au/Industry/Spectrum/Spectrum-projects/Multi-band-auction>

<sup>9</sup> Draft allocation instruments for 3.6 GHz band (3575–3700 MHz) metropolitan and regional lots auction - Consultation paper -

53. Following a public consultation from May 2018, ACMA combined the technical frameworks of the 3.4 GHz and the 3.6 GHz spectrum into one claiming that the bands are directly adjacent to each other and considered substitutable.<sup>10</sup>
54. ACMA had originally proposed in 2017 to use 6 extended metropolitan licence areas for the 3.6 GHz band (i.e. larger than those used for the 3.4 GHz band) and a single regional licence area covering the rest of the south and eastern portions of the country.<sup>11</sup> Industry submissions, however, opposed this proposal on the grounds that alignment with the boundaries used for the 3.4 GHz band would facilitate future spectrum trading and defragmentation of the entire 3.4 – 3.8 GHz band. Other stakeholders “recommended disaggregation of the single regional Australia lot, to enable smaller companies to purchase spectrum in targeted areas of interest.”<sup>12</sup>
55. In response to these submissions, ACMA subsequently adopted a configuration consisting of 6 metropolitan licence areas (aligned with the equivalent 3.4 GHz band metropolitan areas) and 8 regional areas (instead of one larger regional area) and auctioned in November and December 2018, 125 MHz of 3.6 GHz spectrum divided in 5 MHz unpaired blocks, using an ESMRA (Enhanced Simultaneous Multi-Round Ascending) auction format in those 14 geographic areas.<sup>13</sup>
56. It is worth noting that the 3.6 GHz licence geographic areas cover the same geography as the 3.4 GHz licences did in 2000. The vast majority of the Australian population is included in the licenced areas but a significant portion of the territory in the centre and northwest of the country was again excluded from the auction event (the grey area in the map below). ACMA continues to apply a site-based apparatus licensing regime in that remote area.
57. The term of the 3.6 GHz licences auctioned in 2018 was set to approximately 10 years and 8 months, so renewal would coincide with the 3.4 GHz licences originally awarded in 2000 and extended in 2015 as well as remaining unallocated 3.4 GHz licences auctioned in 2017. Therefore, the expiry of all 3.4 GHz and 3.6 GHz licences currently allocated in Australia is December 13<sup>th</sup>, 2030.<sup>14</sup>

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MAY 2018

<sup>10</sup> ACMA, *3.4 GHz and 3.6 GHz band spectrum licence technical framework – Consultation paper*, May 2018, page 9

<sup>11</sup> ACMA, *Draft spectrum reallocation recommendation for the 3.6 GHz band – Metropolitan and regional areas of Australia*, October 2017, page 35, available at –

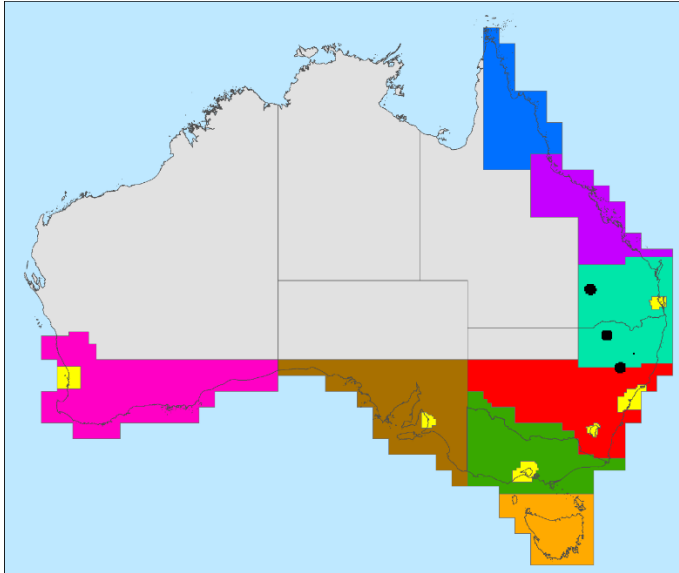
<https://www.acma.gov.au/theACMA/spectrum-reallocation-for-the-3-6-ghz-band>

<sup>12</sup> ACMA, *Draft allocation instruments for 3.6 GHz band (3575–3700 MHz) metropolitan and regional lots auction – Consultation paper*, May 2018, page 19, available at –

[https://www.acma.gov.au/theACMA/3\\_6-ghz-band-legislative-instruments-consultation](https://www.acma.gov.au/theACMA/3_6-ghz-band-legislative-instruments-consultation) .

<sup>13</sup> *Ibid*, page 23,

<sup>14</sup> 3.6 GHz band auction, November 2018 - Auction guide - AUGUST 2018



Australian 3.6 GHz licence areas in 2018<sup>15</sup>

<b>KEY:</b>			
Black	Excised areas	Moree, NSW	Quirindi, NSW
		Roma, QLD	Uralla, NSW
Yellow	Metro areas	Adelaide	Melbourne
		Brisbane	Sydney
		Canberra	Perth
Blue	Regional areas	North Queensland	
Purple		Central Queensland	
Turquoise		Regional Northern NSW/Southern Queensland	
Red		Regional Southern/Western NSW	
Green		Regional Victoria	
Orange		Tasmania	
Brown		Regional South Australia	
Pink		Regional Western Australia	

58. ACMA had also noted in 2017 that it favours an area-wide licensing approach over site-licensing arrangements where it expects demand to exceed supply and where there is interest in deploying dense wide-area networks. In other areas, site-based apparatus licences are considered suitable.

<sup>15</sup> Map and key derived from ACMA, *3.6 GHz band auction, November 2018 – Auction guide*, August 2018, page 20, available at –

<https://www.acma.gov.au/theACMA/applicant-information-package-3-6-ghz-band-auction>

*The existing site-based apparatus licence arrangements in the 3.6 GHz band support use of the band by a number of different services and licensees. Such arrangements are optimal when demand for access to spectrum does not exceed its supply. They allow any prospective operator to apply for licences in specific areas where spectrum is available. This allows spectrum to be assigned as required rather than as part of an area-based licence where services may not be deployed across the whole area or where there are no plans to roll out services in certain areas for some time.*

*Site-based apparatus licence arrangements are not considered optimal if demand for access to spectrum exceeds its supply and there is strong interest in deploying dense wide-area networks. ...<sup>16</sup>*

59. In remote areas of Australia, where C band spectrum has not been auctioned, ACMA has therefore been accepting over-the-counter (OTC) applications on a first-come, first-served basis for spectrum licences. Licence fees are set having regard to spectrum location, geographical location, amount of spectrum occupied, and coverage area authorized by the licence.<sup>17</sup>
60. ACMA, consequently, adopted a spectrum licence area model for the 3.4 and 3.6 GHz bands that separates metropolitan (urban) from regional (rural) areas, in recognition of the different demand characteristics for those areas, as well as facilitate access to spectrum by smaller operators in regional areas. ACMA also chose not to apply area licensing in remote, sparsely-populated regions of the country, where a site-based licensing approach was deemed more effective at facilitating service providers.
61. TSI recommends that ISED take similar considerations into account when determining its Tier 5 licence area model and licensing frameworks. In particular, ISED's Tier 5 service area model should recognize that Canada consists of three distinct types of service areas: urban, rural and remote, instead of two.
62. TSI notes that ACMA has established an evolutionary approach, adapted to both its geography and demography to facilitate accessibility to C band spectrum in metropolitan (urban), regional (rural) and remote areas over the years, while maintaining consistency with past spectrum allocations at all times.
63. TSI submits that, similar to the process implemented by ACMA for spectrum licensing in remote areas, ISED could allow unassigned spectrum following an auction event to be made available to Canadian entities on a first-come, first-served

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<sup>16</sup> ACMA, *Future Use of the 3.6 GHz Band – Options Paper*, June 2017, pages 17-18, available at – [https://www.acma.gov.au/theACMA/future-approach-to-the-3\\_6-ghz-band](https://www.acma.gov.au/theACMA/future-approach-to-the-3_6-ghz-band) .

<sup>17</sup> <https://www.acma.gov.au/Home/theACMA/release-of-the-36-ghz-band-in-regional-and-remote-areas>

basis. Additionally, while an auction might be the appropriate method of assigning spectrum in rural or urban service areas, a first-come first-served or site licensing approach might be more effective in remote areas at ensuring spectrum resources are put to productive use. ISED, like ACMA, could decide to exclude remote areas from auction events, and use an alternate spectrum allocation method.

64. TSI also notes that the complex CCA auction format has been excluded by ACMA for all C band auction events since 2000. Simpler auction formats, namely SMRA, SCA and ESMRA, have been used instead.
65. Given the similarities between Canada and Australia namely in terms of demography and population spread over their respective territories, TSI submits that ISED could apply similar principles when designing its upcoming Technical, Policy and Licencing frameworks for the 3500 and 3800MHz bands.

### Considerations to facilitate access to spectrum for rural entities

66. TSI submits that the complexity of the CCA auction format, as well as the package bidding inherent to CCA auction format effectively limits participation of smaller service providers as well as new entrants thus limiting competition and consumers' choice especially in rural areas.
67. TSI submits that the SMRA auction format is better suited to encouraging participation by smaller service providers as it does not require package bidding and the auction format can easily accommodate key provisions such as set asides and spectrum caps.
68. TSI submits that, in order for the auction format to be effective in enabling participation of small service providers, ISED would need to include key features such as set-aside and/or spectrum caps in the auction rules. Secondly, ISED needs to ensure that the Conditions of Licence (CoLs) include strict deployment, service availability and subordination requirements. These CoLs are necessary to dissuade national and/or regional set-aside eligible operators do not speculatively acquire and warehouse spectrum in rural areas that is not core to their business plan - thus preventing access to spectrum for, and rapid rollout of broadband services by smaller rural entities.
69. TSI believes there is no shortage of spectrum in rural areas, rather there is an artificial supply restriction created by the vast spectrum holdings of the national incumbents in rural areas that are largely warehoused or are only employed to provide partial service in licenced areas. TSI believes that these incumbents as well as new primary licence holders should be strongly encouraged to share unused or underutilized spectrum according to the 'use-or-share rule' set out by the FCC<sup>18</sup> and in the event

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<sup>18</sup> "We note that, contrary to some assertions in the record, Commission records reflect that there is an active secondary market for partitioned and disaggregated licenses. The Commission has

measures to encourage are not sufficient, that ISED adopt a more rigorous tests for spectrum warehousing and corresponding 'take back' provisions in rural areas. The availability of secure and affordable spectrum to rural service providers and the overall efficient allocation of spectrum depend on dynamic licensing frameworks with strong obligations to subordinate spectrum upon request. Where these obligations are implemented, ISED would have more flexibility in the design of Tier 5 service areas while still achieving its policy objectives listed in paragraph 26 of the Consultation Document.

70. In the case that ISED were to use the CCA format in the for the C band spectrum (3500 and 3800 MHz spectrum) auctions, then TSI strongly recommends the use of set asides, spectrum caps and the CoLs strict deployment and service availability requirements.

## Conclusions

71. TSI is appreciative of ISED's initiative to develop new tier 5 service areas. TSI believes the creation of tier 5 service areas will have significant benefits for consumers and service providers – especially in rural areas – as they better enable the application of key principles: efficient spectral utilization, availability of affordable spectrum for smaller service providers and consumer choice and affordability of services.
72. TSI agrees with the principles and practical suggestions for implementation of a third option for the design of Tier 5 service areas – as contained in the Joint Proposal of smaller and/or regional communications service providers (BCBA, Canwisp, CCSA, ITPA, Cogeco, ECOTEL, Sogetel and SSi). 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. Remote Tier 5 service areas are based on unorganised CSDs with population densities of 0.1 persons per square kilometre or less. Urban Tier 5 service areas are based on Statistics Canada's population centres larger than 5,000 persons, with the largest population centres subdivided

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received about 1,000 assignment applications involving partitioned or disaggregated licenses over the last 10 years. Further, we find that the unique characteristics of the 3.5 GHz band are particularly conducive to secondary market transactions. First, the SAS can be leveraged to facilitate secondary market transactions. In addition, as recognized by Professor Connolly, "the use-or share rule greatly diminishes the concerns of potential hoarding or incomplete deployment over a license area." Priority Access Licensees will be incentivized to sell on the secondary market spectrum within their license area that may lie outside of their current network build or that they otherwise do not need access to for their future deployments. Source:

<https://docs.fcc.gov/public/attachments/FCC-18-149A1.pdf>

along CD boundaries. Rural Tier 5 service areas are based on CSDs, CCSs or ADAs to create a reasonable number of service areas across the country.

73. TSI diverges from the Joint Proposal in one critical aspect: rural Tier 5 population threshold should be set at 10,000 rather than 5,000. TSI believes the higher population threshold is required by rural facilities-based service providers to ensure the necessary economies of scale required to roll out innovative, service offerings to their subscribers, build and maintain standards-based, upgradable network facilities, provide sustainable competition and choice for consumers and ultimately the long-term viability of rural service providers as a category of competitors.
74. In the eventuality that ISED decides not to adopt the Joint Proposal, TSI would favour Option 1 subject to the addition of the following provisions to safeguard the spectrum needs of rural service providers:
  - Define appropriate minimum population and size thresholds and amalgamate adjacent CSD until these thresholds are met for both minimum population and minimum size to maintain consistency across various regions of the country; or
  - Carefully review the variations in size and population of Statistics Canada various administrative subdivisions across the country, establish desirable population and size thresholds and select the proper administrative subdivision for each specific area.
75. However, TSI believes that even this modified Option 1 is inferior to the option contained in the Joint Proposal as the former does not adequately distinguish between urban and rural areas.
76. 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 preventing access to spectrum for, and rapid rollout of broadband services by smaller rural facility-based service providers.
77. TSI is in favour of simple SMRA auction formats for competitive licensing as necessary to encourage participation by smaller facilities-based service providers. CCA auction formats are too complicated and require long lead times for preparation thus making participation costly - not to mention financially risky, for smaller bidders.

78. TSI believes there is no shortage of spectrum in rural areas. Rather, there is an artificial supply restriction created by the vast spectrum holdings of the national incumbents in rural areas. TSI believes that these incumbents as well as new primary licence holders should be strongly encouraged to follow the “use it or share it” principle enunciated by the FCC and in the event incentive measures are not sufficient, that ISED adopt a more rigorous tests for spectrum warehousing and corresponding ‘take back’ provisions in rural areas.

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