

SaskTel Reply Comments:

Gazette Notice SLPB-002-19

Consultation on a Policy and Licensing
Framework for Spectrum in the
3500 MHz Band

September 19, 2019

EXECUTIVE SUMMARY

1. The following is a summary of SaskTel's Reply Comments as part of the consultation process for Gazette Notice SLPB-002-19 *Consultation on a Policy and Licensing Framework for Spectrum in the 3500 MHz Band* ("the Consultation").
2. Pro-competitive measures: A wide range of comments were submitted supporting and, in some cases, objecting to the use of pro-competitive measures. This was not surprising. SaskTel still strongly believes that pro-competitive measures must be implemented by the Department in the 3500 MHz spectrum auction. Both a spectrum cap and a spectrum set-aside must be employed for the 3500 MHz spectrum auction. Because of the limited amount of spectrum available for auction spectrum caps must be imposed, and in order to counter the dominance of the three large national mobile service providers, a spectrum set-aside must be utilized to create a level and competitive playing field.
3. SaskTel recommends a spectrum cap of 50 MHz, and a set-aside of 50 MHz. The spectrum cap of 50 MHz is reasonable, within the range of values proposed by other commenters, and will allow for four or more licensees to share the total of 200 MHz of spectrum in the band. The set-aside amount of 50 MHz is also within the range of values proposed by commenters that agreed that a set-aside was required.
4. Assignment Round Structure: Upon review of the 'regional bandwidth variation' (RBV)-based assignment round structure proposed by TELUS in their comments¹, SaskTel now recommends that the RBV-based assignment round structure as proposed by TELUS be used in the 3500 MHz spectrum auction instead of the assignment round structure proposed by the Department. The RBV-based assignment round structure has been successfully used for the 3500 MHz

¹ TELUS comments, paragraphs 168-180

spectrum auctions in both Ireland² and Austria³, and allows a far greater opportunity to achieve spectrum contiguity not only in each service area but geographically across multiple service areas.

5. Geographical contiguity allows for the licensees to deploy TDD-based 5G services on the same licence block(s) in adjacent service areas. The deployment of TDD-based technologies by different operators in adjacent service areas using the same licence blocks requires careful planning, coordination, and interference mitigation measures including synchronization. Despite using these measures, deployments by different operators on the same frequency block will still likely result in coverage gaps along the service area boundaries where interference makes network deployment impossible. Allowing operators to use the same licence blocks to deploy TDD-based 5G technologies in adjacent service areas will greatly reduce the magnitude of the coordination required and greatly reduce the likelihood of interference. Overall, this will allow for the most efficient utilization of the spectrum, in alignment with the goals of the Department.
6. The final block assignments resulting from the use of the RBV-based algorithm in the Austrian and Irish 3500 MHz spectrum auctions show a high level of contiguity between service areas.⁴ The uniform and efficient assignments that can result from the RBV-based algorithms are something that cannot be achieved by the use of blind bidding in sequential rounds in the assignment round structure as proposed by the Department.
7. LTE-based Deployment Requirements: SaskTel notes that almost all the mobile operators providing anything more than a minimal LTE coverage deployment agreed with SaskTel in objecting to the proposed LTE-based deployment requirements. The proposed requirements do not consider the propagation differences between the 3500 MHz spectrum and the low-band commercial

² *3.5 GHz Band Spectrum Award: Information Memorandum*, Commission for Communications Regulation (ComReg), published August 2016. Link: https://www.comreg.ie/media/dlm_uploads/2016/08/ComReg-1671.pdf

Auction term used by the Irish ComReg in their assignment round policy, 2016

³ *Tender Document: Procedure for Spectrum Award in the 3410 to 3800 MHz Range*, Telekom-Control-Kommission (TKK), published September 2018. Link: https://www.rtr.at/en/tk/5G-Auction-Tender-Documents/Tender_Documents_3_4_-_3_8_GHz_EN.pdf

⁴ TELUS comments, paragraphs 175-176, and Figures 6 & 7

mobile wireless bands (600, 700, and 850 MHz) providing the coverage layer that defines the LTE coverage of a network. The smaller coverage areas of the 3500 MHz spectrum band will result in a very excessive and unnecessary capital expenditure by the operators simply to meet a deployment requirement. The time frame for the requirements is also very overly aggressive and shortened even further by having to adhere to protection and notification periods imposed for the transition of incumbent licensees in the rural service areas. Overall, the proposed requirements place an excessive and undue burden on existing mobile LTE service providers and punish those operators that have extensively deployed LTE services into rural areas.

8. Some commenters proposed that the LTE-based requirements be dropped altogether, and that the general deployment requirements as proposed in Annex F of the Consultation be used. SaskTel would agree to this proposal.
9. Should the Department still decide to implement LTE-based deployment requirements, SaskTel still believes that the alternate deployment requirements recommended in paragraph 163 of our comments would be the most appropriate. We proposed that the Department allow operators to utilize any spectrum band to deploy 5G services to meet the Department's deployment requirements, with a longer time frame to allow for the transition of incumbent licensees. Allowing operators to choose the most appropriate spectrum band to deploy 5G networks will provide the flexibility to effectively and efficiently serve rural customers with new 5G services.
10. Failing that, SaskTel believes that the alternative LTE-based deployment requirements as proposed by Rogers in their comments⁵ are reasonable and appropriate. Rogers proposed to base the existing LTE coverage of a network on the LTE coverage provided by an operator's mid-band (AWS, PCS, or BRS) spectrum. The propagation characteristics of the 3500 MHz band are comparable to those of the mid-band AWS, PCS and BRS spectrum bands.

⁵ Rogers comments, paragraph 200

INTRODUCTION

11. Saskatchewan Telecommunications (“SaskTel” or “the Company”) is pleased to provide our Reply Comments as part of the consultation process for Gazette Notice SLPB-002-19 *Consultation on a Policy and Licensing Framework for Spectrum in the 3500 MHz Band* (“the Consultation”).
12. SaskTel has reviewed the comments submitted by the other parties in response to the questions posed in the Consultation. Our Reply Comments are provided below. The section numbering of this document corresponds to the section numbering of the Consultation. Failure to address any particular issue or item, or the Comments made by any other party, should not be construed as agreement with those Comments where such agreement is not in the interests of SaskTel.

SASKTEL REPLY COMMENTS REGARDING THE CONSULTATION ON A POLICY AND LICENSING FRAMEWORK FOR SPECTRUM IN THE 3500 MHz BAND

7. *Pro-competitive measures*

Q1A—ISED is seeking comments on its proposal to implement pro-competitive measures in the 3500 MHz auction.

13. As expected, there were a wide range of comments and opinions submitted on the proposal to implement pro-competitive measures in the 3500 MHz spectrum auction. Some commenters expressed the need for stringent pro-competitive measures, while others felt that less stringent or no pro-competitive measures were necessary. This is no surprise.
14. After a review of the comments submitted, SaskTel still believes that pro-competitive measures must be implemented by the Department in the 3500 MHz spectrum auction. Spectrum caps must be imposed because of the limited amount of spectrum available for auction, and in order to counter the dominance of the three large national mobile service providers, a spectrum set-aside must be utilized. Therefore, both a spectrum cap and a spectrum set-aside must be employed for the 3500 MHz spectrum auction.

Q1B—ISED is seeking comments on the use of a set-aside, an in-band spectrum cap, or a combination of both, including the amount of spectrum that should be applied for the use of a set-aside, and/or the amount of spectrum that should be subject to an in-band spectrum cap. Provide supporting rationale for your responses.

15. For those commenters that proposed the imposition of spectrum caps and/or set-asides and that provided proposed amounts in their submissions, the proposed amounts did vary. The proposed amount for a spectrum cap varied from 40 MHz to 100 MHz. For set-aside spectrum, the proposed values varied from 50 MHz to 100 MHz. Some commenters proposed that the set-aside be set as a percentage of the spectrum available for auction.
16. After reviewing the comments of the other parties, SaskTel still recommends a spectrum cap of 50 MHz and a set-aside of 50 MHz. These values are reasonable, and within the ranges proposed by the other commenters. The spectrum cap of 50 MHz in a band with a total of 200 MHz of spectrum allows for four or more licensees per service area and should allow for effective competition in the market. The set-aside amount of 50 MHz is also reasonable and will allow an opportunity for a smaller entity to acquire a reasonable amount of 3500 MHz spectrum without the domination of the three national mobile service providers.

9.8 Structure of the assignment stage

Q9A—ISED is seeking comments on the proposed structure of the assignment stage, including the order of the assignment rounds, treatment of existing holdings, the combination of service areas into a single assignment area and parallel bidding.

17. SaskTel has reviewed the comments submitted by TELUS including their proposal for an alternate assignment round mechanism. The assignment round structure proposed by TELUS is based on the minimization of ‘regional bandwidth variation’ (RBV) and has been successfully used in recent 3500 MHz spectrum auctions in both Austria and Ireland.⁶ SaskTel supports the TELUS proposal for an RBV-based assignment round structure using the same algorithms and process as

⁶ TELUS comments, response to Q9, paragraphs 166-180

used in the recent Austrian and Irish 3500 MHz spectrum auctions instead of the assignment round structure proposed by the Department.

18. The RBV-based assignment round structure offers the opportunity to achieve geographic contiguity with spectrum assignments in adjacent service areas, something that cannot be achieved utilizing blind bidding in the sequential bidding process in the Department's proposed assignment round structure. As the Department stated in the Consultation⁷, and as all parties agreed, contiguity of spectrum for each licensee within each service area is important. However, geographical contiguity of spectrum assignments for licensees between multiple service areas is also very important.
19. With Time Division Duplexing (TDD) being used for 5G networks in this band, there will be challenges for different licensees to properly co-ordinate TDD-based 5G systems being installed on the same frequency block in adjacent service areas. The adjacent TDD-based networks must either be synchronized together, or a large geographical separation must be imposed between the two networks. This separation will create large holes in coverage, and therefore will result in large areas along the many Tier 4 service area boundaries with very poor or no 3500 MHz 5G coverage. Having geographical contiguity of spectrum assignments will vastly reduce the magnitude of TDD interference and co-ordination issues and allow for a far more efficient and effective utilization of the spectrum in alignment with the Department's goals.
20. SaskTel supports the assignment round structure as proposed by TELUS:

“TELUS proposes that ISED adopt an assignment round structure based upon the notion of minimising ‘regional bandwidth variation’ (RBV). This method for assignment, implemented successfully in 3500 MHz spectrum auctions in Ireland⁸ (2017) and Austria⁹ (2019), uses an algorithmic optimisation to provide bidders with

⁷ The Consultation, paragraph 94

⁸ *3.5 GHz Band Spectrum Award: Information Memorandum*, Commission for Communications Regulation (ComReg), published August 2016. Link: https://www.comreg.ie/media/dlm_uploads/2016/08/ComReg-1671.pdf Auction term used by the Irish ComReg in their assignment round policy, 2016

⁹ *Tender Document: Procedure for Spectrum Award in the 3410 to 3800 MHz Range*, Telekom-Control-Kommission (TKK), published September 2018. Link: https://www.rtr.at/en/tk/5G-Auction-Tender-Documents/Tender_Documents_3_4_-_3_8_GHz_EN.pdf

regional or national assignment options that aim to provide maximum geographic contiguity.

TELUS encourages ISED to review the two recent assignment stages from Austria and Ireland to understand the overlap in policy objectives and the applicability of their specific implementation. Additionally, TELUS highlights the result of both the Austrian and Irish auction that clearly demonstrates the benefits of the assignment stage framework in maximising self-contiguity and geographic contiguity. Both assignment stage results accommodated a regional operator (even small WISP) while supporting maximum geographic contiguity for the industry.”¹⁰

21. The spectrum assignment results from the Austrian and Irish auction across the multiple regions speak for themselves. From the comments submitted by TELUS:



Figure 1 - Assignment results from Austrian 3.x Auction, 2019 (Source: TELUS comments¹¹)

¹⁰ TELUS comments paragraphs 175-176

¹¹ Ibid, page 65 Figure 6

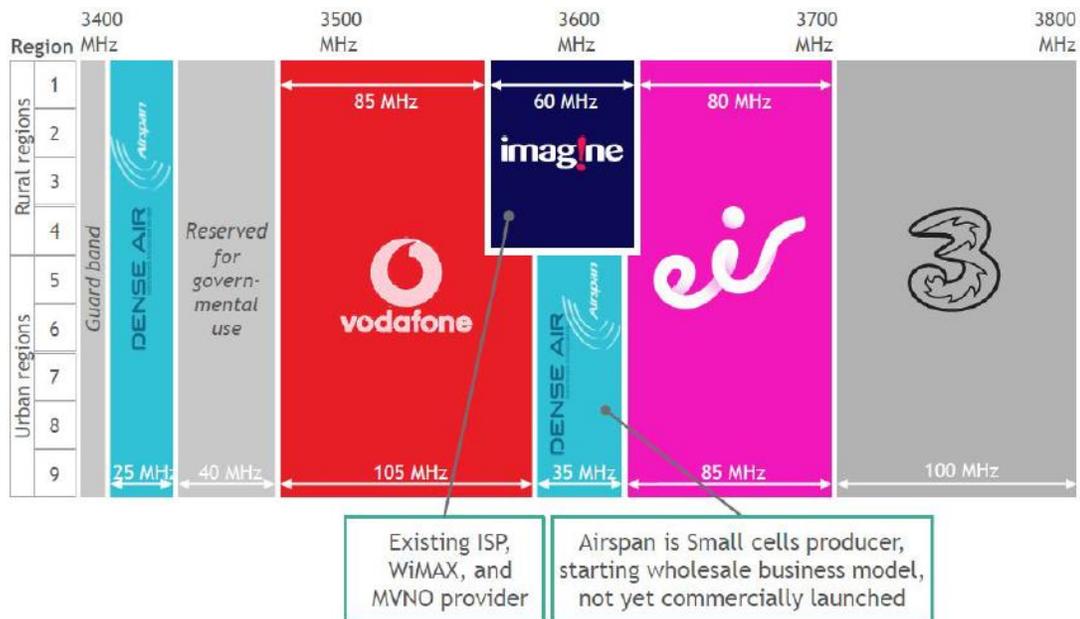


Figure 2 – Assignment results from Irish 3.x Auction, 2017 (Source: TELUS comments¹²)

22. The resulting assignments from the use of the RBV-based assignment structure clearly maximizes contiguity both within each region and also geographically between multiple regions. This alignment in assignments will allow for a very efficient spectrum deployment.
23. SaskTel recommends that ISED utilize an RBV-based assignment round structure for the 3500 MHz spectrum based on the algorithms and processes used in the Irish and Austrian 3500 MHz spectrum auctions.
24. With 172 Tier 4 service areas we recognize that this may become quite complex. As TELUS suggests in their comments¹³, SaskTel would also suggest that the Department consider grouping the 172 Tier 4 service areas into no more than three large regions. Each region would encompass multiple Tier 2 service areas. Applying the RBV-based algorithms on each region would reduce the computational complexity while still allowing geographical contiguity throughout a region.

¹² TELUS comments, page 65 Figure 7

¹³ Ibid, paragraph 179

11.3 Deployment requirements

Q14—ISED is seeking comments on the proposed deployment condition of licence as stated [in the consultation] as well as on the proposed levels of deployment.

25. In our comments SaskTel objected to the proposed deployment requirements specifically for service providers currently offering LTE-based mobile services as inappropriate because they place an excessively undue burden on operators and therefore ironically punish service providers that have extensively deployed LTE networks to serve deep rural regions.
26. Almost all the mobile operators¹⁴ providing anything more than a minimal LTE coverage deployment also objected to the proposed LTE-based deployment requirements in their comments on the Consultation.
27. For example, Bell Mobility stated that the LTE-based deployment requirements punish those who have built out LTE-based mobile networks.

“First, the additional deployment requirement for licensees that currently operate LTE networks is unduly punitive to the service providers who have spent billions of dollars deploying LTE networks to 99% of Canadians. In addition, the timeline associated with this requirement is inappropriately aggressive, and in some cases licensees will simply not have enough time to meet the condition. The proposed condition effectively punishes carriers for serving all Canadians, including those in rural areas.”¹⁵

28. Bell Mobility also commented that the LTE-based deployment requirements as proposed would be applied unequally to licensees.

“The proposed LTE deployment rule provides a loophole by which many of the potential licensees of 3500 MHz spectrum will not be required to provide timely 5G coverage in rural areas because they had not previously invested in providing LTE coverage to these areas. In essence, this counter-intuitive requirement rewards service providers for failing to build out their networks to rural areas. Therefore, if the Department's goal is the expansion of 5G coverage to rural areas, this should instead be built into the

¹⁴ Bell comments paragraphs 89-95, Eastlink comments paragraphs 40-41, Iristel comments paragraphs 40-41, Quebecor comments paragraphs 70-76, Rogers comments paragraphs 200-202, Shaw comments paragraphs 166-167, and TELUS comments paragraphs 190-195

¹⁵ Bell comments, paragraph 89

general deployment requirements that apply equally and symmetrically to all potential providers.”¹⁶

29. Many commenters along with SaskTel pointed out the difference in propagation characteristics between the 3500 MHz band and the low-band¹⁷ spectrum bands. The far greater coverage and range of low-band spectrum results in the low-band spectrum defining the coverage of an LTE network. For example, Rogers commented that:

“... the Department has proposed coverage requirements for incumbent mobile network operators that are extremely aggressive and completely unrealistic to match current LTE networks that have been deployed using lower band frequencies with more favorable propagation characteristics.”¹⁸

“The 600 MHz, 700 MHz, and 850 MHz spectrum bands should be viewed as providing similar coverage capabilities due to similar propagation characteristics and form the coverage layer of a mobile network. The 3500 MHz band has much closer propagation characteristics to the PCS, AWS, and BRS spectrum bands, which form the capacity layer for facilities-based mobile networks. Due to differences in population densities between urban and suburban areas and those of rural and remote communities, the coverage layer may provide sufficient capacity on its own while immediately overlaying the entire network with all capacity bands may not be required nor economically feasible.”¹⁹

30. Bell²⁰ and Shaw²¹, agreed with SaskTel that the required notification and protection periods for incumbents will adversely impact the ability of licensees to deploy 3500 MHz spectrum to meet the proposed deployment requirements. With the extensive rural deployments required to meet the five-year deployment requirements for existing LTE service providers, and the very late start imposed by the two- and three-year protection periods, it will be extremely challenging to meet this schedule, and therefore unreasonable to expect operators to shoulder

¹⁶ Bell comments, paragraph 92

¹⁷ Low-band spectrum refers to the 600 MHz, 700 MHz, and 850 MHz commercial mobile wireless bands.

¹⁸ Rogers comments, paragraph 200

¹⁹ Ibid, paragraph 201

²⁰ Bell comments, paragraph 95

²¹ Shaw comments, paragraph 167

the burden and expense of completing a very large number of 3500 MHz rural installations in only two years.

31. Bell²² and Eastlink²³ suggested that the additional deployment requirements for existing LTE mobile network service providers be dropped and that the general deployment requirements only be used, as per Annex F in the Consultation. SaskTel would agree with this approach because the deployment requirements would then be uniformly and fairly applied to all 3500 MHz licensees.
32. SaskTel agrees with the general deployment requirements as specified in the conditions of licence as proposed in the Consultation²⁴ and as specified in Annex F of the Consultation. The general deployment requirements are reasonable, although there will be challenges meeting the business case for 3500 MHz deployments in the rural Tier 4 service areas with very low population densities. The propagation characteristics of the 3500 MHz band favour urban and community deployments and therefore would not be a first choice for SaskTel for rural 5G deployments. For the rural Tier 4 service areas without a large population center(s) and instead featuring many scattered low-population communities, there will be challenges deploying the 3500 MHz spectrum to meet the general deployment requirements. However, over a 20-year period SaskTel believes the proposed general deployment requirements are achievable.
33. Should the Department decide to implement LTE-based deployment requirements, SaskTel agrees with the suggested proposal from Rogers to reference the LTE-based deployments on the LTE coverage currently being provided by the mobile service provider's existing mid-band (PCS, AWS, and BRS) spectrum deployments. As proposed by Rogers:

“For the reasons discussed [in the Rogers submission], the Department should require network operators to provide coverage to 90% of the population within their mobile LTE network footprint as provided by their PCS, AWS, and BRS spectrum bands within

²² Bell comments, paragraph 95

²³ Eastlink comments, paragraphs 40-41

²⁴ The Consultation, Section 11.3, paragraph 176

10 years of the initial licence issuance date and 13 years to cover 97% of the population.²⁵

34. The proposal from Rogers is reasonable and achievable and will result in a substantial deployment of 5G networks.
35. Despite all the hype and rhetoric in the news media, the use cases and business cases for 5G are very slow to develop. There is a lot of hype in the media about how 5G will revolutionize everything in our society, including for example self-driving cars and advanced robotics. While future 5G networks will be capable of supporting these applications, the truth of the matter is that most of the applications and industries that are being hyped up to justify the 5G network deployments are not going to develop for many years.
36. As stated by the Department in the Consultation, 5G is still a developing technology.

"it is unclear at this time which business cases will drive ongoing investment in 5G networks, which services and applications will deliver the greatest benefits to Canadians, and when such applications will be ready for market."²⁶

37. It would be very risky for network service providers to embark on large scale 5G deployments, particularly in rural areas, without a solid business case.
38. Mobile network operators in Canada have already deployed high-speed high-quality mobile networks using LTE technology, and the LTE technology continues to be upgraded with new features to further increase network performance and customer data throughput, enhance user experience, and enable new services. Although 5G promises network service improvements, high quality services can be provided today with LTE.
39. Should the Department decide to implement LTE-based deployment requirements, SaskTel still believes that the alternate deployment requirements recommended in our comments would be the most appropriate. As originally

²⁵ Rogers comments, paragraph 200

²⁶ The Consultation, paragraph 7

stated in paragraph 163 of our comments, we proposed the conditions of licence be modified as follows:

*Licensees will be required to demonstrate to the Minister of Innovation, Science and Economic Development that **the licensee is providing 5G services using any spectrum band(s) in the licence areas where they offer existing mobile broadband LTE service to cover the following deployment obligations:***

*i. 90% of the population within its mobile LTE network footprint as of June 5, 2019, within five years of the **expiration of the protection period for incumbent licensees for the Tier 4 service area;***

*ii. 97% of the population within its mobile LTE network footprint as of June 5, 2019, within **ten years of the expiration of the protection period for incumbent licensees for the Tier 4 service area;** and*

*iii. 95% of the population outside the large urban population centers, as listed in annex G of this document, in the tiers that contain the large urban population centre within 10 years of the **expiration of the protection period for incumbent licensees for the Tier 4 service area;***

(modifications emphasized)

40. SaskTel's recommended proposal will allow for the timely deployment of 5G networks into rural areas without undue hardships on operators and will allow the licensee the flexibility to choose the most appropriate spectrum band(s) to utilize to effectively serve rural residents with 5G technologies.

CONCLUSION AND RECOMMENDATIONS

41. SaskTel has reviewed the comments filed in response to the Consultation with the Department's proposed policies and rules for the 3500 MHz licensing process, and as a regional-based service provider, SaskTel has provided the Department with our reply comments.
42. **Pro-competitive measures**: Based upon our assessment of the comments submitted and our experience in previous auctions, we agree with the Department **that pro-competitive measures will be required** to level the playing field and therefore allow for the benefits of fair competition and for the support of a fourth player in wireless markets.
43. SaskTel **recommends a spectrum cap of 50 MHz** be imposed for the 3500 MHz licensing process. With a total bandwidth of 200 MHz in the 3500 MHz band, a spectrum cap of 50 MHz will allow at least four operators to access the very valuable 3500 MHz spectrum.
44. SaskTel also **recommends that 50 MHz** of the spectrum being auctioned be **designated as set-aside spectrum**. This is a reasonable portion of the total 200 MHz spectrum in the 3500 MHz band, and allows a smaller operator in each market to acquire spectrum without having to compete against the financial resources of the large national mobile service providers.
45. **Assignment Round Structure**: SaskTel **agrees with the proposal made by TELUS in their comments to implement a 'regional bandwidth variation' (RBV)-based assignment round structure** using the algorithms and processes already successfully utilized in the recent Irish and Austrian 3500 MHz spectrum auctions. SaskTel recommends the RBV-based approach be used instead of the assignment round structure proposed by the Department in the Consultation. The RBV-based algorithms can and have produced spectrum assignments that are not only contiguous for each licensee in each service area, but also geographically contiguous over multiple adjacent service areas.
46. With TDD-based 5G systems proposed to be deployed by all licensees in the 3500 MHz spectrum band, synchronization and co-ordination between operators

will be essential along Tier 4 service area boundaries to mitigate interference. Having contiguous spectrum assignments between multiple service areas will allow for a far more efficient deployment of 5G networks, and greatly reduce the magnitude of interference and coordination issues.

47. Based on the results of the Irish and Austrian 3500 MHz spectrum auctions²⁷, the use of RBV-based algorithms for spectrum auction assignment rounds is well proven to produce geographically contiguous assignments, something which cannot be realistically achieved using blind bidding in the sequential round approach originally proposed by the Department.
48. **LTE-based Deployment Requirements**: SaskTel continues to **oppose the additional deployment requirements for existing operators currently providing mobile LTE services as proposed in the Consultation** because they place an excessively undue burden on operators and ironically punish service providers that have extensively deployed LTE networks to serve deep rural regions. Almost all the mobile operators providing anything more than a minimal LTE coverage deployment also objected to the proposed LTE-based deployment requirements in their comments on the Consultation.
49. For most operators of mobile LTE networks, the coverage layer is provided by low-band spectrum (600, 700, and 850 MHz bands), while network capacity is provided by mid-band spectrum (PCS, AWS, BRS bands). As noted by many of the operators, the propagation characteristics of the 3500 MHz band approximates those of the mid-band spectrum bands, whereas the coverage of LTE-based networks is typically defined by low-band spectrum. It will take an enormous investment in additional towers and infrastructure to match the coverage of low-band LTE networks using 3500 MHz equipment.
50. The time frames proposed in the Consultation to complete the deployment requirements were also very aggressive, and when combined with the requirement to adhere to the protection and notification time periods imposed by the Department for incumbent licensees the time frames become much shorter. The very short time frames and the excessive cost of deployment places a very

²⁷ TELUS comments, page 65 Figures 6 & 7

excessive and undue burden on mobile service providers that ironically have extensively deployed LTE networks to serve rural and remote customers.

51. Several alternatives were proposed by other commenters. Some commenters suggested dropping the additional deployment requirements, and only utilize the general deployment requirements as given in Annex F of the Consultation. SaskTel would agree with this approach because the deployment requirements would then be uniformly and fairly applied to all 3500 MHz licensees.
52. Should the Department choose to implement LTE-based deployment requirements, SaskTel agrees with the suggested proposal from Rogers²⁸ to reference the LTE-based deployments on the LTE coverage currently being provided by the mobile service provider's existing mid-band (PCS, AWS, and BRS) spectrum deployments. The proposal from Rogers is reasonable and achievable and will result in a substantial deployment of 5G networks.
53. Having said that, should the Department choose to implement LTE-based deployment requirements, SaskTel still believes that the alternate deployment requirements recommended by SaskTel in our comments would be the most appropriate. As originally stated in paragraph 163 of our comments, we proposed deployment requirements that would allow operators to meet the deployment requirements by providing 5G services using any spectrum band, as well as an extension of the time frame. With the flexibility to choose any spectrum band for 5G deployments, the operator can effectively and efficiently provide 5G services in a timely manner in rural areas, thereby meeting the goals of the Department.
54. Should the Department choose to implement LTE-based deployment requirements, SaskTel continues to propose that the conditions of licence relating to deployment requirements be modified as follows:

*Licensees will be required to demonstrate to the Minister of Innovation, Science and Economic Development that **the licensee is providing 5G services using any spectrum band(s)** in the licence areas where they offer existing mobile broadband LTE service to cover the following deployment obligations:*

²⁸ Rogers comments, paragraph 200

*i. 90% of the population within its mobile LTE network footprint as of June 5, 2019, within five years of the **expiration of the protection period for incumbent licensees for the Tier 4 service area**;*

*ii. 97% of the population within its mobile LTE network footprint as of June 5, 2019, within **ten years of the expiration of the protection period for incumbent licensees for the Tier 4 service area**; and*

*iii. 95% of the population outside the large urban population centers, as listed in annex G of this document, in the tiers that contain the large urban population centre within 10 years of the **expiration of the protection period for incumbent licensees for the Tier 4 service area**;*

(modifications emphasized)

55. SaskTel is pleased to have had the opportunity to provide our input and reply comments to the important issues raised in this Consultation and hopes that our submission will provide a fuller view of these issues to the Department.