



**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

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

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EXECUTIVE SUMMARY

The Government's 2008 policy to encourage new entry into the Canadian wireless sector has had an immensely positive effect, both directly through the launch of new entrant networks, and indirectly through greater investment and responsiveness on the part of incumbent operators. The once dormant Canadian wireless industry is alive again, and Canadian consumers are the principal beneficiaries.

The challenge now is to consolidate these gains. The key, once again, is spectrum policy.

Over the years, up to and including the 2008 AWS spectrum auction, Canada's three national wireless incumbents have benefited from extraordinarily favourable access to the country's spectrum resources.

The Canadian wireless incumbents have extremely generous endowments of spectrum relative to their domestic and international peers, and are not even using all the spectrum they already hold. Furthermore, they continue to have both the means and the incentive to acquire all new spectrum resources made available at auction.

Sustainable competition requires that the Government employ the policy levers at its disposal to ensure an equitable allocation of spectrum, in regard to aggregate holdings, as well as in regard to the lower frequency holdings that enable superior network coverage.

The specific proposal put forward by QMI for the 700 MHz band would work as follows:

- We recommend adoption in Canada of the US 700 MHz band plan, with the splitting of the upper C block into two smaller blocks.
- This results in the auction of five spectrum blocks of 5+5 MHz or 6+6 MHz across Canada (with the possible addition of a sixth block depending upon the ultimate allocation of the upper D block).
- Given that the useable portion of a 6+6 MHz block in an LTE deployment context is only 5+5 MHz, we recommend that all five (or potentially six) spectrum blocks be treated as equivalent for the purpose of applying spectrum caps.
- Any carrier that already holds 800 MHz cellular spectrum in a given Tier 2 service area should be limited to acquiring one 700 MHz block 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 700 MHz blocks in that service area.
- Complexities related to the mismatch of Tier 2 service boundaries and traditional cellular licence boundaries in certain parts of Canada can be resolved in a straightforward manner, for example through the adoption of a simple rule whereby a cellular licensee is deemed not to hold any spectrum in the 800 MHz band in those Tier 2 service areas where its cellular licence area

covers less than one-half of the population of the overlapping Tier 2 service area.

QMI's proposal has the advantage of not impeding anyone from acquiring spectrum in the 700 MHz band. In fact, the cellular incumbents, if they succeed in securing a block, will have fully 35 MHz of spectrum below 1 GHz, nearly twice the 20 MHz to which new entrants will be limited. Our proposal is fair to everyone.

QMI's proposal is also fully in step with international spectrum policy trends.

Rural Canadians will benefit the most from QMI's proposal, as equitable access to high propagation spectrum below 1 GHz will encourage more operators to expand their coverage into rural and remote areas. As evidence of its commitment in this regard, QMI encourages the Government to impose stringent deployment obligations on the purchasers of 700 MHz spectrum.

On the matter of open access requirements, QMI submits that marketplace and regulatory developments have rendered these unnecessary. In the past several years, the wireless device and applications markets have been radically transformed, to the distinct advantage of Canadian consumers.

Finally, on the matter of auction timing, QMI continues to support a simultaneous auction of available spectrum in the 700 MHz and 2.5 GHz bands. This would provide all mobile carriers with the ability to assess their spectrum holdings in an integrated and strategic manner and would yield a higher level of certainty which in turn is a key element to stimulate long term investment.

I. INTRODUCTION AND OVERVIEW

1. Quebecor Media Inc. (QMI), on behalf of itself and its wholly-owned subsidiary Videotron G.P. (Videotron), is pleased to provide the following submission in response to *Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum*, Canada Gazette Notice No. SMSE-018-10 (the Consultation Document).
2. Videotron was the largest new entrant participant in the Government's 2008 auction of Advanced Wireless Service (AWS) spectrum licences, investing a total of \$555 million to acquire seventeen licences covering the entirety of the province of Quebec and parts of Eastern and Southern Ontario.
3. Since acquiring its AWS licences, Videotron has invested approximately \$500 million in additional resources to build and launch a state-of-the-art High Speed Packet Access Plus (HSPA+) network that already covers most of the major population centres and transportation corridors in Quebec. New coverage territories are being added on a monthly basis.
4. Videotron offers its customers an impressive array of smart phones and other sophisticated wireless devices, at highly competitive monthly rates. The company has also leveraged its numerous content affiliations to inject some much needed excitement into the once moribund Quebec wireless marketplace. Consumers have reacted with enthusiasm.
5. In short, Videotron is living proof that the Government got it right in 2008. By choosing to bet on competition rather than incumbency, the Government has created an environment where all wireless carriers are forced to invest and to innovate to remain relevant.
6. Other new entrants, both launched and soon-to-be-launched, are causing the same pro-competitive forces to take hold across Canada.
7. The challenge now is to consolidate these gains. The key, once again, is spectrum policy.
8. In the remainder of this submission, QMI will make the case that the 700 MHz auction provides a unique opportunity for the Government to create the conditions for sustainable competition in wireless. We will argue that the physical characteristics of spectrum below 1 GHz are materially different from those of spectrum above 1 GHz, and that the forces of competition are well-served when all carriers have a reasonable chance to acquire spectrum in both ranges. We will also argue that the incumbent wireless carriers already benefit from abundant spectral holdings relative to their domestic and international peers.
9. QMI does not seek guaranteed access to the 700 MHz resource. We will compete with others to acquire it. We do, however, seek the establishment of

reasonable constraints on the ability of incumbent carriers to exercise absolute control over spectral resources below 1 GHz.

10. As was the case with the 2008 AWS auction, there can be no doubt that the incumbent carriers, if left unchecked, would have both the means and the incentive to capture the entirety of the 700 MHz spectrum at auction. This would be to the detriment of all Canadians.
11. The structure of our submission follows largely that of the Consultation Document. We begin by addressing technical issues related to the 700 MHz band plan, including the desired size of blocks in both the frequency and the geographic dimensions, as well as the potential allocation of bandwidth to public safety organizations. We then proceed to discuss the rationale for limiting the amount of 700 MHz spectrum individual carriers can acquire in this auction. We conclude with comments on the best means for promoting service deployment in rural areas, the issue of open access, and auction timing.
12. For reference purposes, and to address specific matters of consultation not discussed in the body of our submission, we include at Annex 1 a complete list of the Department's non-confidential consultation questions with our responses. Finally, in accordance with the Department's instructions, we include at Annex 2 comprehensive responses to all of the consultation questions for which confidential information is being provided.

II. BAND PLAN ISSUES AND CONSIDERATIONS

a) Harmonize with the US band plan

13. Of the four band plan options put forward by the Department in the Consultation Document, QMI's definite preference is for the approach which harmonizes with the band plan in place in the United States, as this approach offers definite commercial advantages.
14. Selection of this option by the Department would permit those Canadian operators who succeed in purchasing spectrum in the upcoming auction to benefit from the technology ecosystem currently being developed by the principal American licence holders, namely Verizon in the upper C block and lower A blocks, and AT&T in the lower B and C blocks. The result would be substantial economies of scale for the Canadian operators, as well as better availability of end user devices and network equipment.
15. This selection would also bring with it optimal frequency coordination along the Canadian-American border, and would facilitate roaming between operators in the two countries.
16. As a final comment, we note that harmonization of the Canadian and American band plans at 700 MHz would be consistent with a series of previous decisions taken by the Department in similar circumstances, notably with respect to the cellular, Personal Communications Service (PCS) and AWS band plans.

b) Split the upper C block

17. There is nevertheless one modification the Department should make to the American band plan.
18. Specifically, the Department should split the paired 11+11 MHz block at 746-757 MHz / 776-787 MHz in the upper portion of the band (the upper C block) into two paired blocks of 5+5 MHz and 6+6 MHz respectively.
19. The advantage of such a split would be to increase the number of Canadian operators who could potentially acquire spectrum in the upcoming auction, as the number of paired licence blocks would increase from four to five. This increase of one block, while admittedly modest, would nevertheless be significant, as the overall quantity of spectrum available in the 700 MHz band is quite limited.
20. QMI's suggested modification is minor in scope and would have no impact on the ability of Canadian operators to benefit from the ecosystem currently being developed in the United States in this band, as it would have no impact whatsoever on the fundamental structure of the American band plan and would not alter the upper and lower boundaries of the upper C block. This means that

devices commercialized for the upper C block in the United States could be used without problem by those Canadian operators who succeed in acquiring either of the sub-blocks created by the proposed split.

21. Another substantial advantage that would emerge from the splitting of the upper C block would be the maximization of the number of Canadian licence holders who could potentially enter into roaming agreements with the two principal American licence holders in the 700 MHz band – Verizon and AT&T.
22. In effect, because the splitting of the upper C block would increase from four to five the number of paired licences to be auctioned, the number of “roaming opportunities” would likewise increase.

c) Wait and see for public safety

23. One of the issues raised for consideration in the Consultation Document relates to the type of usage that should be favoured in the paired block 758-768 MHz / 788-798 MHz. The fundamental question posed is whether this usage should be of a public safety or commercial nature.
24. This paired block includes the range that is known in the United States as the upper D block, which is situated at 758-763 MHz / 788-793 MHz.
25. The upper D block was auctioned in the United States in 2008, accompanied by a condition that required the operator acquiring the block to share its usage with public safety organizations operating in the immediately adjacent block, which is specifically reserved for public safety systems.
26. The imposition of such a condition had an evident chilling effect on American operators interested in the block, as the 2008 bidding did not even reach the Federal Communications Commission’s (FCC’s) pre-established reserve price, with the result that no licence has yet been issued for the block.
27. A re-auction of the upper D block remains uncertain as the FCC is still evaluating whether it should ultimately be allocated to public safety organizations or commercial operators.
28. Given the uncertain status of the upper D block in the United States, the Department would be ill advised to proceed too quickly into a decision regarding the type of usage that should be favoured in the 758-768 MHz / 788-798 MHz block and the subsequent issuance of a licence. It would be far preferable for the Department to be patient and wait until the debate about the status of the upper D block in the United States has been resolved. Once that occurs, the Department could take note of whatever decision has been made by the FCC, and use it to better inform a Canadian decision on the best approach to take with respect to the band.

d) Tier 2 service areas for optimal efficiency

29. One of the essential elements that must be considered by the Department in developing an appropriate technical plan for the 700 MHz band is the selection of the service area tier size that will facilitate the optimal utilization of the spectrum to be auctioned. The Department has four possible tier sizes to choose from.
30. We begin by noting that the commercial services that will be deployed in the 700 MHz band will be 4th generation mobile services.
31. QMI is in full agreement with the Department's statement at page 29 of the Consultation Document that "In general, Tier 1 and Tier 2 licences have typically been used for mobile services, whereas Tier 3 and 4 have typically been used for licensing fixed services."
32. Tier 3 and 4 licences afford a necessary flexibility to fixed wireless network operators who typically seek to offer their services in more limited geographic sectors and whose customers do not really require mobility in order to satisfy their core connectivity needs.
33. However, to use Tier 3 or 4 licences for the allocation of the 700 MHz band would impede, or at least seriously endanger, the ability of mobile service operators to assemble the contiguous frequency blocks they will need to be able to offer an acceptable level of service to their customers spread across extended geographic areas.
34. Clearly, the use of Tier 3 or 4 service areas is not appropriate for the 700 MHz band.
35. The choice of a Tier 1 service area (encompassing all of Canada) does not represent a viable option for the Department either.
36. In fact, such a choice would have the effect of excluding regional wireless operators from the auction process, this despite the important role these operators play in the Canadian wireless sector, especially since the AWS spectrum auction. We view it as inconceivable that the Department would want to block their growth potential by issuing Tier 1 licences.
37. It is important to note in this regard that the last time the Department issued mobile telecommunications spectrum licences on a Tier 1 basis was back in 1995, with the issuance of PCS licences to Clearnet, Microcell, Rogers and Mobility Canada.
38. Since the turn of the year 2000, the common practice of the Department regarding mobile spectrum allocation has been to issue, in most cases, licences based on Tier 2 service areas.
39. We strongly believe that the right choice for the Department for the 700 MHz band is to opt for Tier 2 licences.

40. Selection of this service area tier would permit optimal utilization, from a geographic standpoint, of the superior propagation characteristics of the band. QMI agrees fully with the Department's statement at page 29 of the Consultation Document that "The propagation characteristics of the 700 MHz band are most conducive to high mobility applications due to low over-the-air propagation losses ...".
41. Tier 2 licences, by avoiding geographic fragmentation, also permit increased spectral capacity, and QMI shares the Department's perspective when it affirms at page 29 of the Consultation Document that "Licensing this spectrum based on larger geographic areas would result in fewer neighbouring service providers, translating into less coordination between licensees and more effective use of radio spectrum."
42. In light of all of the above, the upcoming auction of commercial spectrum in the 700 MHz band should be based on a single service area tier, and this tier should be the second.

III. PROMOTING COMPETITION

a) The Government's policy to encourage new entry is having its desired effect

43. On November 28, 2007, the Department issued *Policy Framework for the Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range* (the AWS Policy Framework)¹, the intent of which was nothing less than to set a new course for the Canadian wireless industry.

44. In his press release accompanying the policy framework, the Honourable Jim Prentice, then Minister of Industry, expressed the full scope of the Government's ambition:

We are looking for greater competition in the market and further innovation in the industry. At the end of the day, our goals are lower prices, better service and more choice for consumers and business. That is why we are setting aside a portion of radio spectrum exclusively for new entrants into the wireless market.

Having considered all of the comments received during our public consultation, we agree with the TPRP [Telecommunications Policy Review Panel] that measures should be taken to enhance competition in this market. Spectrum is a scarce and valuable resource that is used by all Canadians. It is up to the government to decide how it is to be deployed, to best meet the growing and diverse needs of Canadians.

45. In other words, the Government saw an opportunity to enhance Canadians' economic and social well-being, and it used the tools at its disposal to make this happen.

46. Predictably, the incumbent wireless carriers cried that the policy framework amounted to a subsidization of wireless new entrants. These new entrants, the incumbents argued, would acquire spectrum on the cheap and distort the market with anticompetitive service offerings.

47. These allegations, of course, were firmly laid to rest by the final prices paid in the 2008 AWS spectrum auction, for set-aside and non-set-aside spectrum. In the end, the average winning bid was \$1.26/MHz/pop for set-aside spectrum and \$1.41/MHz/pop for non-set-aside spectrum, far exceeding expectations and well in excess of the average winning bid of US\$0.54/MHz/pop recorded in the 2006 US AWS auction². In the Canadian AWS auction, nobody got a free ride.

¹ Issued under Canada Gazette Notice No. DGTP-007-07.

² US FCC Auction #66.

48. Even more important for the interest of Canadians is what has happened since the AWS auction. Wireless competition has exploded, in both its authentic and more dubious forms.
49. First, in the two and a half years that have elapsed since the auction concluded, no fewer than four new entrant networks have already been launched into service: Wind Mobile in Greater Toronto, Vancouver, Ottawa-Gatineau, Calgary and Edmonton; Mobilicity in these same regions less Calgary; Public Mobile in Greater Montreal and the Golden Horseshoe region of Ontario; and Videotron across most of Quebec. In total, up to half of Canadians already have access to new facilities-based alternatives to the wireless incumbents
50. Second, the incumbents have been forced to ramp up their own investment efforts. For example, it is certainly no coincidence that a mere three months after the auction's close, Bell Mobility and Telus Mobility announced a joint effort to build their own HSPA 3G network, which was launched ahead of schedule in late 2009.
51. For good measure, all three incumbents have also launched new or improved "flanker brands", permitting them to compete more aggressively against the new entrants (without cannibalizing the more inert portions of their customer bases).
52. Among the most prominent consumer-friendly innovations that have appeared from this re-emergence of competitive vigour in the Canadian wireless industry are: gradual elimination of the widely despised system access fees and internally-directed 9-1-1 fees; fairer and more rational contract termination / handset subsidy reimbursement provisions; greater flexibility with regard to handset unlocking, larger (or in some cases unlimited) voice, message and data buckets; lower data usage fees; and more innovative and interesting multimedia content offerings.
53. In short, the once dormant Canadian wireless industry is alive again. The Government's conscious decision to employ the spectrum policy levers granted to it by legislation has incited greater responsiveness in the Canadian wireless industry, to the benefit of all Canadians.
54. At issue now is whether the Government will continue to employ its policy levers to build on and consolidate its success.
55. A proper analysis begins with an assessment of who currently owns the spectrum resource and what they are doing with it.

b) The wireless incumbents are spectrum rich by any standard

56. Over the years, up to and even including the 2008 AWS spectrum auction, Canada's three national wireless incumbents have benefited from extraordinarily favourable access to the country's spectrum resources.

57. The incumbents' accumulation of spectrum began in 1982-1985 with a comparative selection process (otherwise known as a "beauty contest") that awarded the first 40 MHz of spectrum in the 800 MHz cellular band in equal parts to Rogers Wireless and the Mobility Canada consortium of regional telephone company affiliates³. These holdings were topped up in 1989 when each party was awarded an additional 5 MHz, completing the allocation of the cellular band.
58. In 1995, through another comparative selection process, the Government opened up the 1.9 GHz PCS band. The largest licence blocks, 30 MHz each, were awarded to two new entrant carriers, Clearnet and Microcell. The incumbent carriers, however, did not go away empty handed. Each was awarded a smaller 10 MHz licence block to add to its cellular holdings. More importantly, within nine years, each of the new entrants was acquired by an incumbent carrier – Clearnet by Telus Mobility and Microcell by Rogers Wireless. These licence transfers were approved by Industry Canada with no incremental service obligations, although Telus Mobility was required to return 20 MHz of spectrum in certain geographic areas due to application of the mobile spectrum cap that was in effect at the time of its acquisition.
59. By 2001, the Government had made a policy shift to move away from beauty contests toward auctions as a means for allocating new spectrum resources. The first mobile spectrum auction was held in 2001. The three incumbent wireless carriers were eligible to bid on the entirety of the 40 MHz of additional PCS spectrum on offer. They succeeded in purchasing virtually all of it.
60. A second mobile spectrum auction was held in 2008, in the 2 GHz AWS band. This time, the Government chose to set-aside 40 MHz of spectrum for new entrants, while permitting the incumbent service providers to bid on 65 of the 105 MHz on offer. Once again, the incumbent carriers succeeded in acquiring virtually all the spectrum on which they were eligible to bid.
61. In parallel with the preceding developments in the mobile services space, throughout the late 1990s and early 2000s, the Government allocated by beauty contest and similar methods a total of up to 190 MHz across Canada in the 2.5 GHz Multipoint Communication System (MCS) and Multipoint Distribution Service (MDS) bands.
62. MCS and MDS are fixed or limited portability services that have never realized the full potential initially attributed to them. Through a series of acquisitions and licence transfers, the vast majority of the MCS and MDS spectrum holdings, in terms of MHz and population covered, now reside in Inukshuk Wireless Partnership (Inukshuk), a joint venture owned in equal parts by affiliates of Bell Mobility and Rogers Wireless.
63. By virtue of a sequence of policy decisions culminating in Gazette Notice No. SMSE-005-11, *Decisions on a Band Plan for Broadband Radio Service (BRS) and Consultation on a Policy and Technical Framework to License Spectrum in*

³ The Mobility Canada consortium has since ceased to exist, having split into Bell Mobility, Telus Mobility, and a number of smaller regional carriers.

the Band 2500-2690 MHz, released on February 12, 2011, the MCS and MDS bands are in the process of being converted to a new mobile BRS band. Approximately one-third of the BRS holdings of Inukshuk and the other former MCS/MDS licensees will be returned to the Government for auction, with the remaining two-thirds being retained for use as the existing licence holders see fit.

64. Concretely, this means that each of Bell Mobility and Rogers Wireless, by virtue of their shared ownership of Inukshuk, now hold an additional 40 MHz of valuable paired mobile wireless spectrum in the 2.5 GHz BRS band in the most populous parts of the country.
65. All of the preceding allocations, acquisitions and transfers have occurred in a context where Canada has maintained restrictions on foreign ownership of telecommunications common carriers, limiting the number of potential bidders for raw spectrum as well as the potential acquirers of telecommunications operators holding spectrum. The result has been an intense concentration of mobile spectrum resources into few hands, with few comparables in the developed world.
66. The tables on the following page summarize the existing mobile spectrum holdings of the three national wireless incumbents for several major population centres across Canada and compare these holdings to those of the AWS new entrants. The divergence is striking. Incumbent holdings range from a low of 50 MHz (Telus Mobility in Toronto, excluding ESMR spectrum) to a high of 145 MHz (Rogers in most locations). In contrast, new entrant holdings are constrained to a narrow range of 10 to 40 MHz per major centre.

Table 1
Current Incumbent Spectrum Holdings, by Major City
Paired Mobile Spectrum

City	Rogers					Bell					Telus**				
	Cellular	PCS	AWS	BRS*	Total	Cellular	PCS	AWS	BRS*	Total	Cellular	PCS	AWS	BRS	Total
Toronto	25	50	20	40	135	25	30	20	40	115	0	40	10	0	50
Montreal	25	60	20	40	145	25	20	10	40	95	0	40	20	0	60
Vancouver	25	60	20	40	145	0	40	10	40	90	25	20	20	0	65
Ottawa-Gatineau	25	60	20	40	145	25	20	10	40	95	0	40	20	0	60
Calgary	25	60	20	20	125	0	40	10	20	70	25	20	20	0	65
Edmonton	25	60	20	20	125	0	40	10	20	70	25	20	20	0	65

* Assumes Inukshuk's holdings, after one-third return, are split equally between Rogers and Bell.

** Does not include Telus' ESMR holdings below 1 GHz.

Source: Industry Canada licensee tables.

Table 2
Comparison of Incumbent and New Entrant Spectrum Holdings, by Major City
Paired Mobile Spectrum

City	Rogers*	Bell*	Telus**	Videotron	Wind	Mobilicity	Shaw	Eastlink	Public Mobile	Others	Total
Toronto	135	115	50	10	20	10	0	0	10	0	350
Montreal	145	95	60	40	0	0	0	0	10	0	350
Vancouver	145	90	65	0	10	10	20	0	0	10	350
Ottawa-Gatineau	145	95	60	20	10	10	0	0	10	0	350
Calgary	125	70	65	0	10	10	20	0	0	10	310
Edmonton	125	70	65	0	10	10	20	0	0	10	310

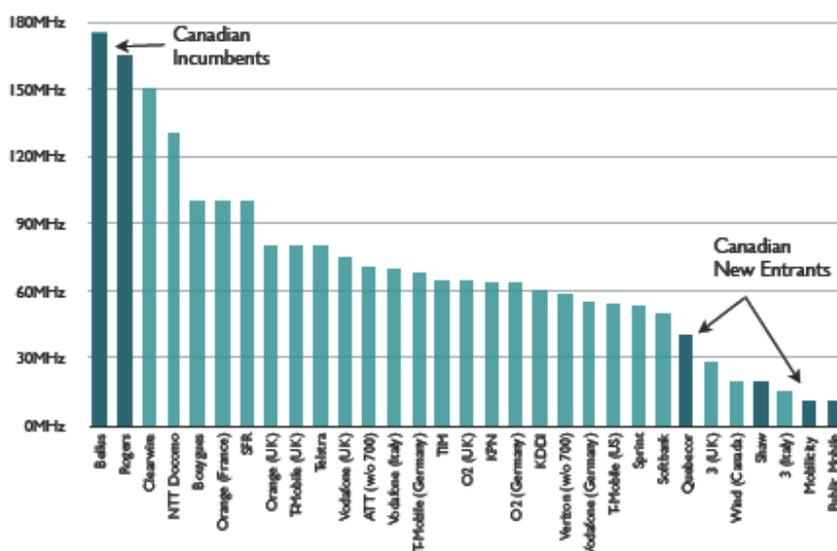
* Assumes Inukshuk's holdings, after one-third return, are split equally between Rogers and Bell.

** Does not include Telus' ESMR holdings below 1 GHz.

Source: Industry Canada licensee tables.

67. Even more striking is the divergence in spectrum holdings between the Canadian incumbents and their international peers. A recent report by the Seaboard Group (the Seaboard Report)⁴ shows this contrast in particularly stark terms. Exhibit 6 of the Seaboard Report, reproduced below⁵, shows that Canadian incumbents are truly world beaters in their ability to accumulate domestic spectrum. Both Rogers and a combined Bell-Telus (“Bellus”) stand head and shoulders above the crowd, with more than twice as much spectrum as such prominent international peers as Vodafone (UK), T-Mobile (Germany) and Verizon (US, pre-700 MHz auction).

Exhibit 6
Comparative Spectral Holdings, International Markets - Canada, by Major Markets IQ2010¹⁸
 Source: Company Reports, SeaBoard Group; 2010



68. Focusing on the North American context, we note that, as a general rule, the Canadian incumbent carriers already hold significantly more spectrum pre-700 MHz auction than the American incumbent carriers hold post-700 MHz. This fact is evidenced in the following table, which shows the total mobile spectrum holdings (cellular/PCS/AWS/BRS/700) for the top two service providers in each of the largest markets in Canada and the United States. When considering this data, it is important to note that the American markets included in the table have substantially higher population and density than the Canadian markets. For example, the smallest of the American census metropolitan areas – Dallas-

⁴ *Over the Rainbow : Thoughts on the Canadian 700 MHz Discussion*, February 2011.

⁵ Reproduced with the permission of the authors. Footnote 18 of the Seaboard Report, referenced in the title of the exhibit, reads as follows: “Events subsequent to the IQ2010 cutoff shown in Exhibit 6, both Germany and the Netherlands auctioned off additional spectra later that year: in Germany, a “Super Auction” saw 350MHz sold to various providers in several frequency bands; in the Netherlands, an additional 130MHz was sold (@ 2.6 GHz).”

Fort Worth – has a population of 6.4 million people, compared to 5.7 million for the largest of the Canadian census metropolitan areas – Toronto.

Table 3
Total Spectrum Holdings, Top Two Carriers in Largest Markets
Canada (pre-700 MHz auction) vs. United States (post-700 MHz auction)

Toronto		New York City	
- Rogers	135 MHz	- Verizon	119 MHz
- Bell	115 MHz	- AT&T	104 MHz
Montreal		Los Angeles	
- Rogers	145 MHz	- AT&T	117 MHz
- Bell	95 MHz	- Verizon	91 MHz
Vancouver		Chicago	
- Rogers	145 MHz	- AT&T	107 MHz
- Bell	90 MHz	- Verizon	101 MHz
Ottawa-Gatineau		Dallas-Fort Worth	
- Rogers	145 MHz	- AT&T	99 MHz
- Bell	95 MHz	- Verizon	64 MHz

Source: Industry Canada licensee tables, and US FCC Spectrum Dashboard.
 Totals include all paired spectrum holdings in the cellular, PCS, AWS, BRS and 700 MHz bands.

c) The wireless incumbents are not even using all of the spectrum they already hold

69. The generous spectrum endowments of Canadian incumbent wireless carriers relative to their domestic and international peers raise the serious question of whether the Government should take active measures to ensure a more equitable distribution of spectrum resources in Canada, particularly between incumbents and new entrants.
70. This question becomes all the more pertinent when one considers that the Canadian wireless incumbents do not even make use of all the wide swaths of spectrum they already hold.
71. For example, the following table records the number of active sites per service provider in Industry Canada's Assignment and Licensing System (ALS) database in the AWS band for Canada's largest metropolitan areas, as of the end of December 2010:

Table 4
Active AWS Sites at End of December 2010

Metropolitan Area*	Incumbent Sites				New Entrant Sites			
	Rogers	Bell	Telus	Total	Globalive	Mobilicity	Videotron	Total
Toronto	0	0	0	0	351	170	-	521
Montreal	0	0	0	0	-	-	369	369
Vancouver	0	0	0	0	122	73	-	195
Ottawa-Gatineau	0	0	0	0	90	33	0	123
Calgary	0	0	0	0	87	0	-	87
Edmonton	0	0	0	0	73	35	-	108

* For analytical consistency, a search radius was used around each city that approximates the core Tier 4 licence area for that city.

Source: Industry Canada Assignment and Licensing System (ALS).

72. The contrast between the two groups of carriers cannot be more sharp. Whereas the incumbent carriers show no pressing need to make use of the combined 50 MHz of AWS spectrum they purchased in each of Canada's densest and most lucrative telecom markets, the new entrant carriers have collectively put their 40 MHz to work, activating in excess of 1400 sites.
73. Even in those non-AWS bands where the incumbent carriers have deployed service, there is reason to doubt whether they are using their existing holdings as efficiently as they could. For example, at pages 14 and 15 of the Seaboard Report, the authors point to the frequent appearance of six-antenna tower arrays in US jurisdictions, whereas such arrays are largely absent in Canada.
74. Six sector arrays are but one example of the spectrum optimization techniques that engineers employ when faced with a strong customer demand for radio resources. Other techniques include: the use of antennas with narrow radiation patterns and variable electrical inclination; the use of automatic cell planning tools that rely, for example, on probes installed on network interfaces; the deployment of self-organizing network technologies that dynamically adjust antenna tilts and transmission power as traffic evolves during the day; the deployment of hierarchical networks involving microcells, picocells and distributed antenna systems; and the introduction of higher performance Adaptive Multi-Rate (AMR) codecs to increase voice capacity per channel.
75. QMI is not privy to whether and what extent the incumbent carriers have made use of the above-mentioned spectrum optimization techniques. But the Department is. At question 4-5 of the Consultation Document, the Department expressly directs each existing spectrum licensee to provide, in confidence, specific efficiency measures investigated or implemented for their current holdings.
76. It is imperative that the Department insist upon receiving a comprehensive, factual response to question 4-5 from each of the incumbent carriers. Before being allowed to bid on new spectrum at 700 MHz or 2.5 GHz, the onus must

be on the incumbent carriers to demonstrate that they are using their already considerable spectrum holdings to the utmost efficiency.

77. Let us state the matter bluntly. Verizon Wireless is managing to serve Dallas-Fort Worth, a booming metropolitan area of 6.4 million people in a market at least two years ahead of ours in terms of mobile penetration, with 64 MHz of mobile spectrum. Do we really believe that Bell cannot squeeze by in Montreal with just 95 MHz, or Rogers with just 145 MHz? Fearful assertions by incumbent carriers that their future depends upon unlimited access to more spectrum resources must be taken with a large grain of salt.

d) The incumbents have the means and the incentive to acquire all available spectrum at auction

78. That the incumbent carriers, in the absence of policy-driven constraints, have both the means and the incentive to acquire all spectrum resources made available at auction has never been in doubt.
79. As part of its reply comments to the public consultation that preceded the 2008 AWS auction⁶, QMI filed a study by professor Daniel R. Vincent of the University of Maryland entitled "Leveling the Playing Field: Efficiency and Revenue Arguments for Licence Set Asides". Among the central conclusions of the study were the following:

For an incumbent firm, the opportunity cost of failing to acquire a licence and enabling new entry in its market includes, in addition to the operating profits, the lost incremental profits that it had enjoyed from competing in an oligopoly with a smaller number of firms. ...

This extra effect generates an incumbent "preemptive incentive" that can enable incumbent wireless bidders to outbid entrant bidders even when operating profits minus build-out costs of the entrants exceeds that of the incumbents.

80. Real world experience supports Dr. Vincent's conclusions.
81. For example, as shown in table 5 below, in the Canadian auction of additional PCS spectrum in 2001, the three large incumbent carriers captured in excess of 99% of the available spectrum by final bid value.

⁶ See Appendix A of the June 27, 2007 reply comments of QMI at <http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08785.html>.

Table 5
Canadian Auction of Additional PCS Spectrum, 2001
Ranking of Winners by Total Amount of Winning Bids

Rank	Bidder	Total Amount of Winning Bids	Percent of Canadian Population Covered
1	Bell Mobility Inc.	\$720,490,000	100%
2	Rogers Wireless Inc.	\$393,520,000	100%
3	Telus Communications Inc.*	\$355,920,000	61%
4	W2N Inc.**	\$11,390,000	28%
5	Thunder Bay Telephone	\$600,000	3%

* Constrained by spectrum cap from acquiring licences in all territories.

** Later sold licences to an incumbent carrier.

Source: Industry Canada

82. Similarly, in the 2008 AWS auction, the three large incumbent carriers captured fully 96% of the non-set-aside spectrum by final bid value. This occurred despite the fragmentation of the set-aside spectrum in many markets and despite the evident interest expressed by new entrants in the non-set-aside spectrum throughout the auction process. In virtually all cases, the dynamic was the same: as soon as a new entrant ventured to make a bid on a non-set-aside licence, it was chased out by the dominant incumbent bidder. In the end, Rogers paid what it took to capture the A block across Canada, and Bell and Telus did the same in the combined E and F blocks⁷.

Table 6
Canadian AWS Auction, 2008
Top 8 Winners of Non-Set-Aside Spectrum

Rank	Bidder	Total Amount of Winning Bids	Percent of Canadian Population Covered
1	Rogers Wireless Inc.	\$999,367,000	100%
2	Telus Communications Inc.	\$879,889,000	100%
3	Bell Mobility Inc.	\$740,928,000	92%
4	6934579 Canada Inc. (Public Mobile)	\$52,385,077	59%
5	Globalive Wireless	\$21,925,000	9%
6	1380057 Alberta Inc. (Shaw)	\$16,700,000	4%
7	Novus Wireless Inc.	\$17,900,000	23%
8	9193-2962 Quebec Inc. (Videotron)	\$5,190,000	2%

Source: Industry Canada

83. This incumbent capture phenomenon can also be poignantly observed in the most recent US 700 MHz auction⁸. Table 7 below tells the story. Despite considerable media hype about potential entry into the US wireless market by

⁷ In two isolated cases, Rogers captured the 20 MHz F block licence while Bell/Telus captured the 20 MHz A block licence. Also, each of Videotron, Shaw, Globalive and Bragg captured isolated licences in the 10 MHz E block.

⁸ US FCC auction #73.

deep-pocketed players such as Google, in the end it was the two largest national wireless incumbents, Verizon and AT&T, who combined accounted for 84% of final bid values. Verizon captured virtually the entire 11+11 MHz upper C block (98% of nation-wide pops) as well as a majority presence in the 6+6 MHz lower A block and a minority presence in the 6+6 MHz lower B block, for \$9.4 billion. AT&T captured a dominant share of the lower B block (62% of nation-wide pops) for \$6.6 billion, which it added to its already dominant share of the 6+6 MHz lower C block acquired through prior auctions and acquisitions⁹.

Table 7
US 700 MHz Auction, 2008
Summary of Top 10 Winners by Net Winning Bids

Rank	Bidder	Total Net Bid Amount	Breakdown of Winnings (% population, per block)
1	Verizon Wireless	\$9,363,160,000	98% of upper C block 52% of lower A block 16% of lower B block
2	AT&T	\$6,636,658,000	62% of lower B block
3	Echostar (Frontier Wireless)	\$711,871,000	76% of lower E block (unpaired spectrum)
4	Qualcomm	\$558,142,000	24% of lower E block (unpaired spectrum) 0.1% of lower B block
5	MetroPCS	\$313,267,000	2.8% of lower A block
6	Cox Wireless	\$304,663,000	6.6% of lower A block 0.6% of lower B block
7	US Cellular (King Street Wireless)	\$300,478,500	7.6% of lower A block 6.6% of lower B block
8	Cellular South	\$191,533,000	4.7% of lower A block 0.5% of lower B block
9	CenturyTel	\$148,964,000	3.8% of lower A block 2.4% of lower B block
10	Vulcan Spectrum	\$112,793,000	2.5% of lower A block

Source: www.wirelessstrategy.com

84. The US wireless market, with four national carriers and several important regional carriers, is more fragmented than the Canadian market. In addition, as we saw in section III.b) of this submission, Canadian incumbents generally hold more spectrum prior to our 700 MHz auction than their American peers hold post-auction. Nevertheless, the fact that Verizon and AT&T were able to capture the lion's share of new frequencies at auction #73 has caused considerable hand-wringing in American policy circles. For example, Congressman Ed Markey, then Chairman of the House Subcommittee on Telecommunications and the Internet had the following to say regarding the results of the US 700 MHz auction:

Yet in wireless, we have a new opportunity with the "beachfront" property of the spectrum. And what is the result so far? At present, it

⁹ AT&T has since acquired even more contiguous spectrum in the 700 MHz band, purchasing the 6 MHz unpaired lower E bloc from Qualcomm/MediaFLO for \$1.9 billion.

looks like two mega-resorts are going up on the beachfront in the form of Verizon and AT&T, solidifying their wireless market and spectrum real estate positions. Yes, Echostar has won almost a nationwide footprint -- not to compete with Verizon and AT&T in the mobile wireless market -- but rather to have spectrum as an adjunct to their satellite television service.

The decision to eliminate spectrum caps by the FCC under Chairman Powell is proving highly ill-considered. Spectrum caps had ensured that incumbents couldn't gobble up all of the available spectrum and effectively box out would-be competitors from reaching the market. And the so-called "spectrum screen" of 95 Megahertz that has substituted for the original cap has been blown away in this auction by AT&T and Verizon in 8 of the top 10 markets, and 17 of the top 25 markets, where that amount of spectrum has now been exceeded.

The FCC must revisit these policy decisions in light of the recently-completed auction and take corrective action going forward. The Commission has the responsibility to learn from the licensing mistakes of the past and to widely disseminate licenses and promote greater broadband competition and should endeavor to do so. I look forward to working with each of the Commissioners as they wrestle with all of these policy issues in the weeks ahead.¹⁰

85. It is imperative that the Government not allow this phenomenon to repeat itself here. Canada's wireless incumbents already control a hugely disproportionate share of the nation's spectrum resources. They cannot be allowed to corner the market once again.

e) Sustainable competition requires an equitable allocation of the spectrum resource

86. The 700 MHz band under consideration in this consultation is the only meaningful aggregation of spectrum below 1 GHz currently available for allocation to mobile services in Canada. It is a particularly valuable resource.
87. Spectrum below 1 GHz benefits from two inherent physical advantages relative to spectrum above 1 GHz.
88. First, the lower band frequencies propagate farther than the higher band frequencies, a feature which greatly reduces the capital cost of rural deployment. Depending on the specific bands being compared and the characteristics of the local terrain, the number of sites required for a deployment above 1 GHz can be anywhere from two to four times the number of sites required below 1 GHz.
89. Second, the lower band frequencies penetrate building structures better than the higher band frequencies, a feature which improves service coverage (in

¹⁰ http://markey.house.gov/index.php?option=com_content&task=view&id=3319&Itemid=241.

terms of both reach and available bit rates) in urban areas. This improved “deep indoor” coverage is not just an incremental benefit to existing wireless users, but can also act as an important stimulus for attracting entirely new wireless users, for both voice and data services.

90. Canada’s incumbent wireless carriers already benefit from substantial spectrum holdings below 1 GHz, in the form of 800 MHz cellular band frequencies they obtained by way of beauty contests more than twenty years ago. These frequencies were initially employed for first generation analog cellular technologies, but have since been refarmed for third generation HSPA+, with migration paths available to fourth generation Long Term Evolution (LTE).
91. It is important to note that the Canadian incumbent carriers, unlike many of their European peers, did not have to participate in a formal reallocation process or negotiate renewed conditions of licence or enhanced service obligations when they refarmed their 800 MHz spectrum from first to third (and eventually fourth) generation technology.
92. Sustainable competition requires an equitable allocation of spectrum, in regard to aggregate holdings, as well as in regard to the lower frequency holdings that enable superior network coverage. Allowing the incumbent carriers to capture the 700 MHz band, to add to their monopoly on the 800 MHz band, would place new entrant service providers at a long term structural disadvantage that would dampen competitive forces across Canada.

f) Holdings at 700 MHz must be capped

93. QMI proposes the following arrangement for capping, yet not prohibiting, incumbent spectrum holdings in the 700 MHz band.
94. As discussed in section II of this submission, QMI supports the adoption of the United States band plan for the 700 MHz spectrum in Canada, with the exception that the US upper C block (11+11 MHz) would be split into two blocks – one 6+6 MHz and the other 5+5 MHz in size. Discussions at the Radio Advisory Board of Canada suggest that this approach has broad support within the Canadian service provider community. QMI also supports auctioning all of the 700 MHz blocks on the basis of Tier 2 geographic service areas.
95. Adopting the modified US band plan as just described would result in the auction of five spectrum blocks of 5+5 MHz or 6+6 MHz in each of the fourteen Tier 2 service areas within Canada. A sixth block of 5+5 MHz (the US upper D block) could also become available depending on what decision is ultimately made regarding the allocation of spectrum to public safety uses within Canada.
96. Given that the useable portion of a 6+6 MHz block in an LTE deployment context is only 5+5 MHz, and for the purpose of capping carrier holdings in the 700 MHz band, we recommend that all five (or potentially six) blocks to be auctioned in the band in Canada be treated as equivalent.

97. In terms of cap structure, we recommend that any carrier that already holds 800 MHz cellular spectrum in a given Tier 2 service area be limited to acquiring only one 700 MHz block. Furthermore, to protect against undue concentration of the 700 MHz spectrum resource in the hands of any one non-cellular operator, we recommend that all other carriers be limited to acquiring only two 700 MHz blocks.
98. The 700 MHz spectrum cap structure we propose has the advantage of not impeding anyone from acquiring spectrum in the band. In fact, the cellular incumbents, if they succeed in securing a block, will have fully 35 MHz of spectrum below 1 GHz, nearly twice the 20 MHz to which new entrants will be limited. Our proposal is fair to everyone.
99. QMI recognizes that there will be some complexity in managing our cap proposal in those areas where incumbent 700 MHz licence boundaries do not precisely match the Department's Tier 2 service boundaries. However, straightforward solutions exist for dealing with this complexity. For example, we would not be opposed to an arrangement whereby a cellular licensee is deemed not to hold any spectrum in the 800 MHz cellular band in those Tier 2 service areas where its cellular licence area covers less than one-half of the population of the overlapping Tier 2 service area.

g) International precedents exist for ensuring equitable access to spectrum

100. If past public consultations are any guide, the incumbent wireless carriers will strenuously oppose QMI's cap structure. They will argue, once again, that the only rational and efficient way to hold a spectrum auction is with no constraints whatsoever. This is the doctrinaire thinking that led to the Canadian 2001 PCS result and that would have impeded new entry into the Canadian wireless market in 2008. It is also the thinking that left the vast majority of 700 MHz spectrum in the hands of the two 800 MHz incumbents in the United States in 2008.
101. It is essential that the Department look with due skepticism on the claims that will be made by the Canadian incumbents. Simply put, spectrum caps and other similar tools are neither unusual nor out of step with international policy trends.
102. For example, in a recent document entitled "Proposal for a decision of the European Parliament and of the Council establishing the first radio spectrum Policy programme", here is what the European Commission had to recommend to the European political authorities¹¹ (underlining added):

¹¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0471:FIN:EN:HTML>, September 20, 2010.

Article 5 Competition

1. Member States shall maintain and promote effective competition and avoid distortions of competition in the internal market or in a substantial part of it.
 2. In order to implement fully the obligations of paragraph 1, and in particular to ensure that competition is not distorted by any accumulation, transfer or modification of rights of use for radio frequencies, Member States may adopt inter alia the following measures, which are without prejudice to the application of competition rules:
 - (a) Member States may limit the amount of spectrum for which rights of use are granted to any economic operator or may attach conditions to such rights of use, such as the provision of wholesale access, in certain bands or in certain groups of bands with similar characteristics, for instance the bands below 1 GHz allocated to electronic communication services;
 - (b) Member States may refuse to grant new rights of use or to allow new spectrum usages in certain bands, or may attach conditions to the grant of new rights of use or to the authorisation of new spectrum usages, when this would lead to an accumulation of spectrum frequencies by certain economic operators which is likely to result in significant harm to competition;
 - (c) Member States may prohibit or impose conditions on transfers of spectrum usage rights, not subject to national or Union merger control, when this is likely to result in significant harm to competition;
 - (d) Member States may amend the existing rights in accordance with Article 14 of Directive 2002/20/EC when this is necessary to remedy ex-post excessive accumulation of spectrum frequencies within certain economic operators which significantly harms competition.
 3. Member States shall ensure that authorisation and selection procedures avoid delays and promote effective competition.
103. Three things stand out from this policy statement. First, maintaining and promoting effective competition is a serious preoccupation of spectrum policy makers. Second, undue accumulation of spectrum resources can harm an otherwise competitive marketplace. Third, limits on the amount of spectrum any one operator can hold (aka spectrum caps) are an entirely legitimate policy response to the prospect of undue accumulation. It is also worth noting the explicit reference to the imposition of spectrum caps below 1 GHz.
104. Several European countries have already acted or are considering taking action consistent with the permissive approach to spectrum caps put forward by the European Commission. Each country tailors its approach to its own competitive structure and its own historic realities regarding spectrum accumulation. Among the most prominent examples are the following:

- In the 2010 German multiband auction of frequencies at 800 MHz, 1.8 GHz, 2 GHz and 2.6 GHz, the largest incumbent carriers (Deutsche Telekom and Vodafone) were limited to two 5+5 MHz blocks each at 800 MHz, while the two smaller carriers (O2 and E-Plus) were each allowed to bid on three 5+5 MHz blocks at 800 MHz.
 - In the 800 MHz auction that will begin soon in Sweden, individual participants will not be allowed to purchase in excess of 10+10 MHz of spectrum.
 - In preparation for the Irish spectrum auction likely to be held in 2011, the regulator has proposed a spectrum cap of 20+20 MHz on holdings below 1 GHz and 50+50 MHz on aggregate mobile holdings.
 - In the upcoming Spanish multiband auction of frequencies at 800 MHz, 900 MHz, 1.8 GHz and 2.6 GHz, individual participants will not be allowed to acquire more than 20+20 MHz below 1 GHz or 55+55 MHz above 1 GHz.
105. Even in the United States, where no spectrum cap is currently in place, the policy approach toward spectrum accumulation is far from one of *laissez-faire*. In fact, concurrent with the 2003 decision to remove the explicit spectrum cap, the FCC adopted a two-faceted policy to ensure that American spectrum resources are neither hoarded nor left to fallow.
106. First, the FCC introduced much more rigorous deployment obligations for newly auctioned spectrum. As an example, winners of licences in the 2008 700 MHz auction are required to provide service sufficient to cover 35-40% of the geographic area of their licences within four years and 70-75% of this area within ten years (the licence term). For licensees that fail to meet the applicable interim benchmark, the licence term is reduced by two years, and the end-of-term benchmark must be met within eight years. At the end of the licence term, licensees that fail to meet the end-of-term benchmark will be subject to a “keep what you use” rule, which will make unused spectrum available to other potential users. By Canadian standards, these are extremely onerous conditions.
107. Second, the FCC introduced a “spectrum screen” approach to analyzing mergers involving spectrum assets. The screen was initially set at 70 MHz and has since been increased to 95 MHz. In more than one instance, acquiring operators have been forced to divest themselves of spectrum resources in order to secure FCC approval for the requisite licence transfers. Most recently, in the wake of the 2008 700 MHz auction, and as evidence of its less than satisfactory outcome, the FCC has modified its spectrum screen policy to apply not only to spectrum acquired through mergers and acquisitions, but also to spectrum acquired at auction.
108. These US measures are far from perfect, and they are not what QMI is recommending for Canada, yet they belie any suggestion that US authorities have the intention of allowing their incumbent carriers to continue to accumulate spectrum resources with impunity.

III. PROMOTING SERVICE DEPLOYMENT IN RURAL AREAS

a) Rural Canadians will benefit the most from an equitable allocation of low frequency spectrum

109. At section 8 of the Consultation Document, the Department has requested comment regarding on specific measures that could be adopted to ensure further deployment of advanced mobile services in rural and remote areas.
110. 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.
111. Videotron for one has already shown a strong commitment to wireless deployment outside of the large population centres, reaching into smaller centres including Victoriaville, Grand-Mère and Saint-Donat, Quebec within five months of initial service launch. Videotron has also been the winning recipient of subsidies under the Broadband Canada program to deploy its HSPA+ network in such areas as Lac-St-Jean-Est, Antoine-Labelle and La Haute Côte-Nord, Quebec.
112. Access to 700 MHz spectrum will considerably enhance Videotron's ability to expand its wireless network to more rural and remote areas within its licence territories. We ask for no guarantee of access to 700 MHz spectrum, only a reasonable structure of spectrum caps to ensure that a small group of carriers cannot monopolize the resource to the disadvantage of rural Canadians.

b) Stringent deployment obligations will further protect rural interests

113. As already stated in this submission, the 700 MHz band is the only meaningful aggregation of spectrum below 1 GHz currently available for allocation to mobile services in Canada.
114. Given its favourable propagation characteristics and its inherent value in helping to extend service to rural Canadians, QMI is of the view that it should bear more rigorous deployment obligations than have been imposed on bands above 1 GHz.
115. In other words, QMI and Videotron are prepared to back up their request for equitable access to 700 MHz spectrum with concrete commitments for service deployment.

116. As a starting point, QMI submits that serious consideration should be given to converting the five-year roll-out targets for AWS spectrum¹² to hard five-year requirements for 700 MHz spectrum. Failure to meet these roll-out requirements could result in a reduction in licence term, much as has been done with the US 700 MHz licence conditions.
117. In addition, QMI submits that serious consideration should be given to imposing Tier 3-based roll-out requirements, even when licences have been awarded on a Tier 2-basis, as we have recommended in this consultation. This approach would provide further assurance to rural Canadians that wireless operators will not seek to satisfy their roll-out obligations solely by providing dense coverage in major urban areas. Consideration should also be given to increasing some of the Tier 3-based roll-out requirements based on a quantitative assessment of reasonable, anticipated deployment patterns.
118. Provided operators know what the roll-out requirements are before bidding starts, they should be able to incorporate the costs of deployment into their business plans. No one should object to providing superior service to rural Canadians on this basis.

¹² See the AWS Policy Framework, Annex 2 – Roll-out Targets.

IV. OPEN ACCESS

a) Marketplace and regulatory developments have rendered open access requirements unnecessary

119. In section 9 of the Consultation Document, the Department asks for comments on whether there is a need for government intervention to promote open access, by increasing access by users to handsets and/or applications.
120. In putting this matter forward for consideration, the Department references the requirements for open access that were included in the US FCC's 2007 rules applicable to the upper C block in the 700 MHz band¹³.
121. Under the FCC's upper C block policy, open access for devices refers to the ability of device manufacturers to develop and of users to procure the devices of their choosing, as long as the wireless network is not negatively impacted. Open access for applications refers to the ability of application developers to create and of users to download, install and use the applications of their choice, while complying with certain technical conditions related to the management of the wireless network.
122. The FCC's decision to impose equal access obligations in the upper C block was motivated fundamentally by what the FCC viewed at the time as an imbalance in the relationship between network operators and device/application developers regarding their ability to launch new products and services. The activist nature of the rules can be seen most clearly in the following statement:
- By fostering greater balance between device manufacturers and wireless service providers in this respect [bringing new devices and applications to market], we intend to spur the development of innovative products and services.¹⁴*
123. In QMI's opinion, the FCC's open access rules, while arguably relevant at the time they were adopted in July 2007, have since been overtaken by marketplace events.
124. In the past four years, the wireless device and applications markets have been radically transformed, providing consumers with new hardware and functionality that were scarcely imaginable prior to 2007. Google, for example, recently disclosed that 27 manufacturers are currently producing a total of 170 different user devices (smartphones, tablets, etc.) equipped with the Android operating system. In addition, at least 150,000 applications are available to end users in the Android Market store.¹⁵ For its part, Apple claims to offer 350,000

¹³ FCC Second Report and Order establishing rules governing wireless licences in the 700 MHz band, adopted July 31, 2007.

¹⁴ FCC Second Report and Order, paragraph 201.

¹⁵ <http://www.businessmobile.fr/actualites/eric-schmidt-google-presente-deja-le-nouvel-android-au-mwc-2011-39758314.htm>.

applications via its APP store, with the ten billionth application download being completed last month.¹⁶

125. In many cases, device and application developers have developed a following of their own, fundamentally altering their rapport with network operators.
126. In Canada, the impetus for imposing open access conditions on wireless carriers has also been overtaken by regulatory events.
127. In October 2009, the CRTC issued its landmark Telecom Regulatory Policy 2009-657 (TRP 2009-657), in which it introduced for the first time an explicit policy framework applicable to Internet traffic management policies (ITMPs). A key element of this framework is a requirement that, when a complaint is made regarding an ITMP that results in any degree of discrimination or preference, the Internet service provider must demonstrate, among other things, that the ITMP is designed to address the need and achieve the purpose and effect in question, and nothing else, and establish that the ITMP results in discrimination or preference as little as reasonably possible.
128. In June 2010, the CRTC issued Telecom Decision 2010-445, in which it formally extended application of the TRP 2009-657 framework to mobile wireless data services used to provide Internet access.
129. The CRTC's actions provide important and substantive protections to equipment and application providers who have reason to believe that a wireless service provider is unjustly discriminating against them. Equivalent protections did not exist in the United States in 2007 when the FCC established its upper C block open access policy, and in fact are only now being considered by the American regulator for the wireless context.
130. In light of all these developments and protections, QMI submits that there is no convincing rationale for the imposition of open access obligations on wireless network operators in Canada.

¹⁶ <http://www.apple.com/pr/library/2011/01/22appstore.html>.

IV. AUCTION TIMING

a) A simultaneous auction is preferred

131. In the Digital Economy Consultation held in the summer of 2010¹⁷, QMI argued in favour of a simultaneous auction of the then soon-to-be-liberated frequency bands at 700 MHz and 2.5 GHz.
132. As we pointed out at that time, while the propagation characteristics of the two bands are not identical, both have been identified for the deployment of fourth generation mobile LTE technology by the international industry group 3GPP.
133. Efficient business planning requires that firms take a comprehensive assessment of the resources that are available to them and make whatever trade-offs are required to arrive at an optimal investment decision. Efficient business planning in the spectrum domain is facilitated when spectrum bands are made available at the same time, to the extent feasible.
134. As a result, we reiterate our recommendation that a single auction be held to award spectrum in both the 700 MHz and the 2.5 GHz bands. This would provide all mobile carriers with the ability to assess their spectrum holdings in an integrated and strategic manner and would yield a higher level of certainty which in turn is a key element to stimulate long term investment.
135. We believe that the Canadian wireless industry would reap significant benefits from an integrated auction and that the enhanced certainty provided by such an auction would contribute to continued high levels of capital investment by wireless carriers.

All of which is respectfully submitted.

¹⁷ See <http://de-en.gc.ca/submissions/>.

ANNEX 1

**RESPONSES TO NON-CONFIDENTIAL QUESTIONS
POSED IN THE CONSULTATION DOCUMENT**

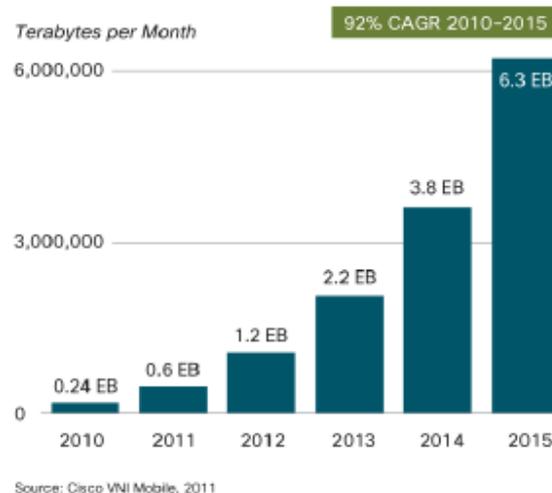
4-1. What is the general need for additional commercial mobile spectrum at this time and what do you anticipate the future needs to be?

As was mentioned by the firm Rysavy Research in its April 2010 report entitled "Spectrum Shortfall Consequences":

The wireless industry is in the midst of tremendous growth and success. Not only has mobile voice become ubiquitous, but people are now beginning to use wireless-data services on a huge scale. The most visible aspect is the surging demand for smartphones. Additionally, the incorporation of advanced wireless networks with other devices like notebooks and netbooks is becoming common and will grow quickly as these new devices take hold. (...).

What makes these mobile devices so compelling is wireless broadband connectivity that provides both instant "wherever, whenever" access to the Internet, applications and services, and the ability to consume increasingly vast amounts of media. The result is rapidly escalating data usage. Current trends in mobile-broadband traffic usage point to inevitable exhaustion of available spectrum in the relatively near term.

The study produced last February by Cisco entitled "Cisco Visual Network Index: Global Mobile Data Traffic Forecast Update, 2010-2015" provides a very good overview of the quasi-exponential growth of mobile data traffic confronting wireless network operators from now until 2015. In fact, as shown in the following table, global mobile data traffic is projected to surpass by 2015 the level of 6 exaocets, which represents a compounded growth rate of 92% for the 2010-2015 period.



Of course, Canadian operators will not be sheltered from the effects of this unfolding worldwide data wave and, if nothing is done, it is evident that we will be faced with a situation where the demand for mobile bandwidth will exceed the supply.

The decision taken by the Department to allocate available spectrum in the 700 MHz and 2.5 GHz bands to mobile services is therefore perfectly justified and represents a good first step in the right direction.

It remains now to see whether this additional mobile spectrum will be equitably distributed among incumbent operators and new entrants in the Canadian mobile market.

5.1 Based on the criteria listed above [in the Consultation Document], 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.

As explained in paragraphs 13 to 16 of the current submission, QMI is of the view that the Department should choose the first option put forward in the Consultation Document, which is to harmonize the 700 MHz band plan with the American band plan, as this choice would notably permit Canadian operators to benefit from the technological ecosystem currently being developed in the United States.

In addition, as mentioned in paragraphs 17 to 22, QMI recommends that the Department incorporate a slight modification to the American band plan, by dividing the 11+11 MHz upper C block into two distinct sub-blocks, one of 5+5 MHz and another of 6+6 MHz.

5.2 The band plans presented in the options above [in the Consultation Document] 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?

The 1 MHz guardbands situated at 757-758 MHz and 787-788 MHz were initially put in place in the United States in order to prevent interference between the upper C block allocated to commercial systems and the upper D block which, initially, was to be used in a public-private partnership between commercial operators and public safety organizations.

As we explained at paragraphs 23 to 28 of the current submission, the status of the upper D block in the United States is presently uncertain. QMI therefore recommends to the Department to wait until the debate is resolved among our southern neighbours before taking a decision regarding the attribution of this block in Canada. This same recommendation also applies regarding the status of the frequency blocks situated at 757-758 MHz and 787-788 MHz, as the requirement to establish them as guard bands would fall away if the Department ultimately came to attribute the upper D block to commercial systems.

QMI also recommends to the Department to retain the 1 MHz guardband set in the American band plan at 775-776 MHz, and to keep it in permanent reserve in order to minimize the interference potential between commercial systems in the upper C block and public safety systems in the lower part of the 768-776 MHz / 798-806 MHz sub-band.

QMI also points out to the Department that, in a similar manner, the retention of the 1 MHz guardband set in the American band plan at 805-806 MHz would minimize potential interference along the boundary between public safety systems operating in the upper part of the 768-776 MHz / 798-806 MHz sub-band and terrestrial mobile systems operating in the neighbouring cellular band.

- 5-3. Do public safety agencies need spectrum for broadband applications?**
- (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?**
- 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.**
- 5-5. What are the challenges faced today by public safety agencies to have cross-border radio interoperability in other frequency bands?**
- 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?**
- 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.**
- 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.

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?

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?

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?

QMI recognizes the fundamentally important role played by public safety organizations in our society.

We also note that SP-768 MHz, *Narrowband and Wideband Public Safety Radiocommunication Systems in the Bands 768-776 MHz and 798-806 MHz*, has already designated 8+8 MHz for use by public security organizations, as well as indicating that a further 4+4 MHz (in the sub-bands 764-768 MHz / 794-798 MHz) would be subject to a future consultation.

QMI is not convinced that representatives of public safety organizations have demonstrated that these 24 MHz of spectrum are insufficient to satisfy their broadband needs, especially given that nothing prevents them from using broadband applications in the 768-776 MHz / 798-806 MHz sub-band (unlike the narrowband restriction that prevails in the United States in this sub-band).

Given the uncertainty that surrounds the use of the upper D block in the United States, QMI considers that it would be preferable to address all the questions related to public safety in a separate consultation once the FCC has pronounced itself on the use of the upper D block.

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.

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

As explained in paragraphs 29 to 42 of the current submission, QMI is of the view that the Department should issue Tier 2 licences for the 700 MHz band, as the choice of

this service area tier would permit optimal utilization of the superior propagation characteristics of the band, as well as avoiding geographic fragmentation of the frequency blocks.

5-14. The Department seeks comments on the transition policy proposed above [in the Consultation Document, re: Low-Power Television (LPTV) broadcasting].

QMI agrees with the transition policy proposed by the Department regarding low power television broadcasting.

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.

QMI agrees with the Department's proposal, and supports the imposition of a hard cut-off date.

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

QMI agrees with the changes proposed by the Department.

6-2. The Department seeks comments on the spectrum utilization policy proposed above [in the Consultation Document].

QMI agrees with the designation of commercial radio systems to be deployed in the 700 MHz band as Mobile Broadband Service (MBS).

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.**

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?

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?

QMI's views regarding the current state of competition in the Canadian wireless market, the effectiveness of the Government's AWS policy decisions, and the need for similar measures in the 700 MHz and 2.5 GHz auctions are set out in paragraphs 43 to 92 of the current submission.

In brief, we submit that the Government's 2008 policy to encourage new entry has had an immensely positive effect on the Canadian wireless industry, both directly through the launch of new entrant networks, and indirectly through greater investment and responsiveness on the part of the incumbent operators.

At issue now is whether the Government will continue to employ its policy levers to build on and consolidate its success.

The Canadian wireless incumbents have extremely generous endowments of spectrum relative to their domestic and international peers, and are not even using all the spectrum they already hold. Furthermore, they continue to have both the means and the incentive to acquire all new spectrum resources made available at auction. Sustainable competition requires that the Government employ the policy levers at its disposal to ensure an equitable allocation of spectrum, in regard to aggregate holdings, as well as in regard to the lower frequency holdings that enable superior network coverage.

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?

QMI's view on the issue of foreign investment restrictions was set out in our submission of July 30, 2010, to the consultation *Opening Canada's doors to Foreign Investment in Telecommunications: Options for Reform* (the Foreign Ownership Consultation), in which we argued that Canada must completely eliminate foreign ownership restrictions in both the telecommunications and the broadcasting sectors, in order to not disadvantage Canadian companies that have integrated activities in the two sectors.

This view is not dependent on the decisions that will ultimately be taken by the Government as a result of the current auction consultation. Similarly, our assessment of the effectiveness of the Government's AWS policy decisions, as well as our policy proposals for the current auction, are in no way dependent on the decision that will ultimately be taken by the Government regarding foreign ownership restrictions. An

equitable allocation of spectrum between incumbents and new entrants will remain a key policy objective regardless of the outcome of the foreign ownership debate.

This being said, to the extent that Canadian ownership and control of the participants in the upcoming auction do continue to be a requirement, QMI strongly recommends that the Department undertake to verify the Canadian ownership and control of each participant before the auction begins. Such a measure is essential to guarantee the efficiency and transparency of the auction process.

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?

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?**

(b) 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)?**

7-7. Are there other mechanisms that should be considered and, if so, how should these be applied?

At paragraphs 93 to 108 of the current submission, QMI puts forward a spectrum cap proposal designed to ensure an equitable allocation of lower frequency spectrum among Canadian wireless carriers, and provides evidence that such a proposal is fully in step with international spectrum policy trends.

The specific proposal put forward by QMI would work as follows:

- We recommend adoption in Canada of the US 700 MHz band plan, with the splitting of the upper C block into two smaller blocks.
- This results in the auction of five spectrum blocks of 5+5 MHz or 6+6 MHz across Canada (with the possible addition of a sixth block depending upon the ultimate allocation of the upper D block).
- Given that the useable portion of a 6+6 MHz block in an LTE deployment context is only 5+5 MHz, we recommend that all five (or potentially six) spectrum blocks be treated as equivalent for the purpose of applying spectrum caps.
- Any carrier that already holds 800 MHz cellular spectrum in a given Tier 2 service area should be limited to acquiring one 700 MHz block 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 700 MHz blocks in that service area.
- Complexities related to the mismatch of Tier 2 service boundaries and traditional cellular licence boundaries in certain parts of Canada can be resolved in a straightforward manner, for example through the adoption of a simple rule whereby a cellular licensee is deemed not to hold any spectrum in the 800 MHz band in those Tier 2 service areas where its cellular licence area covers less than one-half of the population of the overlapping Tier 2 service area.

The 700 MHz spectrum cap structure we propose has the advantage of not impeding anyone from acquiring spectrum in the band. In fact, the cellular incumbents, if they succeed in securing a block, will have fully 35 MHz of spectrum below 1 GHz, nearly twice the 20 MHz to which new entrants will be limited. Our proposal is fair to everyone.

QMI will be filing further comments regarding mechanisms to address competition in the 2.5 GHz band as part of its submission in response to Canada Gazette Notice SMSE-005-11, *Decisions on a Band Plan for Broadband Radio Service (BRS) and Consultation on a Policy and Technical Framework to Licence Spectrum in the Band 2500-2690 MHz*.

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?

See our response to question 7-4 above.

- 8-1. In the above context [in the Consultation Document], the Department seeks comments on challenges and specific problems affecting the deployment of broadband mobile services to low-density rural and remote areas.**
- 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?**
- 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.).**

As explained in paragraphs 109 to 117 of the current submission, QMI submits that an equitable allocation of spectrum below 1 GHz among Canadian wireless operators, as well as the imposition of strict deployment obligations in the 700 MHz band, will allow rural Canadians to derive full benefit from the country's spectral resources.

- 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.**
- 9.2 If government intervention is needed, which of the following options should be implemented?**
- Option 1: Mandated open access requirements for 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.**

As explained in paragraphs 119 to 130 of the current submission, QMI submits that recent developments in the wireless marketplace as well as on the Canadian regulatory front have rendered open access requirements unnecessary.

- 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 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 [in the Consultation Document]. 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.

As explained in paragraphs 130 to 135 of the current submission, QMI is of the view that a single simultaneous auction should be held by the Department to allocate spectrum in the 700 MHz and 2.5 GHz bands.