



**Decisions on a Band Plan for Broadband Radio Service (BRS)
and Consultation on a Policy and Technical Framework to
License Spectrum in the Band 2500-2690 MHz**

Canada Gazette Notice SMSE-005-11

**Reply of Quebecor Media Inc.,
on behalf of itself and Videotron G.P.**

May 16, 2011

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I. INTRODUCTION

1. Quebecor Media Inc. (QMI), on behalf of itself and its wholly-owned subsidiary Videotron G.P. (Videotron), is pleased to provide the following reply to the submissions of interested parties in response to *Decisions on a Band Plan for Broadband Radio Service (BRS) and Consultation on a Policy and Technical Framework to License Spectrum in the Band 2500-2690 MHz*, Canada Gazette Notice No. SMSE-005-11 (the Consultation Document).
2. Our reply follows the structure of QMI's initial submission dated April 19, 2011. We begin with a review of positions regarding spectrum block size and the appropriate geographic service tier for BRS licensing. We then address the issues of how best to promote competition in the BRS band, and how best to stimulate the deployment of BRS services in rural regions.
3. We end with a comprehensive conclusion that pulls together the most salient points from QMI's submissions in the 700 MHz and 2.5 GHz auction consultations. From the start of these consultations, QMI has worked with an eye to producing a series of recommendations that recognize and build upon the complementary nature of the two spectrum bands. We believe we have achieved this objective, and are pleased to provide the Department with our roadmap for ensuring sustainable competition in the Canadian wireless sector for years to come.

II. FREQUENCY BLOCK SIZES

a) Uniform 10+10 MHz blocks

4. Like QMI, several of the parties to the current consultation (including, notably, MTS Allstream, Shaw and EastLink) have recommended to the Department that it establish uniform blocks of 10+10 MHz for the paired portion of the 2.5 GHz band.
5. Other parties¹, however, have recommended to the Department that it adopt a 5+5 MHz frequency block size instead. This position is founded primarily on the argument that the adoption of 5+5 MHz blocks would permit a larger number of carriers to acquire spectrum in the band, while at the same time allowing these carriers to assemble the acquired blocks into larger contiguous blocks, if that is their wish, consistent with their business plans.
6. In reply, QMI submits that the above parties have not demonstrated that the alleged benefits of their approach outweigh the inefficiency that would be introduced into the auction process due to such fragmentation.
7. As we mentioned in our April 19 submission, to adopt paired blocks of 10+10 MHz represents a balanced choice between the need to maximize the number of blocks available at auction and the need to encourage efficient utilization of a spectrum band that has been internationally designated for the deployment of Long Term Evolution (LTE) technology. To choose 5+5 MHz (or smaller) blocks would only result in an inefficient fragmentation of the band, the large size of which affords the Department sufficient room to manoeuvre to avoid such fragmentation.
8. MTS Allstream took a similar position to that of QMI on the matter of block size, presenting the advantages of 10+10 MHz blocks at paragraph 7 of its submission as follows:

Not only will using uniform block sizes of 10 MHz + 10 MHz allow participants to realize the greater efficiencies associated with larger block sizes, it will also allow for the possibility of new entry by multiple carriers provided that these block sizes are accompanied by MTS Allstream's proposed cap of 40 MHz in the 2500 MHz band (see Section IV below), which is needed to promote competition in the market.

9. QMI agrees with this statement. 10+10 MHz blocks (accompanied by an in-band auction cap, to which we will return later in this reply) will be sufficiently large to permit multiple carriers to provide high mobility services at 2.5 GHz while benefitting fully from the advantages offered by LTE technology. In addition, such a block size will enable new entrants to compete more equitably with the BRS incumbents who, as we have previously shown to the

¹ Bell Mobility, Rogers, SaskTel, SSI Micro, Telus, the Radio Advisory Board of Canada (RABC), Huawei and Niagara Networks.

Department, are already well established in the band. The fight would certainly be less equal if new entrants found themselves potentially limited to a block of only 5+5 MHz.

10. In summary, QMI encourages the Department to follow its initial recommendation and adopt a uniform block size of 10+10 MHz for the paired portion of the 2.5 GHz band. As far as the unpaired portion of the band is concerned, QMI maintains its recommendation that a uniform 10 MHz block size be established.

III. TIER SIZES

a) With limited exceptions, use Tier 2 service areas

11. Certain parties have expressed their support for the allocation of 2.5 GHz band licences on the basis of Tier 3 service areas². Others have indicated a preference for allocating these licences using a combination of Tier 2 and 3 service areas³.
12. QMI remarks that the support of those parties who favour Tier 3 service areas appears to be motivated, at least in part, by the fact that BRS incumbents were allocated Tier 3 licences pursuant to the Department's conversion of eligible Multipoint Distribution Service (MDS) and Multipoint Communication System (MCS) authorizations into BRS licences⁴.
13. We recognize this historical fact. As a result, we recognize that in the 2520-2540 MHz / 2640-2660 MHz and 2595-2620 MHz sub-portions of the band, the Department will have no choice but to allocate Tier 3 "filler" licences in the limited number of Tier 2 service areas that have already been partially allocated to BRS incumbents on a Tier 3 basis. The 2-05 service area *Southern Quebec* illustrates this situation well, as the BRS incumbent already holds two of the four Tier 3 licences that make up the Tier 2 territory. QMI acknowledges that the issuance of Tier 3 licences in this case is necessary in order to complete the existing BRS footprint.
14. This being said, and putting aside the limited number of such exception cases, QMI continues to believe that the efficient deployment of high mobility services depends upon the allocation of licences covering large geographic regions. And the ideal size for these regions is that which is obtained via Tier 2 licensing. As we noted in our April 19 submission, with reference to the Consultation Document⁵, the advantages of Tier 2 service areas are threefold:
 - in spectrum terms: reduction in the number of neighbouring carriers, which reduces coordination efforts between networks;
 - in geographic terms: reduction in the number of roaming agreements that need to be concluded with neighbouring carriers; and
 - in economic terms: maximization of scale economies, which are made possible by the deployment of more expansive networks.
15. As a further note, we reaffirm our categorical opposition to the issuance of Tier 4 licences in the 2.5 GHz band. Such an unprecedented fragmentation of a high mobility band would result in extremely inefficient service deployment.

² Bell Mobility, Rogers, SaskTel and EastLink.

³ Telus and Public Mobile.

⁴ Consultation Document, page 34.

⁵ QMI Submission, paragraph 23.

16. For all these reasons, QMI reiterates that the choice for the Department is clear: to auction the available spectrum in the 2.5 GHz band on the basis of Tier 2 licences, except for a limited number of cases where, for historical reasons, Tier 3 licences will need to be issued in order to fill in the current BRS footprint.

IV. PROMOTING COMPETITION

a) An in-band auction cap at 2.5 GHz: The simplest, most direct and least distortionary measure

17. The vast majority of parties to the current consultation, including MTS Allstream⁶, Telus⁷, Shaw⁸ and EastLink⁹, have recognized the necessity for the Department to put in place measures to promote competition in the 2.5 GHz band. As we mentioned in our initial submission¹⁰, of all the frequency bands in which mobile services are permitted, the 2.5 GHz band distinguishes itself by its size (190 MHz) and by the fact that it is the only band to have been designated by the International Telecommunications Union for the deployment of next generation mobile services on a global basis. Considering the importance and uniqueness of this band, QMI is of the view that the Department could do considerable harm to the emergence of sustainable competition in Canadian wireless were it to allow the 2.5 GHz band to become the exclusive preserve of one or a limited number of carriers.
18. Regulatory authorities in numerous other countries have recognized this danger and have put in place various forms of auction caps in the 2.5 GHz band in order to avert the risk of undue concentration. We are speaking here of a regulatory measure that is practically the norm at the international level. We note, for example, that the Austrian and Danish regulatory authorities both imposed a cap of 20+20 MHz as part of their 2010 frameworks for the auction of 2.5 GHz spectrum¹¹. Similarly, the Belgian regulatory authority has indicated that it will impose an identical cap for its upcoming auction of 2.5 GHz spectrum, planned for October¹².
19. As for Canada, the consensus becomes more difficult when one considers the precise structure of pro-competitive measures that should be put in place for the 2.5 GHz auction.
20. To begin with, QMI disagrees with those parties, such as EastLink¹³, who have argued in favour of a spectrum set-aside. Instead, we believe that a properly structured in-band auction cap can achieve the required balance between enabling a sufficient block size and encouraging multiple winners in the auction, all in a manner that causes the least possible distortion to market forces.

⁶ MTS Allstream Submission, paragraph 18.

⁷ Telus Submission, paragraphs 60 and 66.

⁸ Shaw Submission, paragraph 47.

⁹ EastLink Submission, paragraph 18.

¹⁰ QMI Submission, paragraph 6.

¹¹ DotEcon Ltd, *Fixed or flexible? A survey of 2.6 GHz spectrum awards*, June 2010; see: <http://www.dotecon.com/publications/dp1001.pdf>.

¹² Institut belge des services postaux et des télécommunications, *Mise aux enchères des droits d'utilisation des systèmes d'accès radioélectrique dans la bande 2500-2690 mhz - règles des enchères*, page 4; see: <http://www.auction2011.be/images/stories/documents/-auctionrules4gfr.pdf>.

¹³ EastLink Submission, paragraph 19.

21. The advantages of an in-band auction cap were discussed at length in a study by QSI Consulting Inc.¹⁴, jointly commissioned by QMI and Shaw, and annexed to QMI's reply to the *Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum* (the 700 MHz Consultation). Among the advantages identified by QSI, three apply particularly well to the reality of the 2.5 GHz band:

- *[an auction cap] is fair and equitable to all mobile wireless providers interested in acquiring spectrum (...)*¹⁵.
- *(...) the auction cap is the best way to promote sustainable competition for mobile wireless services in Canada*¹⁶.
- *(...) the primary concerns that have been raised about other policy levers, such as aggregate spectrum caps and spectrum set-asides, do not apply to the in-band auction cap*¹⁷.

22. Several parties to the current consultation also recognize the advantages of an in-band auction cap. Rogers, in particular, stated the following at paragraphs 53 and 54 of its submission:

It is worth noting however that while auction caps distort auctions, they are far less damaging than set-asides and spectrum caps. Auction caps are normally used to ensure multiple winners in an auction. Unlike a set-aside, an auction cap creates few if any gaming opportunities. An auction cap only limits how much spectrum a bidder can obtain, not which specific license blocks are available to it. Every bidder therefore can place bids upon any licence as long as they do not exceed the cap. The cap ensures there are multiple winners in the auction without the distortions and waste created by a set-aside.

An auction cap is also less damaging than a spectrum cap. A spectrum cap impedes a carrier's ability to meet the increasing demands for faster mobile broadband services. Establishing arbitrary limits is simply inconsistent with every current forecast of spectrum demand. An auction cap however is a temporary one-off measure to ensure accessibility during an auction, and may not interfere with a carrier's long term ability to meet the needs of its customers.

23. Rogers then summarized its position as follows:

¹⁴ *In-Band Auction Cap: Promoting Sustainable Competition in the Canadian Mobile Wireless Industry Through an Equitable Auction Design*, see : [http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/smse-018-10-quebecor-attachment.pdf/\\$FILE/smse-018-10-quebecor-attachment.pdf](http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/smse-018-10-quebecor-attachment.pdf/$FILE/smse-018-10-quebecor-attachment.pdf).

¹⁵ QSI Study, page 11.

¹⁶ QSI Study, page 12.

¹⁷ QSI Study, page 12.

If Industry Canada adopts a spectrum aggregation limit, the Department should apply an auction cap and not a spectrum cap. While both types of caps distort markets, the auction cap creates far less damage than a spectrum cap and for a shorter period of time.¹⁸

24. Despite the considerable support that exists for an auction cap arrangement among various parties to the current consultation, important differences of opinion nevertheless persist regarding the exact quantity and type of spectrum that should be included under such a cap.
25. We note, however, that a 40 MHz limit seems to be a popular choice among the parties that favour an in-band spectrum cap. In fact, each of MTS Allstream¹⁹, Shaw²⁰ and Telus²¹ have expressed support for a cap of this magnitude.
26. There also exists some uncertainty regarding the treatment that should be accorded Inukshuk Wireless Partnership (Inukshuk), the principal incumbent in the 2.5 GHz band and a joint venture owned in equal parts by affiliates of Bell and Rogers. It is undeniable that this uncertainty has an impact on the decisions the Department must take as it prepares the upcoming auction.
27. QMI is of the opinion that the Department could greatly simplify its policy task, while at the same time clarifying the situation for all parties interested in the 2.5 GHz band, by taking the two following actions:
 - focus on the paired portion of the band, insofar as the setting of an in-band cap is concerned; and
 - oblige Bell and Rogers to confirm their intentions regarding Inukshuk prior to the start of the auction eligibility process.
28. Our recommendation regarding the first action is based on the results of auctions held in recent years in the 2.5 GHz band in various foreign jurisdictions. These results indicate that the non-paired spectrum in this band has generally sold for considerably less than the paired spectrum. One can expect this trend to apply in Canada, with the paired frequency blocks attracting the most intense competition among auction participants. Furthermore, as shown in Annex A of the Consultation Document, the non-paired spectrum is already completely allocated in the most densely populated regions of the country. As a result, QMI believes it would be preferable for the Department to limit the auction cap to the paired portion of the 2.5 GHz band.
29. Our recommendation regarding the second action is based on the differing degree of openness displayed by Bell and Rogers in their submissions regarding the future of Inukshuk.

¹⁸ Rogers Submission, paragraph 56.

¹⁹ MTS Allstream Submission, paragraph 19.

²⁰ Shaw Submission, paragraph 47.

²¹ Telus Submission, paragraph 68.

30. Rogers, for its part, has been fairly explicit, making the following statement at paragraph 60 of its submission:

As stated above, Rogers does not anticipate that it will jointly build and operate an LTE network with Bell using 2500 MHz spectrum. Since this spectrum is shared between Rogers and Bell, their individual entitlement amounts to 50% of the total amount of 2500 MHz spectrum licensed to Inukshuk. Any cap that will apply to Rogers must only apply to Rogers' share of Inukshuk's 2500 MHz spectrum (...).

31. While not entirely clear, we read this statement as an affirmation that Rogers intends to cause Inukshuk to divest itself of any spectrum that is to be used for mobile services.
32. Bell, on the other hand, has not been forthcoming with its intentions. Logic suggests that Bell and Rogers will need to cooperate on any divestiture of spectrum to Inukshuk's partners, yet Bell has chosen to remain silent on this matter.
33. In the interest of full transparency, to clarify the roles of Bell, Rogers and Inukshuk in the upcoming auction, and also to simplify the cap structure to be put in place for the auction, QMI recommends that the Department obtain from Bell and Rogers, prior to the start of the auction eligibility process, a firm public commitment that they will not jointly build or operate any mobile wireless network using BRS spectrum, whether obtained before or during the auction. In the absence of such a commitment, Bell, Rogers and Inukshuk would have to be treated as associated entities throughout the auction process and would be jointly subject to any caps that are established.
34. Provided the Department agrees to take these two actions, identifying the optimal cap structure then becomes a simple exercise. The advantages of a 20+20 MHz auction cap applied to the paired portion of the BRS spectrum, as QMI described in our April 19 submission²², become self-evident.
35. We reiterate that our proposed in-band cap is balanced and limited in its application. It does not involve the set-aside of spectrum blocks and does not seek to impose any cap on the aggregate amount of spectrum that any one carrier may wish to hold outside of the 2.5 GHz band. Our proposal is also an equitable measure, in two respects. First, it serves to avoid a situation where incumbent carriers succeed in blocking new entrant access to the paired portion of the BRS band. Second, it nevertheless permits each of Bell and Rogers (once the spectrum holdings of Inukshuk are split equally between them) to bid on an additional 10+10 MHz in each of the service areas that form part of Regions A and C, as described in Annex A to the Consultation Document. As for Region B, it is a fact that neither Bell nor Rogers would be able to purchase any additional spectrum in these service areas, however this constraint flows directly from the fact that both companies would already hold a substantial

²² QMI Submission, paragraphs 39 to 42.

20+20 MHz paired block in Region B, enough to provision an extremely high capacity LTE network.

36. For all the reasons we have just seen, QMI remains convinced that our proposal to introduce an in-band auction cap of 20+20 MHz in the paired portion of the 2.5 GHz band is a simple, direct measure that causes the least possible distortion to market forces, while permitting an equitable distribution of 2.5 GHz spectrum among incumbent and new entrant carriers.

V. PROMOTING SERVICE DEPLOYMENT IN RURAL AREAS

a) Let demand density drive BRS deployment in rural areas

37. The majority of the parties to the current consultation expressed the view that the propagation differences between the 700 MHz and 2.5 GHz spectrum bands are such the establishment of strict deployment obligations would be more appropriate at 700 MHz than at 2.5 GHz.
38. QMI recognizes this reality, which formed the basis for the position we adopted in the 700 MHz Consultation, namely that the best way to protect the interests of rural Canadians is to ensure an equitable distribution of low frequency spectrum.
39. As we stated at paragraph 110 of our February 28 submission to this other consultation:

QMI submits that the most effective way to ensure rural Canadians derive full benefit from the nation's spectrum resources is to encourage more operators to expand their networks further into rural areas. And the surest way to ensure such an expansion occurs is to provide more operators with access to superior propagation spectrum below 1 GHz.

40. In fact, to the extent we can assume an equitable distribution of low and high frequency spectrum among carriers, the most likely scenario to emerge is one in which these carriers favour the use of low frequency bands for the initial deployment of new high mobility services in rural and remote regions, then top up these deployments through the targeted use of higher frequencies wherever justified by an increase in local demand density.
41. The successive deployment of low and high frequencies is explained by the complementary nature of the 700 MHz and 2.5 GHz bands. In fact, this complementarity is widely acknowledged. As we noted to the Department at paragraph 76 of our reply to the 700 MHz Consultation:

For example, Rogers recognizes that "not all spectrum is interchangeable" and asserts that "[t]he evidence around the world clearly demonstrates that mobile broadband coverage outside large urban areas will best be achieved, from a practical and economic perspective, using low band spectrum". These statements gain support from Rogers' consultant Lemay-Yates Associates Inc. (Lemay-Yates) who states that "AWS and BRS spectrum bands by themselves, i.e. without the support of broad geographic deployment in the 700 MHz spectrum band, are not well-suited to fulfill the objectives of ensuring the availability of post-3G mobile broadband services everywhere in Canada" (original text includes footnotes).

42. Telus, for its part, also makes reference to the complementarity of bands and to the successive deployment of low and high frequencies, at paragraph 93 of its submission when it states:

The build out of BRS spectrum in rural and remote areas will not keep pace with the build out of the 700 MHz band in rural and remote areas. However, given that there is so little 700 MHz spectrum available, BRS spectrum will necessarily be used for capacity in significant portions of rural and remote areas, where viable, based on population density and other factors. BRS spectrum should not, however, be expected to be the primary driver of rural and remote coverage, because of its inferior propagation characteristics (...).

43. The essential point here is to take advantage, at the start, of the superior propagation characteristics of the 700 MHz band in order to deploy high mobility services as extensively as possible to rural and remote regions. This explains the importance of attaching strict deployment conditions to licences issued in the 700 MHz band, as QMI recommended to the Department in the 700 MHz Consultation²³.
44. Once this lower frequency coverage layer has been deployed, it becomes perfectly logical to rely on market forces to drive the deployment of a higher frequency coverage layer based on carriers' own business plans, subscriber density and overall success in the marketplace. Bell, for one, shares this perspective when it states at paragraph 76 of its submission that "[m]arket forces should determine the implementation of 2500 MHz spectrum in rural areas".
45. This being said, if the Department feels that some guidance should be provided to carriers in their deployment activities in the 2.5 GHz band, QMI remains of the view that deployment targets such as those set for the AWS auction would be sufficient. We note that Rogers and Telus hold similar opinions in this regard²⁴.
46. To summarize, in recognition of the propagation characteristics of the 2.5 GHz band, QMI encourages the Department to allow market forces and demand density to drive deployment of these higher frequencies in rural and remote regions. If further guidance is deemed necessary, the Department can opt to establish deployment targets along the lines of those set for the AWS band.

²³ QMI Submission, February 28, 2011, paragraphs 113 to 118.

²⁴ Rogers Submission, paragraph 81; Telus Submission, paragraph 94.

VI. CONCLUSION

47. We have now reached the final phase of a public consultation cycle in which the Department has called on players in the Canadian wireless industry to express their opinions regarding the policy and technical framework for the 700 MHz and 2.5 GHz frequency bands, with a view to auctioning these bands as early as next year.

48. In reality, these two consultations are one, as the Department itself has recognized at page 1 of the 2.5 GHz Consultation Document:

Developments in the 2500 MHz band and the 700 MHz band have shown that both bands are suitable for the deployment of advanced mobile/broadband networks/services to meet growing user demands. The Department notes that a number of policy-related issues could benefit from concurrent consideration of the development of these two bands, as well as the development of the wireless services market as a whole.

49. It is with this perspective in mind that QMI has submitted over the past several months a series of proposals which, when combined, form a coherent spectrum policy aimed at ensuring an equitable distribution of high and low frequency spectrum among Canadian wireless carriers.

50. Ensuring an equitable distribution of spectrum becomes particularly important when one considers the complementary nature of the 700 MHz and 2.5 GHz spectrum bands. As the British regulatory authority Ofcom recently noted regarding the deployment of LTE technology in various bands:

Given the different technical characteristics and availability of spectrum at different frequencies it is likely that future networks will use a range of frequencies to provide services. (...). For example, sub-1GHz spectrum may be used to provide services in sparsely populated rural areas as it is more cost effective. On the other hand, in urban areas where traffic is likely to be heavy, services may be deployed in higher frequency bands, where more spectrum is available to provide the necessary network capacity.²⁵

51. The cornerstone of our set of policy proposals is the establishment of a distinct in-band auction cap for each of the bands to be allocated: one cap at 700 MHz and another at 2.5 GHz.

52. Given the distinct propagation characteristics of the two spectrum bands, as well as the more limited quantity of spectrum available at 700 MHz, the recommended design for the two auction caps is, by necessity, slightly different:

²⁵ Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues, Annex 6, page 34; see: <http://stakeholders.ofcom.org.uk/consultations/combined-award/>.

Recommended auction cap design for the 700 MHz band

- Any carrier that already holds 800 MHz cellular spectrum in a given Tier 2 service area should be limited to acquiring one 5+5 MHz block in the 700 MHz band in that service area.
- Any carrier that does not already hold 800 MHz cellular spectrum in a given Tier 2 service area should be limited to acquiring two 5+5 MHz blocks in the 700 MHz band in that service area.
- Licenses should be accompanied by strict roll-out conditions in order to ensure the deployment of high mobility wireless services in rural and remote areas.

Recommended auction cap design for the 2.5 GHz band

- Any carrier, incumbent or not, should be limited to acquiring a maximum of 20+20 MHz of paired spectrum in the 2.5 GHz band in any given service area, including spectrum held prior to the start of the auction.
- Deployment in rural and remote regions should be driven by market forces, that is to say by the density of demand experienced by the carriers.

53. QMI's auction cap proposals distinguish themselves by being simple, direct and equitable. Of all the measures parties have put forward to the Department to promote wireless competition, QMI's proposals are particularly advantageous. These advantages include:

- No one is excluded from acquiring spectrum in either band.
- No one is guaranteed of acquiring spectrum in either band.
- No requirement to establish a definition of "new entrant".
- No need to make an aggregate determination of "how much spectrum is enough" either above or below 1 GHz, as the in-band caps would not apply to auctions or secondary market transactions in other bands.
- No need to be concerned about the complexity of revising either cap in the future, as the caps would remain in place only as long as is pre-determined by the Department.

54. For all of these reasons, QMI is profoundly convinced that it has delivered to the Department a complete roadmap that will allow it build on past spectrum policy successes while ensuring sustainable, robust competition among wireless carriers going forward, all to the great benefit of urban and rural Canadians.

All of which is respectfully submitted.