Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum

Canada Gazette Notice SMSE 018-10

Response of Barrett Xplore Inc.

February 28, 2011

Executive Summary

1. Barrett Xplore Inc. and Barrett Broadband Networks Inc. (collectively, “Barrett”) are pleased to submit the following comments in response to the Department’s paper, Consultation on a Policy Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum, as announced in Canada Gazette Notice No. SMSE-108-10. As Canada’s largest rural broadband provider, deploying fixed wireless and satellite broadband services across all regions of Canada, Barrett welcomes this opportunity to comment on the development of a framework for the licensing of spectrum in the 700 MHz band.

2. In building its broadband business over the last five years, Barrett has used a combination of terrestrial and satellite technologies to provide an affordable broadband Internet service to its customers in rural markets. Given the rapidly growing demand for broadband connectivity, Barrett has found that fixed wireless solutions can be quite cost-effective for providing broadband services to rural residential customers.

3. While the focus of this consultation is on the provision of Canadian mobile communications services, there remains a gap in the availability of affordable broadband services between rural and urban areas in large part driven by the inaccessibility of wireless spectrum. Barrett believes that the 700 MHz (and 2500 MHz) bands are part of the spectrum solution to narrow, and inevitably eliminate, the digital divide between urban and rural Canadians.
4. While broadband and mobile (and “nomadic” – partly mobile) are converging, there will be limitations over the next several years in the ability of wireless mobile technologies to deliver the kind of bandwidth that urban residential customers normally obtain via cable or DSL wireline technologies. Fixed wireless using 700 MHz spectrum, in combination with spectrum at higher bands (e.g., 2500 MHz and 3500 MHz), represent very real immediate alternatives to ensure rural Canadians obtain broadband service. Thus, Barrett maintains that at least in rural areas, the 700 MHz spectrum could well be more valuable to provide broadband than mobile service.

5. Barrett has successfully acquired spectrum as the basis for deploying broadband wireless service; however, it has been unable to acquire spectrum from incumbent providers who have acquired rural spectrum in other bands (800 MHz, 2500 MHz, 3500 MHz, etc.). In Appendix A (Confidential), we show where we acquired this spectrum and from what sellers. While we have tried to negotiate with the incumbents for rural spectrum, we have not been able to complete any transaction to date – even where the incumbent has not deployed service to rural areas.

6. The Department’s stipulations of service obligations can be accommodated without actually providing service to rural areas, many of which can be quite close to urban areas. Thus, we are aware of many areas where there is lack of broadband capability, and yet we cannot acquire any spectrum from existing incumbent holders. While we are quite interested in participating in the spectrum auction for the 700 MHz and 2500 MHz bands, in order to acquire more spectrum, the spectrum auction rules need to be designed in a way that supports the objective of providing broadband service to rural areas in Canada.

7. The historic licensing of spectrum blocks and the geographic tiers adopted for these licensing processes have not made it feasible for a new entrant to acquire spectrum to serve rural areas only. Typically, the service areas are dominated by the urban population, as they are far more numerous than rural Canadians. For example, the rural portion of the Tier 4 service area for Calgary is 92% urban. A
firm that wants to serve the rural population in the Calgary service area cannot outbid a firm wanting to serve the urban areas. As stated above, although the successful bidders do not want to part with rural spectrum it does not mean that it is in their business plans to use it to serve rural Canadians.

8. Tier 2 and Tier 3 services areas are too large in area for carving out the rural market areas. Even the allocation of spectrum blocks on a Tier 4 basis in many cases is not granular enough to enable such a rural carve out, especially in licences dominated by nearby urban centers. In Barrett’s analysis there are 125 Tier 4 service areas that contain under 100,000 inhabitants, which could be defined as Tier 4 rural licences, leaving 47 Tier 4 service areas with significant populations, which could be defined as Tier 4 urban licences. Barrett proposes that the Department undertake an unbundling of the rural population in the Tier 4 urban licences with populations above 100,000, so that the rural population can be properly served with broadband. The rural portions of the unbundled Tier 4 urban service areas could then be combined with adjacent Tier 4 rural service areas, so as to keep the total number of services areas at 172. Through use of Statistic Canada’s census subdivisions (CSDs) Barrett proposes that two to four blocks in the 700 MHz band could be subject to Tier 4 rural unbundling. Following the rural unbundling and redistribution of the Tier 4 service areas, Barrett proposes specific measures for the auction of 700 MHz that enable providers to focus on the rural market and provide broadband service – mobile, fixed, or nomadic – and thus reduce the urban-rural divide and fulfill one of the objectives of the federal government’s Digital Economy Strategy. Since the incumbents already have a considerable amount of rural spectrum in the Cellular, PCS, AWS and BRS bands – and have generally not rolled out affordable broadband service to rural areas – Barrett proposes certain restrictions in the auctions rules. We have developed three options as follows:

a. A rural set aside whereby entities (and their affiliates and associated entities) with 50 MHz or more of spectrum in the Cellular/PCS/AWS/BRS bands would be excluded from bidding on the rural portions of the unbundled Tier 4 blocks.
b. A **rural spectrum cap** whereby entities (and their affiliates and associated entities) that hold 12 MHz or more of 700 MHz band spectrum auctioned in blocks subject to Tier 2 or 3 (not unbundled) would be prohibited from bidding on rural portions of unbundled Tier 4 spectrum.

c. A **rural broadband bidding credit** whereby the Department would offer a 20% bid credit to winners of 700 MHz band Tier 4 licences that made commitments to make broadband Internet access available to 50% or more of the population within an unbundled Tier 4 rural service area within three years of obtaining 700 MHz spectrum.

9. Given that there is a significant amount of rural spectrum that is already allocated, Barrett proposes a complementary way to stimulate the rollout of broadband service to rural areas. We propose the expansion of RP-019 to encompass spectrum beyond 800 MHz (to which it is not applied), so that incumbents can be challenged to properly serve rural areas or be subject to a competitor requesting to do the same. There is a defined, uncomplicated public process for this eventuality which has been successfully used in the case of the original cellular service for various underserved parts of the country. Such a mechanism extended to the full range of rural spectrum for broadband service (whether mobile, fixed, or nomad) would greatly stimulate the use of existing spectrum.

10. If these steps are taken, Barrett believes that the interests of broadband service to rural areas will be far better served than at present, and we would look forward to participating in that roll-out. Our responses to the individual questions of this consultative paper have been crafted in this framework for your consideration.

**Introduction**

11. Barrett is pleased to provide the following comments in response to the Department’s paper, *Consultation on a Policy Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum*, as announced in *Canada...*
As Canada’s largest rural broadband provider, deploying fixed wireless and satellite broadband services across all regions of Canada, Barrett welcomes this opportunity to comment on the development of a framework for the licensing of spectrum in the 700 MHz band.

12. In the 700 MHz consultation paper, the Department has outlined its intention to release new spectrum for commercial mobile broadband services in the next two years. Barrett believes that the licensing of spectrum in the 700 MHz band provides the Department with an ideal opportunity to address the availability of affordable broadband Internet services for rural Canadians. As such, many of Barrett’s comments focus on the policies and measures that the Department may pursue to foster market entry, sustainable competition, robust service offerings and the accelerated deployment of broadband Internet services in rural areas of Canada that could eliminate the rural/urban digital divide, once and for all.

13. This submission is focused on providing comments and proposing several alternatives that enable the lower population density areas of Canada to access broadband services of similar capacity and prices as urban residents and businesses. In doing so, it puts forward, among other things, the case for a broader perspective than just 700 MHz (or even 700 MHz + 2500 MHz) for mobile communications. Barrett believes it is necessary to review spectrum usage in rural and remote areas in a broader context for all forms of broadband communications, including, but not limited to, mobile broadband.

Background

14. Barrett, headquartered in Woodstock, New Brunswick, operates Xplornet Internet Services, Canada’s largest rural broadband provider, with customers and dealers in every province and territory. Barrett aims to bridge the urban/rural digital divide by ensuring that every Canadian, regardless of where they live, has access to broadband, thereby enabling them to compete effectively in the global economy and gain access to essential government and educational services.
15. Barrett’s 450 dedicated employees are committed to providing an excellent customer experience for its subscriber base, with reliable, bilingual service available nationwide 24 hours per day, 7 days per week, 365 days per year. Combined with a nationwide dealer and service installation network of over 3,000 professionals, Barrett provides local sales and support throughout Canada.

16. Barrett is the only operator that offers broadband coverage to 100% of Canada’s population by taking a best-fit technology approach. Barrett deploys a hybrid service delivery solution combining the inherent strengths of wireless and satellite technology to serve Canada’s lower density areas. Through a strategy of organic growth, so far, Barrett has built a wireless network infrastructure of over 600 broadcast towers, serving rural Canadians in six provinces – New Brunswick, Quebec, Ontario, Manitoba, Alberta and British Columbia – and a complementary satellite network overlay to reach 100% of Canada’s population.

17. To continue to provide rural Canadians with state-of-the-art broadband services, Barrett continually seeks to implement new proven communications technologies. In October 2010 Barrett announced that it had commenced a next-generation 4G network for rural Canadians, starting with terrestrial fixed wireless, and quickly followed by a new satellite network. This is the first commercial deployment announced of a national 4G network in Canada. For rural Canadians, the deployment of this technology means that they have better access to faster, affordable broadband. And this state of the art technology is coming to rural Canada first.

18. The 4G network will have both terrestrial and satellite components. The terrestrial wireless network, which will be comprised of roughly 1,200 towers, will be capable of speeds over 40Mbps improving to over 100Mbps within the next year. While speed is important, the key to a great experience is more bandwidth, and the new network will provide the capacity for more robust service packages, ranging from 3x to 10x the capacity of today's HSPA. The terrestrial 4G network will initially be based on WiMAX, and is software-upgradeable to the future WiMAX protocol or
to LTE, -whichever will offer rural customers a better experience. Barrett's investment in the new terrestrial wireless network is planned to be approximately $150 million.

19. The terrestrial wireless network will be complemented by a new 4G satellite network, which will be based on new High-Throughput Satellite (HTS) architecture, starting with the first satellite, Viasat-1, scheduled to launch in 2011, followed by a second satellite, Hughes Jupiter, in 2012. These satellites will allow Barrett to provide robust speeds of up to 25Mbps (downloads) and 10Mbps (uploads). In combination, the 4G networks will mean that by 2012, every rural Canadian will have access to affordable, robust broadband.

20. Construction of the new terrestrial 4G wireless network started this past fall with the first region of the network and customers coming online in January 2011. The 4G satellite network will see its first customers coming online in late 2011.

21. Barrett continues to look forward to being one of rural Canada’s leading broadband services companies and working with the Department to develop a policy and licensing framework that is designed to directly meet the growing broadband communications needs of rural Canadians.

4. Commercial Mobile Services

4-1. What is the general need for additional commercial mobile spectrum at this time and what do you anticipate the future needs to be?

22. Since 1985, the Department has licensed over 270 MHz of spectrum for wireless mobile communications, starting with the 800 MHz Cellular band (50 MHz), the 1900 MHz personal communications services (PCS) band (130 MHz), and recently the 1700/2100 MHz Advanced Wireless Services (AWS) band (90 MHz). In licensing these various blocks of spectrum, the Department has adopted various measures designed to advance important public policy objectives. These objectives have included the promotion of competition in wireless communications, the enabling of advanced communications services to most regions of Canada.
(including rural and remote areas), the provision of a diversity of service offerings to consumers and business, and the encouragement of facilities-based competition. In the evolution of wireless, the Department has recognized the criticality of wireless communications and spectrum resources to advance the modernization of the Canadian telecommunications system and has taken every opportunity to foster these objectives in the licensing processes for the Cellular, PCS and AWS spectrum.

23. Canada has come to a critical crossroads; the licensing of the 700 MHz and 2500 MHz bands will virtually double the spectrum resources for broadband wireless communications with up to 274 MHz of new spectrum (up to 84 MHz in the 700 MHz band and 190 MHz being refarmed in the 2500 MHz band). It is a critical timeline for the federal government to address important public policy issues, which will set the course of broadband wireless communications in Canada for the next decade. By around 2013, the Canadian wireless industry will have approximately 540 MHz of prime broadband spectrum at its disposal to unleash the full promise and potential of the digital economy for all Canadians. The net public benefit expected from these public spectrum resources should be available to all Canadians. Canadians living and working in large urban centres or in less-densely populated rural areas should enjoy a reasonable diversity of advanced broadband services and network facilities to meet their social, economic and cultural needs.

24. The Department must be commended to have summarized in the 700 MHz Paper in a very succinct manner the spectrum holdings of the incumbents (mainly Rogers, Bell, TELUS, and some regional telcos) in the 800 MHz cellular band and the 1900 MHz band. It is important to note the advantages of the 700 MHz band are being underscored for its coverage reach, lower network development cost and excellent propagation. In fact, as the data show, the incumbents already have a substantial amount of spectrum:

   a. 100% of the 50 MHz of spectrum in the 800 MHz Cellular band and some 10-15 MHz of 800 MHz band trunk mobile spectrum. This 800 MHz
spectrum has been licensed for two national networks since 1985, and there are still many parts of rural Canada having only access to one mobile wireless network or recently started receiving service from two mobile wireless networks. Also, 800 MHz is very similar to 700 MHz spectrum in terms of its propagation and service-economics characteristics.

b. Similarly, most of the 130 MHz holdings in the 1900 MHz bands are owned by the incumbents, and they were able to secure 50 MHz (57%) of the 90 MHz AWS spectrum auctioned in 2008.

c. The three large incumbents share about 95% of the 24 million wireless subscribers operating in the 800 MHz Cellular and 1900 PCS bands.

d. In the largest urban markets, the three large wireless incumbents have about 230 MHz of the total Cellular, PCS and AWS spectrum. Their 50 MHz AWS spectrum has not been deployed as yet for commercial service.

25. With respect to the 2500 MHz band, the Department’s decision is that Canada will adopt a world band plan, whereby existing radio installations will have to migrate to the new plan, and existing licensees will have to return approximately one-third of their multipoint communications services (MCS) and multipoint distribution services (MDS) spectrum to be auctioned. As a result, some of the incumbent wireless operators will retain significant spectrum (up to two-thirds of the 190 MHz in the 2500 MHz) for Broadband Radio Service (BRS), including high mobility.

26. The Department has outlined the various spectrum holdings and has taken into account the additional 2500 MHz holdings that will be available without a new licensing process to wireless incumbents in the overall spectrum-holding statistics reported in 700 MHz Paper (as reproduced in Exhibit 1).
27. The same scenarios are being repeated in the development of fixed broadband spectrum in the 2300 MHz wireless communications services (WCS) and 3500 MHz fixed wireless access (FWA) bands, where significant spectrum holdings are available to a few licensees. These licences are often the same operators having similarly large spectrum holdings in the Cellular, PCS and AWS spectrum. Through vertical integration within the Canadian telecommunications industry, some of these dominant holders of spectrum also have extensive wireline broadband facilities (ADSL, cable modem) which extend to the most lucrative segments of the rural market. However, spectrum-based facilities represent for many situations the only practical means of bringing advanced broadband communications services to low-density service areas, not just for mobile use but fixed broadband-based services as well. Lack of access to spectrum, therefore, is a critical barrier to entry for entrepreneurs who wish to develop radio-based facilities in these low-density areas.

28. From the CRTC *Communications Monitoring Report 2010* (the “CMR 2010”) on the performance of broadband services in Canada for both wireline and wireless
facility availability, it is evident that the wireline ADSL and cable facilities are well entrenched as the dominant access technologies. However, it is also evident that there exists a great disparity between access facilities available and broadband subscription rates in urban and rural areas in some of the provinces. Barrett’s position is that it is not for a lack of demand, but a lack of availability. Again, similar to broadband mobile spectrum, a significant amount of unused fixed wireless access (FWA) (175 MHz) and wireless communications services (WCS) (30 MHz) spectrum has been licensed since the early 2000s but has not yet been deployed, particularly in low-density areas of the licence holdings. It will likely stay idle in the foreseeable future for much the same reason as mobile wireless spectrum: these areas are either non-core to the licence holder’s business base, or as a means to frustrate wireless broadband competition. Barrett submits that it is relevant to this consultation to point out that fixed broadband spectrum is not effectively used in rural areas.

29. Against that background, the Department has made some effort to extend the diversity of advanced wireless service to rural Canada, such as the recent *Broadband Canada: Connecting Rural Canadians* program, but the provisions put in place have not met the objective of making readily available spectrum for rural development. The definition of spectrum-area blocks which encompass large geographic service areas (i.e., Tiers 1-3) may be conducive to hold spectrum auctions they are not for operators wishing to serve the challenging technical and economic aspects of low density areas, such as rural communities. Even the smallest tier (Tier 4) blocks are not optimally designed as many urban centric licences are too large in area, capturing large amounts of rural communities, to leverage the spectrum to solve rural challenges and problems in an economic way.

30. The Department has a unique opportunity to change the conditions that would encourage service to rural areas, as it is proceeding to open up some 270 MHz of new broadband wireless spectrum. This doubling of spectrum resources from 270 MHz to 540 MHz presents the opportunity to redress the digital divide and expand rural broadband services. It is well documented that there is very little deployment
of the existing licensed spectrum in most rural regions of Canada (Cellular, PCS and AWS bands and similarly in the 2300 MHz WCS and 3500 MHz FWA bands), and that suitable policy provisions should be established that redress broadband rural communication by providing practical access to spectrum in suitable areas and at compensatory prices to the population density. The urban-centric economy of needing the urban market to serve the rural market has not helped alleviate Canada’s digital divide over the past 25 years or so. Perhaps historically there was insufficient demand or viable business alternatives brought forth that would warrant a different approach. Clearly that is no longer the case. Some of the spectrum must be earmarked for rural broadband, and the forthcoming auction presents an opportunity to change the current dynamics of spectrum ownership and use.

4-2. Provide general deployment information on the current use of your existing holdings in mobile spectrum band. In the case where current holdings are not being used, provide information on its planned use, including timelines.

31. See Appendix A (Confidential)

4-3. Indicate your need for additional spectrum for commercial mobile service applications how much spectrum is required.
(a) What deployment timelines are being considered?
(b) What types of applications/uses are envisioned?
(c) To what degree will your business’ anticipated spectrum needs be addressed by have access to the 700 MHz and/or 2500 MHz spectrum?

32. See Appendix A (Confidential)

4-4. Do you plan to use 700 MHz spectrum acquired in the auction with, or on behalf of, an entity, which may participate in the auction? If yes, with which entity?

33. See Appendix A (Confidential)

4-5. Provide comments on the extent to which alternate spectrum access arrangements have investigated/considered to respond to your need for additional spectrum. In addition, provide specific efficiency measures investigated or implemented for current holdings.

34. See Appendix A (Confidential)
5. 700 MHz Band Plan Issues and Considerations

5-1. Based on the criteria listed above, which of the four band plan options should be adopted in Canada? Why is this option preferred over the other options? If Option 3 (APT band plan) is selected, what should the block sizes be?

In providing your responses, include supporting arguments, including potential benefits to wireless subscribers.

35. Barrett recommends that the Department adopt Option 1, in order to harmonize Canada’s band plan with the United States (U.S.) band plan. While Option 1 is not perfect, it is the only option that will work, due in part to the ready availability of chip sets. As pointed out by the Department, Option 1 would promote economies of scale by allowing the Canadian market access to a wide selection of low-cost equipment, enable cross-border roaming and allow simpler coordination procedures. The Department should keep step with the U.S. band plan, including guardbands, should the U.S. choose to make modifications before the Canadian auction begins.

36. While the Department should adopt Option 1, it should implement two minor deviations from the U.S. band plan, in order to allow more operators to acquire scarce 700 MHz spectrum in the upcoming auction. First, the paired block 746-757 MHz / 776-787 MHz (known as the “Upper C block”) should be split into two paired blocks of 5+5 MHz (e.g., 746-751 MHz / 777-782 MHz and 751-756 MHz / 782-787 MHz). Second, to minimize the possibility of interference between paired and unpaired systems, one MHz guard band should separate the paired and unpaired blocks, i.e., 716 and 728 MHz would be designated as guardbands, with two, unpaired blocks (717-722 and 722-727 MHz) remaining available.

37. Although these minor modifications to Option 1 would represent a deviation from the size of the block that was licensed in the U.S., it would not violate the fundamental structure of the U.S. band plan and would maintain the upper and lower limits of the Upper C block. As such, consumer devices designed for operation in the Upper C block in the U.S. could be used by Canadian licensees of either of the sub-blocks proposed above. Barrett notes that there is already
precedent for Canada to deviate slightly from U.S. band plans for commercial mobile spectrum. Canada has already similarly deviated from the U.S. PCS band plan with respect to the licensing of PCS B1, B2, and B3 blocks as three separate paired blocks in Canada, whereas this spectrum has been licensed as a single paired block in the U.S.

38. At the same time, the licensing of two smaller paired blocks rather than a single larger paired block would provide more flexibility for operators and would not preclude the possibility of any party from successfully bidding for the two paired sub-blocks and assembling them into a single paired block, in the event that they wish to acquire a larger paired block of contiguous spectrum in order to support their business plans.

5-2. The band plans presented in the options above include guardbands. Should the Department auction the guardbands, or should these frequencies be held in reserve for future use such that they are technically compatible with services in the adjacent bands?

Also comment on any related aspects not addressed above or other possible option, including combinations of options.

39. The Department should keep step with the U.S. band plan, should the U.S. choose to make modifications to any guardband definitions before the Canadian auction begins.

40. It should be noted that in the U.S. band plan, the existing guardbands between the D and C blocks were intended to provide interference isolation between the original 10+10 MHz public/private shared public safety/commercial broadband network and the commercial C block. Specifically, if the Department allocates 10+10 MHz to public safety, the 1 MHz guard band (757-758 MHz and 787-788 MHz) shown in SMSE-018-10 (Figures 5.3, 5.4 and 5.5) will continue to be required. However, if the Department allocates only 5+5 MHz to public safety (763-768 MHz and 793-798 MHz), a 1 MHz guard band should be placed immediately below the public safety broadband block (at 762-763 MHz and 792-793 MHz).
41. To address the impact of interference from adjacent channel systems, Barrett recommends that a minimum 1 MHz wide guardbands be used to isolate public safety broadband and the commercial broadband networks to reduce adjacent channel interference. The coverage impact of interference is especially of concern to public safety as incidents cannot be planned around areas of poor or non-existent coverage holes. These guardbands must be held in reserve rather than auctioned.

5-3. Do public safety agencies need spectrum for broadband applications? If so:
(a) How much and for which type of applications?
(b) What are the anticipated deployment plans and the possible constraints, if any, in implementing these plans?
(c) Is there suitable alternate spectrum to the 700 MHz to meet these broadband requirements?

42. There is a clear difference of opinion between commercial mobile operators and public safety users with regards to the requirement for spectrum for public safety needs in metropolitan areas and near metro coverage. This is due to the competition for spectrum in congested areas – the spectrum that is assigned to public safety is denied to commercial operators. In the U.S., the Federal Communications Commission (FCC) has spent considerable energy trying to find ways to assign public safety, while not denying commercial operators access to this spectrum. To date, these efforts have not been fruitful, although it would appear that the FCC continues to assess the situation.

43. In non-metro locations – where Barrett has been deploying its fixed wireless broadband networks – the situation is quite different. In these locations, spectrum is largely unutilized and lays fallow, awaiting someone to unlock its potential. In the same way that Barrett is looking to unlock this potential in the 700 MHz band and other bands useful to provide rural broadband services, public safety should also be given priority to access commercial operators’ unused spectrum to meet their needs.

44. Barrett is willing to entertain joint ventures with public safety agencies in non-metro areas to share the costs to deploy and operate these networks in order to meet the global needs of non-metro public safety users across the country.
5-4. **Comments are sought on the need for public safety broadband radio systems to be interoperable: (a) between various Canadian public safety agencies; (b) between Canadian and U.S. public safety agencies.**

45. Barrett supports the idea of interoperability both between various Canadian public safety agencies and between Canadian and U.S. public safety agencies. Interoperability of communications systems is vital to close cooperation and joint operations. Barrett is willing to entertain joint ventures to facilitate if the opportunity should arise.

5-5. **What are the challenges faced today by public safety agencies to have cross-border radio interoperability in other frequency bands?**

46. As a commercial provider of broadband services to Canadian households and businesses, Barrett is not in a position to directly comment on the cross-border interoperability challenges faced today by Canadian public safety agencies. Nevertheless, Barrett welcomes any opportunity to discuss with public safety agencies the wireless communications challenges they face and work with them to develop solutions.

5-6. **Notwithstanding your responses to questions 5-3 to 5-5, the Department seeks comments on whether public safety broadband needs can be met by using commercial systems with priority access rights for public safety, at commercial rates.**

   (a) Your views and comments are invited on priority access rights, including pre-emption, and on the feasibility of such a system.

   (b) What public safety technical and operational requirements cannot be met by commercial systems, from either a public safety or commercial operator point of view?

   (c) What specific rules, if any, should be mandated by the Department to make such a system viable?

47. Public safety agencies have expressed the concern over time that technology designed for commercial networks is built to meet the business-model and operational requirements of the commercial carrier based on the user market served, the vast majority of which are consumers. The standardization, development, and implementation of carrier-based broadband networks, like other commercial technology platforms, are typically driven by consumer requirements. Because public safety users would, at best, represent less than 5% of the carriers’
user base, it would be difficult, although not impossible, for a carrier to develop standards and to implement functionality that is specifically geared to such a small subset of their market.

48. Notwithstanding these concerns, Barrett believes that it can work with public safety agencies in non-metro areas across Canada to meet their needs by sharing costs to deploy and operate the networks through careful and joint planning of their systems and commercial agreements that ensure that both parties can prosper. To date, Barrett has not been approached to address public safety needs, but if the Department made this a priority in non-metro areas, Barrett would welcome this development to maximize the use of spectrum for the benefit of Canadians in a commercially beneficial manner.

5-7. **Comments are sought on the need for regional (local, provincial, etc.) dedicated broadband networks to provide access to all public safety agencies, and the institutional feasibility of implementing such a system.**

49. Barrett does not have any comments, at this time, on the need for dedicated regional broadband networks for providing access to public safety agencies.

5-8. **Is there a need for a dedicated national interoperable broadband network to provide access to all public safety agencies? The Department seeks comments on the institutional feasibility of implementing such a system.**

50. While Barrett supports the idea of interoperability among public safety agencies, it is not in a position, at this time, to comment on the need for dedicated national interoperable broadband network or the institutional feasibility of implementing such a system.

5-9. **If band plan Option 1, 2a, or 2b in Section 5.1 is chosen, which one of the three options described above should be adopted and why is this option preferred over the other options? Provide supporting rationale.**

51. Barrett believes that the Department should defer its consideration, decision and licensing of D block spectrum until the situation in the U.S. has been resolved. Once the U.S. has decided on the services for which D block spectrum will be
licensed, the Department should hold a separate consultation to consider the licensing of D block spectrum in Canada.

5-10. If commercial operators are mandated to support public safety services, what tier size should be applied in order to ensure adequate public safety coverage?

52. While not ideal, Option 2 would likely be best alternative in non-metro, low-density areas served by Barrett. Given the limited availability to Barrett of any spectrum for immediate access for deployment, any relief of high propagation, low cost deployment spectrum is welcome. While there would be provisions for priority access for public safety system, Barrett would hope that these provisions would take into consideration all remaining unused public safety designated spectrum first, before requiring Barrett to provide access, at the potential detriment of rural Canadians.

5-11. If the APT band plan (See Option 3 in Section 5.1) is adopted:
(a) Given that the APT band plan requires a 55 MHz duplexing separation, can Canadian public safety services operate their current narrowband systems in this band plan configuration? If not, what are possible alternatives to address public safety needs?
(b) Should spectrum be designated for dedicated public safety broadband systems, and how much?

You are also invited to comment on any related aspects that are not addressed above, including whether the decision should be delayed until the U.S. situation is known.

53. Barrett does not have any comments, at this time, on the band planning issues related to the operation of public safety services under the APT band plan (Option 3). Barrett also recommends that the Department delay any band planning decisions that may be affected by band planning decisions in the U.S., until after the U.S. has resolved those issues.
5-12. The Department seeks comments on whether the auction of 700 MHz commercial spectrum should be based on uniform tier sizes across all spectrum blocks, or a mixture of tier sizes.

54. Barrett recommends that the Department adopt the same approach it has in previous in the AWS auction as well as the approach adopted by FCC in its own licensing of 700 MHz spectrum. In both cases, licences were available for different geographic tier structures. Adopting different tier sizes for different tier blocks will increase bidders’ opportunity to acquire the geographic coverage of spectrum that suits their business plans. By providing choice in geographic coverage the Department is more likely to achieve an economically efficient outcome, whereby spectrum is allocated most efficiently to the bidders that will put it to the best economic use.

55. There is considerable precedent for variable tier structures within the same licensing process. Canada’s AWS auction included licences at both Tier 2 and Tier 3. The FCC’s band plan for 700 MHz spectrum included six different geographic configurations: nationwide, economic area (EA), cellular market area (CMA), regional economic area groupings (REAG) and economic area grouping (EAG). Given the number of paired and unpaired blocks available in the 700 MHz band, the Department has an opportunity to offer more than one tier structure to bidders, and therefore, Barrett respectfully recommends that the Department adopt two or more tier structures within the 700 MHz band.

5-13. Based on your answer above, what tier size(s) should be adopted?

56. With up to five paired blocks and two unpaired blocks potentially available during the 700 MHz auction, Barrett recommends that the Department take this opportunity to offer licences at Tiers 2, 3 and 4. In particular, the inclusion of between four and two blocks at Tier 4 would give rural service providers the opportunity to obtain spectrum in rural areas without having to pay urban premiums to obtain rural areas adjacent to urban areas.
5-14. **The Department seeks comments on the transition policy proposed at Section 5.4 of SMSE 018-10.**

57. Barrett supports the Department’s proposals for LPTV stations. Should there be locations where there is an urgent and justifiable need to displace LPTV frequencies in non-metro areas, Barrett recommends that the Department mediate discussions between users and TV licensees, with a view to negotiating specific dates, after August 31, 2011, on which these TV operations would either move their service(s) outside the disputed channel or would cease operation.

5-15. **The Department seeks comments regarding its proposal to permit low-power licensed devices, including wireless microphones, to operate in the band 698-764 MHz and 776-794 MHz only until March 31, 2012.**

58. Barrett agrees with the Department’s proposed March 31, 2012 date; however, it has concerns about the number of unlicensed devices that are believed to be operating in the band. To address this problem, the Department should implement a public information campaign as soon as possible to notify all users, licensed and unlicensed, about the termination date. To discourage further unauthorized uses, the Department should also issue an order prohibiting the manufacture, importation, distribution, leasing and sale of any such equipment capable of operating in the band 698-806 MHz.

6. **Changes to Canadian Table of Frequency Allocations**

6-1. **The Department seeks comments on its proposed changes to the Canadian Table of Frequency Allocations for the band 698-806 MHz.**

59. Barrett agrees with the changes to the Canadian Table of Frequency Allocations for the band 698-806 MHz, as proposed in SMSE-018-10.

6-2. **The Department seeks comments on the spectrum utilization policy proposed at Section 6 of SMSE 018-10.**

60. Barrett agrees with the spectrum utilization policy proposed at Section 6 of SMSE 018-10.
7. Promoting Competition

7-1. The Department seeks comments on the current state of competition and its anticipated evolution, including the impact on consumers in the Canadian wireless services market: (a) in general; (b) in terms of its contributions and interaction to the broader Canadian telecommunications service market; (c) in comparison with the wireless markets of other jurisdictions.

61. Over the years, various measures have been used by the Government to foster wireless competition, a diversity of service providers and offerings, coverage to all regions, such as the use of spectrum cap to prevent spectrum hoardings, spectrum set-aside to encourage new entrants, minimum roll-out requirements to encourage reasonable coverage and usage of spectrum, roaming to facilitate service coverage of new entrants’ subscribers, access to cellular spectrum to third-party cellular provider as last measure to bring cellular mobile to unserved areas, flexible rules for aggregating/dividing spectrum to foster sub-lease of un-used spectrum and others measures. These approaches have had modest and sometimes very temporary benefits in advancing competition and opening opportunity for new entrants in the wireless marketplace, stimulating competitive rivalry in pricing and service offerings among the incumbents and new entrants. The result has been to establish better coverage, facility-based providers in urban regions and high-density corridors, but these measures have had little impact in bringing a diversity of services to many Canadians and businesses residing in rural areas.

62. The failure of spectrum resources to support a diversity of wireless networks and advanced broadband is well illustrated in the 2010 CRTC Communication Monitoring Report (CMR 2010). Section 5.5 of the 2010 CMR reports that the wireless network covers approximately 20% of Canada’s geography and 99% of the population (approximately to 34 million inhabitants).1 Also, the CMR 2010 indicates that advanced wireless networks supporting smartphones and turbo sticks are available to 96% of Canadians.2

---

63. However, with wireless penetration of 70.9% in 2009, Canada was the lowest among eight leading Western economies.\textsuperscript{3} As of 2009, it also had only three major providers, while the U.S. and U.K. had six and five respectively, at the time.\textsuperscript{4} And while the number of urban-area competitors has increased in Canada, following the AWS auction, this competition is nascent and has not yet extended to all rural areas.

64. Canada’s relatively low penetration rate, lower number of competitors and corresponds with its relatively high pricing. In order to try and get around the difficulties inherent in ARPU (average revenue per user) comparisons, the Organization for Economic Cooperation and Development (OECD) has developed a usage-level basket methodology that compares the price for paid for a consistent package of services at 3 usage levels (Low, Medium and High).\textsuperscript{5} As illustrated in Exhibit 2, when adjusted for usage-levels, Canadian wireless service prices were significantly higher in the low- and medium-usage category, but were slightly lower in the high-usage category compared to the seven other countries profiled.

\textsuperscript{5} According to the OECD basket methodology a low-use basket includes 360 voice calls, 396 SMS messages and 8 MMS over one year. A medium-use basket includes 780 voice calls, 600 SMS and 8 MMS over one year. A high-use basket includes 1680 voice calls, 660 SMS and 12 MMS over one year. The monthly rates were calculated by dividing the average annual price by 12. Prices were adjusted for exchange rate and purchasing power parity.
Exhibit 2 International comparison of mobile communications costs, 2008

Also, statistics in CMR 2010 show that there was very little, if any, wholesale leasing of wireless services in Canada in 2009. Wholesale revenues were a small fraction of retail revenues. The low penetration, high prices and lack of wholesale activity signal that Canada’s mobile wireless market may not be as competitive as it might be in other industrial countries.

We believe that, broadly, the current means for licensing of national and regional spectrum licenses encourages wireless operators to acquire the same amount of spectrum across their serving areas, regardless of their business case, market needs, population density, or spectrum use. This practice encourages the acquisition and hording of unreasonable amounts of spectrum in rural areas, which is subsequently left as an unused and unproductive precious resource. The economics for a national or large regional operator makes it attractive to first deploy wireless facilities and new advanced networks in urban areas and high density corridors, and leave the rural regions as either part of their long term business plan, or never to be realized. Accordingly, rural Canadians are the last people to be served with basic and advanced wireless services, resulting in a perpetual, and sometimes widening, urban/rural digital divide. In the meantime the spectrum is not used and spectrum

---

holders are not receptive to sell some of their large spectrum holding for many reasons including a disruption of their potential, future plans or potential competition to their existing land-based broadband facilities. The challenge to ensure that sufficient broadband spectrum is readily available to entrepreneurs that wish to develop a diversity of broadband facilities and service offerings in rural areas. This will result in either service being made available for the first time, or a competitive market being realized, similar to what the Department is encouraging with recent auctions in urban markets.

67. While Canada has several licensees of mobile wireless spectrum, it really only has three wireless carriers with quasi-national presence – Rogers, Bell and TELUS. Moreover, because of the geographic structure of the Canadian market, many parts of the country, especially low-density areas, have only two or even one effective supplier of mobile wireless services. Outside of the Windsor-Quebec City corridor, only a small group of major urban areas and certain provincial border regions have three or more facilities-based providers.\(^7\) Most of Canada’s wireless service zones are covered by only two or one facilities-based provider.

7-2. **Provide views, and any supporting evidence, on the impacts of government measures adopted in the AWS auctions, including the impacts on consumers and on the state of competition. In particular, what has been the impact, if any, of such measures on industry concentration, barriers to entry or expansion of services, and the availability of new or improved service offerings and pricing plans?**

68. Barrett congratulates the Department on its design and execution of the AWS auctions. In particular, the Department’s decision to implement a new entrant set-aside, which directly led to the entry of several new players in the Canadian marketplace. These new players, including WIND Mobile, Mobilicity, Public Mobile Inc., Eastlink, Shaw Communications, and Videotron are giving Canadian consumers in urban areas additional choice.

69. That being said, the design and results of the AWS auctions have done little to address the issue of deployment of advanced mobile services or fixed broadband

services in rural and remote areas. The Department now has the opportunity, through the 700 MHz auction, to address the rural and remote issue. Furthermore, the 700 MHz auction is the perfect opportunity for the Department to implement measures and mechanisms to address the availability of wireless services in rural and remote areas in a manner that would be just as effective as the manner in which it addressed industry structure and competition in Canadian urban areas in the AWS auction.

7-3. In light of the current conditions in the Canadian wireless service market(s), is there a need for specific measures in the 700 MHz and/or 2500 MHz auction to increase or sustain competition?

70. Through the AWS auction, the Department went a long way towards reintroducing choice and competition to Canada’s wireless service markets. However, the new industry structure brought about by the AWS auction is still very much in its infancy: the Cellular incumbents remain firmly dominant within their respective geographic markets. What is more, Canadians in rural and remote areas have very limited choice. Given the advantages of 700 MHz spectrum, such as favourable economic characteristics, propagation conducive for coverage of large areas and overcoming difficult topology and the long-term timeframe for the licensing of additional mobile wireless spectrum in Canada, it is imperative that the Department implements specific measures in the auctions of both the 700 MHz and 2500 MHz bands in order to provide an environment in which the nascent competition in Canada’s wireless markets can germinate and grow. To that end, the Department will have to implement either a 700 MHz set aside or a 700 MHz spectrum aggregation limit.

71. The limited deployment of wireless broadband services in rural and remote areas of Canada is another major issue in the Canadian wireless market, which will have to be addressed through the 700 MHz auction. As such, the Department will also have to implement specific measures in the auction to promote the deployment of wireless services in rural and remote areas. Barrett describes several measures in Section 8.
7-4. The Government of Canada has undertaken a consultation on potential changes to the foreign investment restrictions that apply to the telecommunications sector. How would the adoption of any of these proposed changes impact your responses to the questions above?

72. Barrett welcomes the Government of Canada’s consultation and review of potential changes to the foreign investment restrictions. Barrett has submitted comments for this consultation process and has encouraged the federal government to implement investment rules that raise the limit on direct foreign investment from 20% to 49% and apply this limit to both telecommunications carriers and broadcasting distribution undertakings (BDUs).

73. While changes to the foreign investment restrictions could open the Canadian market and auction to more competition from a larger pool of new entrants, the changes could also strengthen incumbents’ position. Moreover, the changes could do very little to promote deployment of wireless services in rural and remote areas, as the issue is not one of lack of capital or potential market entrants. As such, any changes to the foreign investment restrictions do not alter the need for specific measures to foster competition in urban areas and deployment of wireless services in rural and remote areas.

74. Nevertheless, changes in the foreign investment restrictions can greatly affect Canadian companies’ ability to raise foreign capital to fund their acquisition of spectrum. Barrett believes that if the federal government plans to announce changes to foreign investment restrictions, it should do so at least six months prior to start of any auction, so that all Canadian companies – small and large – will have sufficient time to actually raise foreign financing in advance of the auction.
7-5. If the Department determines that there is a need for measures to promote competition, which of the above mechanisms would be most appropriate and why should this mechanism be considered over the other? Comments should also indicate if further restrictions should apply so that policy objectives are met, for example, over a given time period?

In light of your response above, and recognizing that pending decisions on the specific band plan, spectrum for public safety system, tier sizes and open access requirements could influence your response:

75. Barrett believes that there is a need for the Department to implement measures to promote competition and the deployment of broadband Internet services in rural and remote areas. These measures are discussed in more detail in Section 8. These measures should ensure that companies that have business plans focused on providing services to rural areas can acquire spectrum on an affordable basis, and not be priced out of the market because the price of rural spectrum is tied to the price of urban spectrum.

7-6. (a) If the Department were to implement spectrum aggregation limits (caps):
(i) Should the cap apply to the 700 MHz band only or be broader?
(ii) What should the size of the cap be?
(iii) Should bidders and their affiliates or associates share the cap?
(iv) How long should the cap remain in effect?

If the Department were to implement a set-aside in the 700 MHz auction:
(i) Who should be entitled to bid in the set-aside block(s) and should the entitled bidders be restricted to bidding on the set-aside only?
(ii) How much spectrum should be set-aside and which block(s) should be set-aside?
(iii) If the set-aside were to include multiple blocks of spectrum, should they be contiguous?
(iv) What restrictions should be put in place to ensure that policy objectives are met (for example, should trading of the set-aside spectrum be restricted for a given time period)?

76. Barrett believes that there is a role for either a spectrum aggregation limit or set aside in the 700 MHz band to promote competition and the deployment of broadband Internet services in rural and remote areas. At Question 8-3, Barrett provides detailed descriptions of the design of these two measures.
7-7. Are there other mechanisms that should be considered and, if so, how should these be applied?

77. Barrett believes that there are, indeed, mechanisms other than spectrum caps or set asides available to the Department for promoting competition and deployment of broadband services in rural and remote areas. At Question 8-3, Barrett provides detailed descriptions of the design of the alternative measures that will help the Department achieve this policy objective.

7-8. The Government of Canada has undertaken a consultation on potential changes to the foreign investment restrictions that apply to the telecommunications sector. How would the adoption of any of the proposed changes affect your responses to the questions above?

78. While changes to the foreign investment restrictions could open the Canadian market and auction to more competition from a larger pool of new entrants, the changes could also strengthen incumbents’ position. Moreover, the changes could do very little to promote deployment of wireless services in rural and remote areas, as the issue is not one of lack of capital or potential market entrants. As such, any changes to the foreign investment restrictions do not alter the need for access to competitive spectrum bands, for specific measures to foster competition in urban areas or deployment of wireless services in rural and remotes areas.

79. Nevertheless, changes in the foreign investment restrictions can greatly affect Canadian companies’ ability to raise foreign capital to fund their acquisition of spectrum. Barrett believes that if the federal government plans to announce changes to foreign investment restrictions, it should do so at least six months prior to start of any auction, so that all Canadian companies – small and large – will have sufficient time to actually raise foreign financing in advance of the auction.
8. Promoting Service Deployment in Rural Areas

8-1. In the above context, the Department seeks comments on challenges and specific problems affecting the deployment of broadband mobile services to low-density rural and remote areas.

80. Barrett commends the Department for recognizing the need to consult on the specific issue of promoting service deployment in rural areas. This is a welcome step by Barrett and the large number of small and medium-sized rural service providers.

81. While the Department’s initiatives to promote competition in the Canadian wireless market have led to the entry of new providers in urban markets in Canada, rural and remote regions in Canada still have only very limited availability of affordable broadband services – mobile and fixed. This lack of affordable broadband services largely stems from the lack of competition in these areas. Data and service-coverage maps published by the CRTC show that outside of major urban areas, the vast majority of rural and remote parts of Canada have only one or, at best, two facilities-based providers of mobile communications services (Exhibit 3). There is a direct correlation between the lack of competition and the lack of accessible wireless spectrum for service offerings.
82. In terms of the availability of broadband 3G and 3.5G services, the situation is even worse. Large swathes of rural and remote Canada – with the exception of Alberta and the Windsor-Quebec City corridor – have only one facilities-based provider of high-speed mobile communications services (Exhibit 4). While these operators may (although they may not) eventually deploy service it tends to severely lag availability compared to urban areas.

83. While Canada’s incumbent mobile wireless providers have introduced 3.5G HSPA (high-speed packet access) to many rural areas of Canada, it should not necessarily be viewed as an affordable broadband Internet access platform, especially when compared to primary, fixed access services in urban areas, such as DSL or cable. Within urban areas, 3.5G broadband Internet access is much more expensive than cable and ADSL alternatives.
Exhibit 4 Number of facilities-based providers of 3G and 3.5G mobile communications services


84. As an example, Rogers advertises its mobile Internet service (based on HSPA technology) at $65 per month for 5 Gigabytes (GB) of downloading. This translates in an average cost of $13 per GB. Subscribers to Rogers’ cable Internet service with 60 GB per month of downloading pay $46.99, or 78¢ per GB. In other words, the HSPA option – which may be considered Rogers’ primary wireless technology for rural broadband – costs over 16 times more than the service offered to urban customers.

85. Clearly, HSPA-based mobile Internet access is nowhere near being an affordable substitute for fixed Internet access provided in urban areas by cable and ADSL, and in rural areas by fixed wireless technologies. The fact that Rogers, for example, covers 88% of the population with its HSPA network⁸ is irrelevant, since HSPA-

⁸ Rogers, “Rogers Has You Covered from Coast to Coast,” downloaded at https://www.rogers.com/web/content/wireless_network> downloaded on February 25, 2011.
based mobile Internet is not as affordable an offering as a fixed, primary access solution.

86. While the Department has pointed to the deployment of broadband mobile services as a policy issue to address within the 700 MHz auction, the real policy issue is the general lack of affordable broadband Internet access in rural Canada, whether it be mobile, fixed, nomadic or a combination. According to the CRTC, some 16% of Canadian rural households had no access to terrestrial broadband Internet services in 2009. In some provinces and territories, the percentage was much higher. Based on Barrett’s extensive operating experience, we believe the actual proportion of rural households without access to satisfactory broadband Internet services is higher.

87. Barrett commends the Department for the Broadband Canada: Connecting Rural Canadians program. The Department’s decision to initiate the program demonstrates its continued commitment to ensuring that rural Canadians have access to broadband Internet access on par with Canadians in urban areas; and aligns to Barrett’s mission of ensuring affordable, robust broadband for all Canadians. It also underlines the continued importance of addressing the digital divide. Barrett’s position is that the only remaining issue to address is availability of spectrum in rural areas. It would be remiss if the Department did not use the 700 MHz auction, as well as the upcoming 2500MHz auction, as an opportunity to swiftly and decisively address the more general issue of broadband access in rural areas.

The source of the rural deployment problem

88. In part, the manner in which the Cellular and PCS incumbents have had to acquire and utilize their mobile spectrum in rural areas has played a key role in the lack of broadband availability in these areas.

---

89. One of the biggest obstacles to the deployment of broadband services in rural areas is the fact that the Tier 2 and Tier 3 licence structures necessarily result in a situation where wireless carriers that are focused on urban areas end up holding large swathes of spectrum in rural areas, which they do not necessarily see as economic or core to their businesses. Companies such as Rogers, Bell and TELUS have no choice but to acquire licences that cover vast tracts of rural Canada just so they can gain access to Canada’s urban markets.

90. Even when Canada’s Cellular and PCS incumbents meet the roll-out requirements in their conditions of licence, they effectively leave large areas of the country with no access to advanced wireless communications services. In effect, these urban-focused wireless carriers are sitting on spectrum in rural areas of Canada. Their business models do not permit them to economically develop these spectrum holdings and their licence conditions do not compel them to do so either.

91. In effect the acquisition cost of spectrum in many rural parts of Canada is dictated by the urban price, rather than the rural price. While the urban-focused carriers value this urban spectrum quite highly, the value placed on the rural spectrum by companies such as Barrett with rural-focused business models is much lower. The result is that much of the rural spectrum in Canada, today, is in the hands of companies that hold it only by virtue of the geographic parameters of the spectrum licence and is not in the hands of companies with business models that position them to cost-effectively deliver broadband Internet access to rural and remote households and businesses.

*The Department’s efforts to address this problem*

92. The Department has attempted to stimulate the deployment of mobile communications services. Under RP-19, the Department allows new parties in unserved or underserved areas to apply for spectrum already licensed to a Cellular incumbent. Where parties that want access to rural spectrum cannot gain this access through private transactions, the RP-19 process is available. Barrett commends the
Department for developing and instituting RP-19 as a tool for promoting the deployment of mobile communication services in rural areas.

93. Despite the Department’s efforts the availability of affordable broadband Internet access in rural areas still trails urban areas. The 700 MHz auction provides one of the most important opportunities to address the rural-broadband issue in Canada. The characteristics of 700 MHz spectrum make it ideal for the economic provision of wireless broadband services.

   a. The propagation profile of 700 MHz spectrum means that a single base station can cover a larger geographic area than in many other commercial spectrum bands. This makes it more economical to deploy in low-density areas as more homes and businesses can be served.

   b. The wide radio channels offered by the 700 MHz band means it can accommodate broadband radio technologies such as long-term evolution (LTE), which can further increase a base station’s coverage area or increase the data communications speeds and volumes within a given coverage area.

   c. The lower-frequency 700 MHz band is also superior to higher-frequency bands in terms of its ability to maintain a signal over variable terrain or through foliage. This means that within the same coverage area more homes and businesses can be served.

   d. The 700 MHz band is highly suitable for mobile communications, permitting the licensee to offer a combination of mobile, fixed and nomadic solutions, depending on customers’ usage patterns as they evolve over time.

---

10 Industry Canada, Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Services, SMSE-018-10, p. 2.

94. These characteristics of the 700 MHz band make it ideal not only for the provision of mobile communications services but also the provision broadband Internet access in rural areas. Indeed, the Department’s own consultation paper concludes as much.

...deployment of broadband radio systems in the 700 MHz band will have an important role in increasing the penetration of broadband wireless services in regions with low population density (Industry Canada, Consultation on a Policy Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum p. 2).

95. As such, it is absolutely essential for the Department to utilize the 700 MHz auction process to ensure that spectrum in rural parts of Canada makes it into the hands of companies that put the highest value on it and will use it to more quickly deploy – perhaps at the same pace as in urban areas – lower-cost broadband services to rural households and businesses and effective eliminate Canada’s digital divide.

8-2. Is there a need for further regulatory measures or changes to existing regulatory rules (e.g. RP-19) to facilitate service deployments in rural and remote areas that remain unserved and/or underserved?

96. Barrett believes that the marketplace alone will not sufficiently address the problem of a lack of availability of affordable broadband Internet access in rural areas. As such, some type of intervention is required by the Department, either during the auction or in the licence conditions for winners of auctioned spectrum.

Adoption of Tier 4 Service Areas

97. Barrett believes that tier structure ultimately has a significant bearing on the deployment of wireless services in rural and remote areas. Tiers 2 and 3 – which have been used in previous auctions of mobile spectrum – combine spectrum in urban and rural areas, and therefore prevent rural service providers from obtaining exclusively rural spectrum. Instead, wireless carriers with urban-focused businesses end up being required to obtain large swaths of rural spectrum along with their urban spectrum; irrespective as to whether they ever intend to use. Barrett believes that the issue of deployment of wireless broadband services in rural and remote
parts of Canada can be most effectively addressed through the adoption of a tier structure with a higher geographic resolution than is offered by Tiers 2 or 3.

98. While there is no reason why urban-focused wireless carriers cannot lease or sell their rural spectrum to other service providers, to date, this has not happened to any material degree in Canada. Indeed, Barrett has, since 2007, completed five individual transactions involving the transfer of spectrum licence; however, none of these transactions was with one of the Cellular/PCS/AWS licensees. As a result, urban-focused wireless carriers continue to forego the infrastructure needs of rural Canada.

99. The application of a higher resolution tier structure, such as Tier 4, within the 700 MHz band, would go a long way towards subdividing service areas in a manner that would give rural communications service providers a better opportunity to obtain 700 MHz spectrum in certain rural areas, at costs more relevant to the size and population density of the market. Barrett’s own analysis shows that under Tier 4, 125 of the 172 service areas could be classified as rural on the basis of the fact that their populations are below 100,000. These 125 rural Tier 4 service areas would attract sufficient interest from rural-focused service providers such as Barrett.

Rural Unbundling

100. While the adoption of the Tier 4 structure should attract rural service providers to 125 service areas, it still leaves large numbers of Canadians in low density areas unaccounted for in the Tier 4 service areas dominated by census metropolitan areas (CMAs) where the service area populations are 100,000 or higher.

101. Calgary is a perfect example of this shortcoming of the Tier 4 structure. The Tier 4 service area, 4-136, includes the City of Calgary and the Calgary Region; however, it also extends to as far west as Banff National Park and the British Columbia border, and as far north as Olds, Alberta (Exhibit 5). It encompasses the City of Calgary with a population density of 1,360 inhabitants per sq. km. and Mountain
View County, Alberta with a population density of 3.3 inhabitants per sq. km. For a Tier 4 service area such as 4-136 Calgary, there is a need for further sub-division using Statistics Canada’s census subdivisions (CSDs), which are the building blocks of the Tier 4 structure.

**Exhibit 5 Household Density Profile of Calgary Service Area**

The problem of rural areas contained within urban Tier 4 service areas is not unique to Calgary; the Ottawa Tier-4 service area displays a similar household density profile, whereby the vast majority of the land area is outside the higher-density rural area (Exhibit 6). It is in this exurban area where Barrett focuses its service provision.
102. As Canada’s largest broadband service provider using fixed wireless broadband services to rural Canada, Barrett has found that exurban areas with a population density of fewer than 25 households per square kilometre (sq. km) also experience the very acute broadband availability issues. The Department, itself, has previously used a threshold of 25 households per sq km. to delineate urban and rural areas for the purpose of spectrum management.

For the purposes of interpreting spectrum management documents, any contiguous collection of four or more spectrum grid cells, each having a mean household density in excess of 25 households per square kilometre, shall be considered to be an urban area. An individual spectrum grid cell, with a mean household density of 25 households per square kilometre or less, that separates two collections of cells that do meet the “urban criterion”, shall be considered to be part of that urban area (Industry Canada, Identification of Urban vs. Rural, Radiocommunication Information Circular 27, August 2, 2000, p.1).
103. In order to attract rural-focused service providers to bid on spectrum in these ex-urban areas, the Department should unbundle the rural and urban sections of Tier 4 service areas with populations above 100,000 (referred hereafter as “rural unbundling”). This rural unbundling would entail separating CSDs with household densities of less than 25 households per sq. km. from higher-density areas within a single Tier 4 service area. It would also entail merging the rural component of each unbundled service area with an adjacent rural area in Tier 4 another service area in order to form a larger contiguous rural service area. By implementing this latter step, the Department can keep the total number of service areas available for auction equal to the original total of 172 Tier 4 service areas.

104. Barrett recognizes that the adoption of the Tier 4 structure and any rural unbundling of service areas would arguably introduce more complexity into a Canadian auction, by multiplying the number of licences on offer. However, there is recent Canadian precedent using this tier, such as the Department’s auctions of 2300 MHz and 3500 MHz licences in 2004, 2005 and 2009.

105. With respect to the argument that this high propagation band would create too many coordination challenges one only need look to the latest U.S auction. The recently lucrative U.S. 700 MHz auction designated most of its blocks with tiers that are either similar in number (176 Economic Area [EA] licences) or much greater in number (734 Cellular Market Areas [CMA] licences) than Canada’s Tier 4 structure. While the Department does suggest that the FCC’s cellular market areas are more akin to Canada’s Tier 3 service areas, Barrett respectfully disagrees. An auction’s complexity is based on number of licences, and sizing should be based more on density, rather than strictly total population. Given Canada’s larger land mass it is imperative we also take into consideration density to serve.

106. Barrett believes that the adoption of a higher resolution tier structure is of vital importance to the Department’s policy goal of encouraging the deployment of advanced wireless services throughout Canada, including rural and remote areas. As such, Barrett recommends that the Department adopt the Tier 4 structure for the
same number of blocks as the U.S. used for EA and CMA licences within the 700 MHz band. That is, Barrett recommends that the Department adopt unbundled Tier 4 for at least two blocks.

107. For the remaining blocks within the 700 MHz band, Barrett would support the Department if its position was to assign larger Tier sizes of either Tier 2 or Tier 3, although the more licences available the greater chance for more licensees, and increased competition.

108. To address the Tier 4 service areas where urban areas dominate, but rural areas still account for large land area and significant population, the Department should implement some type of rural unbundling. The application of rural unbundling to Tier 4 would go a long way to subdividing spectrum blocks in a manner that would likely lead to lower costs of acquisition for rural service providers, without changing carriers’ overall valuations of urban spectrum.

109. Rural unbundling is the necessary additional step to unhitching the cost of rural spectrum from urban spectrum; however, it is not likely to be sufficient on its own. Affordable broadband Internet access will only come to rural areas where market entry is not stifled. The Department must therefore keep the barriers to entry as low as possible. In this case, the Department must keep the cost of acquiring rural 700 MHz spectrum as low as possible without affecting urban prices. Lower spectrum acquisition costs would open the opportunity for companies with rural-facing business models to acquire the spectrum and economically develop it.

110. As such, the Department will also have to implement additional measures within or after the 700 MHz auction to help facilitate entry into rural markets, in much the same as it did during the AWS auction. Barrett has developed three potential options that it believes are feasible and can be implemented by the Department so as to mitigate or remove the urban premium that rural providers often face in auctions.
8-3. Should the Department decide that measures are necessary, comments are sought on specific measures that could be adopted within the 700 MHz spectrum auction process to ensure further deployment of advanced mobile services in rural and remote areas (e.g. roll-out conditions, tier structure, etc.).

111. There are primarily three options available to the Department in terms of the measures it can implement within the 700 MHz spectrum auction process, which would promote deployment of affordable advanced mobile services, and more generally, broadband services in rural areas through market entry. Most of these measures require the Department to implement Tier 4 rural unbundling for selected blocks in the 700 MHz auction, however some do not.

112. As noted in Section 8-2, the limited deployment of wireless broadband in rural areas of Canada is due, in large part, to the fact that Cellular and PCS incumbents have no choice but to acquire rural spectrum, which is not featured in their business plans. That being the case, it is absolute necessary that the Department adopt unbundled Tier 4 service areas for at least two blocks in the 700 MHz band. Once the Department has implemented unbundled rural Tier 4s, it will provide the necessary basis for it to implement one of several specific measures to further promote competition and service deployment in rural areas.

Option #1: Rural Set Aside

113. One measure available to the Department is a rural set aside. To implement this measure, the Department would adopt the Tier 4 service area for two to four 700 MHz blocks and apply rural unbundling to these blocks. Barrett proposes that any entity (and its affiliates and associated entities) with spectrum holdings of 50 MHz or more in any single geographic service area across the Cellular, PCS, AWS and BRS bands should then be excluded from bidding on any of these unbundled Tier 4 spectrum blocks.

114. In the AWS auction, the Department implemented a new entrant set aside, whereby any entity (including affiliates and associated entities) with a share of 10% or more of revenues in the national wireless market was prohibited from bidding on three
particular blocks of AWS spectrum. This 10% threshold excluded Rogers, Bell and TELUS from bidding on the set aside spectrum in the AWS auction. An exclusion threshold of 50 MHz would achieve a similar result in the 700 MHz auction, while also ensuring that regional incumbents, which already hold large amounts of mobile wireless spectrum in rural areas, are also unable to bid on the rural set aside blocks.

115. A 50 MHz threshold would exclude Rogers, Bell, TELUS, MTS and SaskTel from bidding on the rural set aside rural 700 MHz spectrum, while still permitting AWS licensees such as Bragg, Videotron, Shaw, Globalive, and Public Mobile to bid on the rural set aside spectrum. In this regard, the threshold specifically excludes the large incumbent operators in each province from obtaining additional spectrum in rural areas where they are already sitting on large underutilized spectrum holdings. The fact that the 50 MHz applies to a single geographic service area also means that regional incumbents would not be able to bid on rural spectrum outside of their home province.

116. As of part if this rural spectrum set aside, the Department could also impose explicit rural rollout requirements on the winning bidders of the unbundled Tier 4 spectrum, without having to burden winners of urban spectrum with the requirements. This could potentially raise the value of the urban spectrum.

**Option #2: Rural Spectrum Cap in 700 MHz Band**

117. A second option available to the Department is a rural-area spectrum cap in the 700 MHz band. As with Option #1, the Department would adopt the Tier 4 service area for two to four 700 MHz blocks and apply rural unbundling to these blocks. Under the proposed cap, each entity (and its affiliates and associated entities) that acquired 12 MHz or more of 700 MHz band spectrum in one of the blocks defined on the basis of Tier 2 or Tier 3 service area structures would be prohibited from acquiring any rural spectrum in the unbundled Tier 4 blocks.
Option #3: Rural Broadband Bidding Credit

118. A third option would be for the Department to implement a bidding credit to provide an incentive for auction bidders to pursue the deployment of broadband wireless services in rural areas. This option would be analogous to an approach previously adopted by the FCC to promote the deployment of wireless services on tribal lands and the ownership of spectrum among under-represented entrepreneur groups.

119. For the rural broadband bidding credit, the Department would offer a 20% bid credit to winning bidders that made commitments to provide broadband Internet access to 50% or more of the rural population within un unbundled Tier 4 service area within three years of obtaining 700 MHz spectrum. Bidders would be allowed to meet their roll-out commitment by either (i) directly providing broadband Internet access, or (ii) providing third-party access to their rural 700 MHz spectrum. Bidders would essentially receive a 20% discount on their total bid amount, upon submission of their written commitment and final bid payment. At the end of the three year period, the winning bidder would have to repay the full value of the bidding credit with interest, if it did not meet the rollout requirement.

120. Unlike the first two options (rural set aside and spectrum cap), the broadband bidding credit would not necessarily require the Department to implement rural unbundling within the auction process, per se. The Department would merely have to define rural and urban areas before the auction and provide population and spatial data for each area before the auction. However, there would be no requirement for the Department to modify the auction licences or auction design in any manner to accommodate rural unbundling.

121. In order to limit the extent of bidding credits within the auction, the Department should offer the bidding credit only on the blocks auctioned on the basis of the Tier 4 structure. In that regard, the bidding bonus would only be available on potentially two to four blocks, and not widely available to all bidders.
Expanded RP-19

122. As a complementary measure to the three licensing options already outlined in this section, the Department could expand the scope of the existing RP-19 provides another option for the Department. Like Option #3 (rural broadband bidding credit), the Department could adopt an expanded RP-19 without having to necessarily implement rural unbundling for the auction. Although, the Department would still have to provide a clear delineation of rural and urban areas.

123. As with the existing RP-19, an expanded RP-19 (referred hereafter as “RP-19a”) would allow third parties to submit a letter of intent to the Department requesting access to unused spectrum in rural areas through licence transfer, sub-licensing, or irrevocable long-term lease. However, unlike the existing RP-19, RP-19a would require third parties to commit to providing broadband Internet access (download speeds of 1.5MBps or higher) to at least 50% of the population in the rural area within three years of receiving access to the spectrum. Also, whereas as RP-019 only applies to Cellular spectrum, RP-19a would apply to Cellular, PCS, AWS and BRS spectrum.

Exhibit 7 Key attributes of expanded RP-019a

| Geographic coverage and type of services | • RP-019a would apply to spectrum in rural areas and would consider broadband Internet access.  
• Applicable to Cellular, PCS, AWS and BRS spectrum. |
| Summary of procedure | • A third party could submit a letter of intent to obtain access to spectrum where there is at least one channel or spectrum block of available (unused) spectrum in the rural CSD. This letter of intent must also confirm that unsuccessful discussions had been held between the third party and the entity that is licensed to provide service in desired location. |
| Holdback period | • To permit spectrum licensees with sufficient time to rollout broadband Internet access to rural CSDs, the licensee would have a three-year holdback period in which they could holdback the spectrum from a |
third party.

- An RP-019a letter of intent could not be brought against a licensee until after it has held spectrum in a geographic area for at least three years. To access Cellular/PCS/licensed BRS spectrum, third parties could submit letters of intent immediately. To access spectrum held by AWS entrants, third parties would have to wait until 2014 to submit letters of intent. To access 700 MHz and auctioned 2500 MHz spectrum, third parties would have to wait until three years after those licences are issued.

<table>
<thead>
<tr>
<th>Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>- No compensation required for access to Cellular spectrum and PCS spectrum licensed by comparative review.</td>
</tr>
<tr>
<td>- For access to spectrum obtained at auction, the Department would prepare guidelines for establishing compensation, should the parties not be able to arrive at a private transaction.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Imminent-use provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Existing spectrum licensees that have not used the spectrum in question for over three years could not invoke the <em>imminent use</em> provision to prevent access to their spectrum.</td>
</tr>
</tbody>
</table>

124. In order to give existing Cellular, PCS, AWS and BRS spectrum licensees sufficient time to use their spectrum to rollout their own broadband Internet access to rural areas, the incumbent licensee would have a three-year holdback period in which it could holdback the spectrum from a third party. In other words, third parties could only submit a letter of intent on a particular block of spectrum, until after the incumbent licensee had held it for three years. An RP-19a letter of intent could not be brought against a licensee until after it has held spectrum in a geographic area for at least three years. To access Cellular/PCS/licensed BRS spectrum, third parties could submit letters of intent immediately. To access spectrum held by AWS entrants, third parties would have to wait until 2014 to submit letters of intent. To access 700 MHz and auctioned 2500 MHz spectrum, third parties would have to wait until three years after those licences are issued.
125. Following the three-year holdback period, a third party could submit a letter of intent to obtain access to spectrum where there is at least one channel or spectrum block of available (i.e., unused) spectrum in the rural area. The use or un-use of the spectrum would be established by an independent engineering professional. The letter of intent would have to also confirm that unsuccessful discussions had been held between the third party and the entity that is licensed to provide service in desired location.

126. As with RP-19, RP-19a would not require the third party to provide compensation to the licensee for access to Cellular or PCS spectrum not licensed by auction. However, for spectrum licensed by auction, the third party would have to provide financial compensation to the licensee. As such, the Department would have to, at a later date, develop guidelines for determining compensation in situations where the two parties could not arrive at a private agreement.

Summary

127. In the long run, the most effective method for promoting the deployment of affordable advanced mobile broadband services, and more generally, broadband services in rural areas is to foster greater competition through market entry. This outcome is best achieved by reducing the cost of acquiring rural spectrum and by preventing large national and regional licensees that already hold large amounts of underutilized rural spectrum from acquiring more spectrum that could stay underutilized.

128. As outlined in Section 8-3, there are several options available to the Department in terms of measures that it can implement during or after the 700 MHz auction, in order to promote the deployment of wireless broadband services in rural areas. All of these options first require the Department to implement some form of rural unbundling in accordance with an established definition of rural.

129. A rural set aside (option #1) would directly prevent large national and regional licensees from obtaining additional rural spectrum. At the same time, it would
encourage market entry by making available up to five blocks of paired spectrum and two blocks of unpaired spectrum for AWS entrants and other potential entrants to the mobile wireless market.

130. Should a rural set aside not be feasible, the Department could institute a 12 MHz rural spectrum cap for the 700 MHz band. A 12 MHz rural cap would still permit the large national and regional licensees to obtain 700 MHz spectrum in the Tier 2 or 3 blocks; however, it would prevent them from also acquiring unbundled Tier 4 rural spectrum.

**Exhibit 8 Summary of Options for Promotion of Rural Service Deployment in 700 MHz Band**

<table>
<thead>
<tr>
<th>Adoption of Tier 4 and Rural Unbundling</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The Department adopts Tier 4 service areas for two to four blocks within the 700 MHz band.</td>
</tr>
<tr>
<td>- The current Tier 4 service areas are divided into rural vs. urban service areas. Any service area with a population greater than 100,000 is defined as an “urban” and any service area with population less than 100,000 is defined as a “rural.”</td>
</tr>
<tr>
<td>- <strong>Rural unbundling:</strong> Urban service areas are subdivided into urban and rural areas based on households density rates at the census subdivision (CSD) level. Any CSD with fewer than 25 households per sq. km is defined as “rural.” Then the rural CSD is redistributed to an adjacent rural service area in another Tier 4 service area in order to keep the total number of unbundled Tier 4 licences at 172.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option #1: Rural Set Aside</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The relevant 700 MHz blocks would be unbundled into urban and rural sections, as defined above, i.e., 2-4 blocks.</td>
</tr>
<tr>
<td>- Existing licensees and affiliated companies holding more than 50 MHz of Cellular/PCS/AWS/ BRS spectrum would be excluded from bidding on the set aside spectrum blocks.</td>
</tr>
<tr>
<td>- The implication is that excluded companies would not be able to obtain any rural spectrum in the 700 MHz band.</td>
</tr>
<tr>
<td>- Rural spectrum licences come with explicit roll-out requirements that risk loss of spectrum if not met.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option #2: Rural Spectrum Cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The relevant 700 MHz blocks would be unbundled into urban and rural sections, as defined above, i.e., 2-4 blocks.</td>
</tr>
<tr>
<td>- Each entity (and its affiliates and associated entities) that acquired 12 MHz or more of 700 MHz band spectrum in one of blocks defined on the basis of Tier 2 or Tier 3 service area structures would be prohibited from acquiring any rural spectrum in the unbundled Tier 4 blocks.</td>
</tr>
<tr>
<td>- Could be implemented as part of sequential auctions or the simultaneous auction of Tier 2, 3 and 4 licences.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option #3: Rural Broadband Bidding Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The Department would offer a 20% bid credit to winning bidders that made commitments to make broadband Internet access available to 50% or more of the population within an unbundled Tier 4 rural service area within three years of obtaining 700 MHz spectrum.</td>
</tr>
<tr>
<td>- Bidders could meet their roll-out commitment by either (i) directly providing broadband Internet access, or (ii) providing third-party access to their rural 700 MHz spectrum.</td>
</tr>
<tr>
<td>- Bidders would essentially receive a 20% discount on their total bid amount, upon submission of their written commitment and final bid payment.</td>
</tr>
</tbody>
</table>
131. Should the Department determine that rural unbundling is not feasible for the auction itself, then it could consider measures outside of the auction. One measure, a rural broadband bidding credit (option #3) could be implemented without rural unbundling during the auction. The Department could limit the scope of this incentive by confining it to the unbundled Tier 4 spectrum blocks in the 700 MHz band.

132. RP-19a is a complementary measure that would also not require rural- unbundling during an auction. RP-19a would help to ensure that unused spectrum in rural areas could be used by third parties to deliver broadband Internet access. In this regard, it would directly address the Department’s policy challenge without having to alter the structure of the auction in any manner.

9. Open Access

9-1. The Department seeks comments on whether there is a need for government intervention to promote open access, by increasing access by users to handsets and/or applications.

133. While the FCC has applied specific open-access requirements to Block C of the 700 MHz spectrum, the remainder of spectrum under the FCC’s regulation is subject to its general open access requirements. On December 21, 2010, the FCC announced its policy on net neutrality. In Report and Order FCC 10-201, the FCC reaffirmed the principle of net neutrality and open access for fixed broadband Internet access services. These principles included transparency regarding network management practices, no blocking of lawful access to Internet content and applications, no unreasonable discrimination of lawful network traffic, and allowance for reasonable network management.12

134. The FCC extended most of these principles to the burgeoning area of mobile broadband Internet access. However, it noted that the operational constraints facing mobile networks entails that concept of reasonable network management may

---

present additional challenges for mobile providers. As such the FCC concluded that it would take measured steps at this time to promote open access in mobile networks. The implication of the FCC’s decision is that mobile providers in the U.S., outside of 700MHz Block C, will have greater latitude in their network management practices in relation to fixed broadband providers.

Barrett believes that the policy and regulatory environment reaffirmed by the FCC Order will continue to lead to the development of innovative Internet content and applications for consumers and businesses using both fixed and mobile access. The recent widespread adoption of Google’s Android operating system is an example of such. The development of Android and similar applications and content will occur regardless of the FCC’s special provisions for Block C. Therefore, there is no need at this time for the Department to follow FCC’s direction and apply specific open-access provisions to specific spectrum blocks in 700 MHz or any other band.

If government intervention is needed, which of the following options should be implemented?
- Option 1: Mandated open access requirements across all future commercial mobile bands
- Option 2: Mandated open access requirements for the entire commercial mobile spectrum in the 700 MHz band.
- Option 3: Mandated open access requirements for the “C Block” (746-757/776-787 MHz) as in the United States.

Barrett believes that a general policy of open access that recognizes the particular operational challenges facing mobile networks will be sufficient to promote open access to a degree that Canada, like the U.S., will continue to experience a rapid proliferation of innovative content and applications for fixed- and mobile-Internet users.

---

10. Auction Timing

10-1. The Department is considering three options to proceed with the 700 MHz and 2500 MHz bands auction processes:

Option 1: to conduct an auction for licences in the 700 MHz band first, followed by an auction for licences in the 2500 MHz band approximately one year later;

Option 2: to conduct an auction for licences in the 2500 MHz band first, followed by an auction for licences in the 700 MHz band approximately one year later;

Option 3: to conduct one combined auction for licences in both the 700 MHz and 2500 MHz bands, which would be six months later than the first auction in the case of separate auctions.

Industry Canada is seeking views on the merits or disadvantages of proceeding with each of the various options stated above. The Department seeks to understand the magnitude of interdependencies between the two bands from a business/operational perspective. Specifically, comments are sought as to the extent spectrum in these bands is interchangeable or complementary from both a technological and a strategic perspective. In addition, views on the business and financial capabilities of participating in a joint auction for both bands are sought. Comments should include the rationale for selecting one option rather than another.

137. Barrett recommends that the Department proceed with Option 3 whereby it would conduct one combined auction for licences in both the 700 MHz and 2500 MHz bands.

138. That being said, Barrett recommends that the Department consider holding sequential auctions for urban and rural service areas. Under a scenario of sequential auctions, the Department would first auction the spectrum blocks subject to Tier 2 or 3 service area structures. This auction would be followed by an auction of the spectrum blocks subject to Tier 4, including the urban and rural portions of any unbundled service areas.
Appendix A