Submission by
QUEBECOR MEDIA INC.

To Industry Canada

in Response to

Canada Gazette Notice DGTP-002-07,
"Consultation on a Framework to Auction Spectrum in the
2 GHz Range including Advanced Wireless Services"

May 25, 2007
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QUEBECOR MEDIA INC.

EXECUTIVE SUMMARY
1. Introduction and Executive Summary

This submission is provided to Canada’s Minister of Industry by Québecor Media Inc. (QMI), in response to Canada Gazette Notice DGTP 002-07 entitled “Consultation on a Framework to Auction Spectrum in the 2GHz Range including Advanced Wireless Services”.

1.1 Overall comment on the auction rules and license conditions discussed in DGTP-002-07

In DGTP-002-07, Industry Canada states the following (p. 20) “As the Department is now releasing additional spectrum for flexible use, it is timely to consider the long-term competition issues in a broad context”.

In light of the competitive characteristics found in the mobile market, Industry Canada correctly identifies a number of competition related issues to be:

- “The potential for market entry, the types of barriers to entry that such new entrants might encounter and whether spectrum incumbents have the incentive and means to acquire additional spectrum for the purpose of preventing access to prospective competitors.
- “The efficient use of spectrum, particularly in view of the considerable demand. Some parties have noted that the existing national PCS/cellular operators currently have considerable spectrum to operate their wireless networks”.

Also in DGTP-002-07 (p. 24), Industry Canada notes that “digital telephony roaming is commonly available to foreigners traveling in Canada or to Canadians traveling in many regions of the world. It is expected that Canadian subscribers of any carrier would benefit from similar roaming services. As mobile services have become an important service to
many Canadians, it is important that all networks be fully integrated into the national telecommunications network”.

QMI submits that the framework for auction rules and license conditions discussed in DGTP-002-07 would be fair and effective in promoting entry by new facilities-based carriers into the Canadian mobile telecommunications market, provided that the pre-requisites to make the business case of a new entrant viable be included in the final auction rules and license conditions. This refers to the availability of spectrum set aside for new entrants, regional licenses and mandated automatic seamless digital roaming. Hence, many details of this framework need to be finalized to ensure its proper and successful implementation to the benefit of Canadian consumers and businesses.

In Section 1, QMI highlights its key arguments regarding the auction rules and license conditions which are pre-requisites for new entrants to participate in the upcoming auctions and have a reasonable probability of success as new facilities-based entrants into Canada’s mobile communications market.

Section 2 of this submission highlights QMI’s perspective on the Canadian mobile telecommunications market and its relative positioning worldwide and on how other countries have responded to the challenges of increasing competition in mobile communications services via spectrum award rules and license conditions.

Section 3 and Section 4 of this submission explain QMI’s responses to the sixteen (16) questions posed by Industry Canada and provides details on how the proposed auction rules and license conditions should be implemented for the benefit of all Canadians.
**1.2 The importance of the upcoming spectrum auction: the last opportunity for new entrants**

QMI is pleased to have the opportunity to offer these comments on the very important issue of spectrum auctions for new mobile services.

First of all, considering that Canada’s mobile penetration was at close to 58% at year–end 2006 and that it will be of the order of 10% higher or approximately 68% in early 2009, when new mobile carriers could launch services, the upcoming AWS auctions are the last opportunity for new carriers to enter the Canadian mobile market as facilities-based carriers.

These auctions constitute a unique opportunity for Canada to increase the competitiveness of its mobile industry and to enhance the benefits of mobile communications to all Canadian consumers and businesses via more innovation and more competitive prices.

As is demonstrated further into this Submission, the incumbent national PCS/cellular carriers, comprised of Bell Canada, Rogers and Telus, are already spectrum rich even before the upcoming auction for AWS and other spectrum. Moreover, these incumbent carriers will also have many opportunities in years to come to acquire additional spectrum when future spectrum bands are awarded for various mobile applications.

It is therefore imperative that the appropriate auction rules and license conditions be put in place by Industry Canada for new carriers to be able to enter this market now, i.e. as part of the upcoming auction, as was done in many other countries.

Otherwise, the upcoming auctions will only lead to a repeat of the results of the 2001 spectrum auction, with the three incumbent carriers walking away with all the spectrum made available in almost all areas of the country.
1.3 The capabilities of QMI and Videotron Ltd

Quebecor Inc. (TSX: QBR.A, QBR.B) is a communications company with operations in North America, Europe, Latin America and Asia. Quebecor Inc. has operations in 18 countries. It has two operating subsidiaries, Quebecor World Inc. and Quebecor Media Inc. Quebecor World is one of the largest commercial print media services companies in the world.

Quebecor Media inc. (QMI) owns operating companies in numerous media related businesses: Videotron Ltd., the largest cable operator in Québec and a major Internet Service Provider and provider of telephone and business telecommunications services; Sun Media Corporation, Canada's largest national chain of tabloids and community newspapers; TVA Group Inc., operator of the largest French-language over-the-air television network in Québec, a number of specialty channels, and the English-language over-the-air station Sun TV; Canoe Inc., operator of a network of English and French language Internet properties in Canada; Nurun Inc., a major interactive technologies and communications agency with offices in Canada, the United States, Europe and Asia; companies engaged in book publishing and magazine publishing; and companies engaged in the production, distribution and retailing of cultural products, namely Archambault Group Inc., the largest chain of music stores in eastern Canada, TVA Films, and Le SuperClub Vidéotron Ltd., a chain of video and video game rental and retail stores.

Videotron Ltd is the largest cable television network in Quebec with close to 1.6 million cable TV subscribers. Videotron is also the largest High-Speed Internet service provider in Quebec and a leading provider of VoIP services in Canada, with more than 450,000 VoIP customers in early 2007. Vidéotron has achieved more than 25% penetration of its customer base with telephony in approximately 2 years, a significant success when compared to any of its peers.
Vidéotron is a renowned technology leader and innovator among Canadian and North American cablecos. Other examples of Videotron’s technology and service innovation leadership among Canadian telecommunications carriers are:

- Videotron was the first cableco to implement bi-directionality on its local network to 97% of its subscribers;
- Vidéotron offers the fastest high speed Internet service to its residential customers in Canada. In July 2006, Vidéotron upgraded its Extreme Plus Internet Service from 16 Mbps to 20 Mbps, without changing the price of the service. Vidéotron offers this service across its entire addressable market of 2.4 Million homes passed in Quebec. No other cableco or telco in Canada offers such high-speed Internet service to its entire subscriber base.
- Videotron launched High Definition Video-on-Demand in March 2007\(^1\), another first in Canada.
- Videotron is conducting technology trials with Cisco to bring up to 100 Mb/s of bandwidth to its subscriber base, a first in North America. In February 2007, Videotron announced positive results of the trials started in December 2006 and potential launch of the new service in 2007\(^2\).

Videotron has been a participant in the Canadian mobile communications market since launching its mobile service in August 2006, first in Quebec City and then to other cities including Montreal later in the year. This service is being offered via an agreement with Rogers Wireless. As per the latest quarterly results released, Videotron had captured more than 20,000 wireless subscribers among its addressable market.

QMI perceives mobile as a natural extension of its existing service offering to the consumer market and as an important competitive tool in the rapidly evolving Canadian telecommunications services industry. QMI vies to become a mobile broadband operator, leveraging its fixed network as well as future mobile operations.

\(^1\) Un dimanche à Kigali en HD sur Illico sur demande, March 14, 2007, Press release of Videotron Ltee.
\(^2\) A first in North America, Cisco Wideband Technology provides capacity to handle explosive downloading capabilities; Videotron positioned to deliver fastest Internet speeds in Canada, February 1, 2007, Press release of Videotron Ltee.
QMI also views mobile telecommunications as a critical tool to foster the development and distribution of Canadian and Quebec content on this rapidly emerging media platform.

These objectives cannot be accomplished if QMI is limited to resale of network capacity from one of the 3 incumbents as a Mobile Virtual Network Operator (MVNO) as this approach exhibits significant shortcomings. MVNOs have to deal with limited flexibility in terms of service pricing, technology available as well as choice of handsets. The result is a lag in service offering, competitive pricing and innovation provided to the MVNO customers.

For example, MVNOs cannot differentiate themselves in terms of coverage. In the Canadian context, these arrangements generally do not enable the resellers to offer the latest broadband mobile innovative services, such as video clips, mobile TV or mobile movies, and thus limit the ability of the service provider to keep up with the facilities-based carrier and their service offerings. MVNOs also typically generate much lower operating margins, thus reducing their ability to invest into accelerated customer base acquisition.

Furthermore, the technology differences between the incumbent mobile carriers in Canada restrict the choice of underlying carrier for a service provider and could place in jeopardy the long term viability of resale arrangements under the current regulatory obligations.
1.4 The benefits of entry by new facilities-based mobile carriers in Canada

Based on information released by Statistic Canada on May 14, 2007\(^3\), wireless services generated close to $13B of revenue in Canada in 2006, up more than 16% compared to 2005.

The profitability of Canadian mobile carriers has also been significantly improving for many years. Overall operating profit in wireless increased 41.3% for the whole year, compared to 2005, and a very impressive 67.1% increase in the fourth quarter of 2006 alone, compared to 2005.

When analyzing the mobile communications industry in Canada, the question is not really if the industry is successful, since, from a financial perspective, it obviously is.

The better question is how Canada’s performance, on a number of consumer benefits and operational metrics, compares to that of other countries and if found lagging, what can be done about it.

It is a recognized fact that penetration for mobile telecommunications services in Canada significantly lags what has been achieved in other developed countries and that the relative worldwide positioning of Canada continues to slip every year. At the end of 2004, Canada’s mobile penetration ranking had slipped to 29 out of 30 among OECD countries.

In 2006, mobile penetration in the US, our neighbor and largest trading partner, increased from 70% to 78% of the population. During the same year, in Canada, mobile penetration increased from 52% to 57%. Essentially, even though Canada’s mobile market is substantially less mature than the US market, its growth rate is substantially slower than

\(^{3}\) The Daily, Statistic Canada, May 14, 2007
the growth rate experienced in the US. This is exactly the opposite of what should be expected.

The difference in penetration between the US and Canadian market leads us to argue that we are “missing” 6.5 Million mobile subscribers in this country, more than all the current number of subscribers of either Telus or Bell, a fact often overlooked when discussing the viability of a fourth mobile carrier in Canada.

The Canadian mobile telecommunications market is also characterized by the fact that two (2) out three (3) major incumbents, namely Bell Canada and Telus, are also the two largest incumbent wireline carriers. This translates into a slower, more managed introduction of new services in the market, notably when it comes to offering the so called “large bucket” packages, with thousands of minutes included per month. These types of services were introduced very successfully in the US to promote the use of mobile telephone at the expense of conventional wireline telephone, but are essentially non existent in Canada.

Much has been said and written about prices for mobile services in Canada. In general, although the details vary, the conclusion is the same…. mobile services cost much more in Canada than they do in the US.

As a matter of fact, the cost of each minute of voice communications in Canada is roughly double the cost in the US.

Not surprisingly, Canadian mobile carriers are reporting much better operating margins than their US counterparts.

For example, in IQ 2007, Rogers’ wireless EBITDA margin was at 49.4%, very similar to the margin reported by Telus. By comparison, the EBITDA margin of Verizon Wireless, one of the largest and best managed US mobile carriers with a very low churn rate, was at 44.3% for the same period.
It is a somewhat little known fact that Canadian wireless carriers have also been laggards in capital investment over the last 6 years, also when compared with US carriers, and that the difference has increased over recent years.

From 2004 to 2006 inclusively, the capex intensity of large US mobile carriers was reported at 18% to 20% of revenues, depending on the year, while in Canada it stood at approximately 13%. Thus, for each of these years, the capex intensity of US carriers was 40% to 50% higher than that achieved by Canadian carriers.

No wonder the deployment of advanced 3G technologies in Canada lags that of the US.

Not surprisingly, as of IQ 2007 results, mobile data accounted for 17.4% of Verizon’s wireless ARPU. In Canada, Rogers, reported the highest proportion of revenues generated by mobile data at 12.3%, also in IQ 2007.

In addition, since the conclusion of the U.S. 2006 AWS auction, national and regional mobile carriers have announced significant investment plans to deploy equipment in their newly acquired spectrum. As examples, within just a few months of the auction completion, T-Mobile announced an investment in excess of $2.5B US to upgrade its network to 3G. More recently, regional mobile carrier MetroPCS completed an Initial Public Offering (IPO) exceeding more than $1B U.S. after acquiring AWS licenses for a total of $1.4B to expand its footprint. MetroPCS’s “unique business plan” is underpinned by flat fees for unlimited local calls and requires no long-term contract from its customers.

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5 MetroPCS Completes $1 Billion IPO, Wall Street Journal, April, 19, 2007, Article by Yvonne Ball.
In summary, if we want to capture the salient points of a US/Canada comparison in terms of mobile metrics, it would be:

<< Higher end user costs, lower capital investment and slower deployment in advanced 3G technologies all combined, translate into lower penetration and total industry revenues, but higher margins for Canadian carriers as opposed to US carriers>>.

No wonder that the incumbent mobile carriers vehemently oppose any auction rules or license conditions that could result in a new entry into the market. This was highlighted in a recent Financial Post article “That visceral reaction at the possibility of a new entrant underlines how much BCE, Telus and Rogers want to keep others out of the market”.

QMI and other potential new entrants will be catalysts for changes to the current paradigm and the creation of significant end user benefits.

This will be accomplished via more competitive pricing to increase penetration rapidly, quicker introduction and widespread deployment of advanced 3G technologies and better quality mobile data and video services to all regions of the country in rural as well as in urban areas.

Now is the time to act - before it is too late.

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6“Pre-Wireless spectrum auction manoeuvring”, FP article, April 22, 2007, Paul Vieira

Canada Gazette Notice DGTP 002-07
QMI Submission - May 25, 2007
1.5 Enabling a level playing field: the conditions for new entry in Canada’s mobile communications market

QMI is committed to successfully deploy a facilities-based state-of-the-art mobile telecommunications network, provided that a level playing field is set out to enable entry by new carriers.

This means that in order for new telecommunications carriers - including QMI - to commit to the significant investment which will have to be made to successfully compete in the Canadian mobile telecommunications industry, appropriate auction rules and license conditions need to be in place to provide a reasonable opportunity for success. These conditions will be necessary to enable a level playing field.

This is nothing new in the Canadian telecommunications industry. Enabling a level playing field has traditionally been recognized as an important principle by the Canadian government and policy makers in order to set up competitive environments that can allow the emergence of new players.

In 1982, the Canadian government invited applications to operate cellular service in 23 Metropolitan Areas across the country. The need for a level playing field was recognized when licenses were issued in 1983. There was a spectrum license for a new entrant, Cantel (now Rogers Communications Inc. or RCI) and spectrum licenses set aside for the incumbent telephone companies. In addition, to ensure that Cantel would have a reasonable chance of success as the sole carrier without incumbent wireline facilities, the license conditions included a no-head start policy, meaning that cellular service from the cellular affiliates of the telephone companies could not be launched ahead of the Cantel service. This was a significant benefit provided to then new entrant Cantel (now RCI) to enable it to compete on a level playing field against the incumbent telephone companies.

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7 Canada Gazette Notice DGTN-006-82/DGTR-017-82. October 15th, 1982
Without this measure, Cantel would have been subjected to a major competitive disadvantage and its success could have been in doubt.

The need to level the playing field was also recognized in 1995 when PCS licenses were issued. A spectrum cap was applied to the total spectrum assets of incumbent carriers resulting in a 10 Mhz spectrum set aside for these carriers. 30 Mhz spectrum licenses were then awarded to new entrants. After the award of the PCS licenses in 1995, the two new entrants had total mobile spectrum assets of 30 MHz each, while the two incumbents had 35 MHz each. In addition, roaming obligations were imposed on the incumbents before they could start offering their own digital PCS services.

From the launch of mobile services to the auction of remaining PCS spectrum in 2001, Canadian mobile carriers paid out license fees on a yearly basis as opposed to upfront fees. In addition, these fees increased in conjunction with the expansion of their mobile network and with their growth in revenues. As an example, the following Table highlights total cellular service revenues and licence fees for BCE Mobile Communications Inc. in 1991 and 1993.

**Table 1 – BCE Mobile yearly licence fees in the early 1990’s**

<table>
<thead>
<tr>
<th>BCE Mobile Communications Inc.</th>
<th>1991</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellular Operating Revenues</td>
<td>$288.3M</td>
<td>$386.3M</td>
</tr>
<tr>
<td>Yearly License Fees</td>
<td>$3.5M</td>
<td>$16.3M</td>
</tr>
</tbody>
</table>

Sources: BCE Mobile Annual Report 1991
BCE Mobile Communications Inc., Annual Information Form, 1993

As is demonstrated above, in 1991, a total of 6 years after the launch of its cellular service, BCE Mobile only paid out $3.5M of licence fees to Industry Canada in that year or slightly more than 1% of its revenues.
BCE Mobile as well as the other incumbent mobile carriers in Canada thus significantly benefited from a licence fee regime on a pay-as-you-go basis where yearly fees increased with the growth of their respective businesses. This was a significant benefit awarded to these carriers as they were building out their networks, a benefit they enjoyed until the 2001 PCS auctions, i.e. for more than 15 years. This benefit was a result of the use of comparative evaluation or competitive process then in use to award mobile spectrum as opposed to the use of auctions, as currently favored.

As was eloquently demonstrated in the 2001 PCS auction in Canada and in other auctions in other countries, the value of any mobile spectrum is highest for incumbent operators. Incumbent operators acquire spectrum not only to provide service to their increasing base of customers but also, they acquire additional spectrum as an effective means of blocking entry and of ensuring that no new competitors emerge. This results in higher spectrum valuations for incumbents whenever spectrum is made available, regardless of their own needs.

For this reason, QMI argues that no new entrant will emerge in Canada if sufficient measures are not implemented to promote such entry. These measures include a spectrum set aside.

Awarding mobile spectrum on a regional basis is also a critical success factor, especially in the context of Canada’s geography. This approach was used extensively and to great success in the United States and would be easily applicable in Canada. The details of our Submission provide information highlighting the fact that many AWS mobile licenses were acquired by regional bidders in the US in 2006. Implementing a similar approach in Canada would result in enhanced coverage, services and benefits to all Canadians, whether they live in urban or rural areas. Regional licenses will enable smaller Canadian carriers to successfully enter the mobile market and thus, competition in each local market would be much enhanced by this measure. Offering regional licenses will also enable a faster deployment of advanced 3G technologies in rural areas such as HSDPA and EVDO Rev A and their future evolution.
Offering new spectrum on a national basis does not provide any guarantee that competition will emerge in currently underserved areas. However, a national competitive force could emerge from a multitude of regional players.

Regional mobile carriers hold the key to provide new mobile service alternatives to all Canadians.

Another critical success factor in enhancing competition in mobile services is mandatory automatic seamless roaming. The importance of roaming has long been recognized in the US where manual roaming among mobile carriers was enshrined in the Code of Federal Regulations more than 10 years ago, as of 1996. Roaming is considered on a technology-neutral basis and the newly auctioned AWS licensees in the US are thus captured by the same provision. Mobile carriers, as all other telecommunications carriers, are subject to common carrier obligations in the US.

Roaming has been a cornerstone of the success of the US mobile industry in fostering increased competition and regional carriers.

Indeed, without mandated automatic seamless roaming, there cannot be regional mobile facilities-based carriers as it is a well recognized truism that incumbent carriers have no motivation to offer roaming to other emerging carriers. Canadian incumbent mobile carriers have been violently opposed to executing digital roaming agreements within their domestic markets, except and only between themselves.

All major incumbent mobile carriers in Canada have however entered into numerous roaming agreements with carriers in other countries to ensure that their customers obtain

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8 Code of Federal Regulations, Title 47, Part 20.12 (c) “Roaming”, effective October 28, 1996: “Each carrier subject to this section must provide mobile radio service upon request to all subscribers in good standing to the services of any carrier subject to this section, including roamers, while such subscribers are located within any portion of the licensee’s licensed service area where facilities have been constructed and service to subscribers has commenced, if such subscribers are using mobile equipment that is technically compatible with the licensee’s base stations.”
the full and expected benefits of mobility. For example, Rogers Wireless, similar to other carriers around the world, is a member of the GSM Association (GSMA) and has thus entered into roaming agreements with numerous carriers in a large number of other countries. The following excerpt from the GSMA’s website highlights the perspective of carriers worldwide regarding the benefit of roaming.

“GSM Roaming, which involves roaming between GSM networks, offers the convenience of a single number, a single bill and a single phone with worldwide access to over 210 countries*. The convenience of GSM Roaming has been a key driver behind the global success of the GSM Platform.”

Wholesale services and interconnection are an integral element of any telecommunications service offering. All carriers providing wireline services, whether incumbents such as Bell or Telus, or competitors, such as Rogers, rely on the services of other carriers to provide wireline services to their customers across the country. Cablecos such as Videotron have opened up their local networks to other service providers. This is not an exception, but a general rule that applies to all. It is long overdue for this rule to apply to mobile communications across Canada.

In Canada, the impact of a lack of roaming obligation is exacerbated by the differences in technology (CDMA-based and GSM-based) deployed by the various carriers.

*Please note that throughout this submission, the terminology GSM-based encompasses conventional second generation (2G) GMS technology as well as all its evolution, including GPRS, EDGE and third generation (3G) HSPA and beyond such as LTE. By the same token, the terminology CMDA-based encompasses 1XRTT as well as EVDO and its different revisions such as EVDO Rev A.

QMI respectfully submits that there are six (6) critical requirements for new carriers to consider entering the Canadian mobile market and for increased competition and innovation to benefit Canadian consumers and businesses as rapidly as possible.
1. **The requirement for 40 MHz of spectrum to be set aside for new entrants**, the minimum requirement for new entrants to effectively compete.

2. **The requirement for regional licenses**, to bring competition in all urban and rural areas of the country.

3. **The requirement for mandated automatic seamless digital roaming**, as a prerequisite to the existence of regional licenses.

4. **The requirement for mandated tower co-location and antenna site sharing**.

5. **The requirement for future licensees to rapidly build-out their networks**, as QMI believes that strict conditions need to be imposed on licensees to use the spectrum awarded. QMI recommends that future licensees with set aside spectrum be required to build out to 50% of their covered population in all Tier 2 licences within 3 years, after official spectrum award to the new entrant.

6. **Restrictions imposed on holders of set aside spectrum regarding the transfer to or acquisition of the totality or of a portion of their licenses by existing incumbent mobile carriers for a period of five years.**

In QMI’s perspective, these auctions represent a unique, and likely the last, opportunity for the Canadian government to set out a framework to enable the emergence of increased competition in mobile and for Canada to eventually catch up with its peers. To this effect, the last two requirements highlighted above have been included by QMI to ensure that spectrum is rapidly and effectively used by new entrants and that public welfare is enhanced in a sustainable manner via restrictions put in place regarding the sale of set aside spectrum by new entrants to any of the current incumbent carriers.

The 3-year, 50% population coverage recommended network build out requirement will avoid the participation in the auction of speculators who would acquire spectrum with the only objective of reselling it to one of the incumbent operators within a short timeframe. This approach is contrary to the objectives of QMI who fully intends to
participate in the Canadian mobile industry as a builder of networks and hence creator of value and benefits for Canadian consumers.

The objective of the additional restriction on the sale of set aside spectrum for up to 5 years is to ensure the sustainability of competition and consumer protection in the long term. Similar measures have been put in place in other countries to ensure the sustainability of competition in their mobile markets. Furthermore, since recent history indicates that the acquisition of a mobile carrier can have a significant negative impact on public welfare, QMI also recommends a mandatory public consultation to assess the need to return mobile spectrum as well as to analyze competition issues, should a new carrier sell its operation to an incumbent after the 5 year period.

Moreover, QMI highlights that new entrants will require the ability to pay out licence fees committed as part of the upcoming auctions on a yearly basis over the duration of their licence term. This requirement appears very reasonable and justifiable in light of the significant benefits awarded in the past, and still in effect to this day, to the incumbent mobile carriers in regards to the payment of their licence fees.

The details of QMI's submission to Industry Canada support the critical requirements listed above based on Canadian and international experiences.

1.6 On the question of mandated tower co-location and antenna site sharing

Tower sharing has not been specifically addressed by Industry Canada in the AWS consultation.

Tower sharing is similar to sharing telephone and utility poles, which has been normal practice in wireline communications for many years.

Tower sharing is a recognized enabler for mobile communications worldwide. As an example, in the US, towers are often provided by independent tower companies such as
American Tower. The situation is markedly different in Canada where towers have more often than not been jealously guarded by the various mobile carriers as a competitive advantage and as a tool to delay the network deployment of other carriers and increase the capital investment required.

The advantages of tower co-location and antenna site sharing are numerous, among which we note:

- Minimization of environmental issues associated with new towers and roof tops by sharing towers and roof tops. A good example of the detrimental impact of the co-location of multiple towers is provided in the picture below.\(^9\)
- Speed to market for the various mobile carriers to enhance coverage and increase network capacity.
- Reduction in capital investment for new entrants and incumbents alike, as mobile carriers continually need to expand the number of wireless sites to provide for enhanced coverage as well as to increase the capacity or bandwidth of their existing network.
- Revenue generation for the carriers or organizations that own the towers and antenna sites.

\(^9\) Additional pictures highlighting environmental issues with multiple towers are provided in Appendix A to this Submission.
In 2003, Industry Canada commissioned professor David A. Townsend, Faculty of Law, University of New Brunswick, to investigate issues related to tower co-location and sharing. One of the six (6) questions to be investigated as part of the mandate of Professor Townsend was stated as “How and to what extent can tower sharing be utilized in order to reduce the total number of towers?”

The final report of Professor Townsend, was published in December 2004. More than two years have elapsed since the recommendations regarding a National Antenna Tower Policy Review were forwarded to Industry Canada.
The lack of mandated tower co-location and antenna site sharing will have a significant negative impact on how quickly Canadian consumers and businesses will be able to benefit from increased competition for mobile services after the AWS auction.

QMI urges Industry Canada to issue its policy regarding tower co-location and antenna site sharing forthwith to enable carriers interested in participating in the upcoming mobile spectrum auctions to initiate their activities immediately.

1.7 QMI urges Canada’s government to advance the timing of the upcoming AWS spectrum auction

There is inherently a significant time lag between the award of spectrum to a new mobile carrier and the launch of a new mobile network.

QMI urges the Canadian government and Industry Canada to accelerate the process to award the AWS spectrum and the other bands included in the current consultation and to hold the spectrum auction early in the fourth quarter of 2007.

The US completed its award of AWS spectrum in September 2006. If Canada awards AWS spectrum in early 2008 as per the preliminary timetable highlighted by Industry Canada, for example in February 2008, this would result in a delay of close to 18 months in spectrum award compared to the US.

These delays are unacceptable to Canadian consumers and businesses that need increased competition and access to the best available mobile services. Canadian consumers are clamoring for more mobile services and Canadian businesses need better access to enhanced mobile communications tools.

QMI urges the Canadian government to advance this timetable by six months for the benefit of all Canadians.
QUEBECOR MEDIA INC.

SUBMISSION
2. Perspective on the Canadian Mobile Industry

Mobile communications services in Canada have been enjoying significant growth rates both in terms of penetration as well as overall revenues on a continuous basis, every year since their launch in Canada in the mid’80s.

Based on information released by Statistic Canada on May 14, 2007\textsuperscript{10}, wireless services generated close to $13B of revenue in Canada in 2006, up more than 16% compared to 2005.

The profitability of Canadian mobile carriers has also been significantly improving for many years.

Overall operating profit in wireless increased 41.3% for the whole year compared to 2005 and a very impressive 67.1% increase in the fourth quarter of 2006 alone, compared to 2005.

Although the wireless segment represents less than 60% of the revenues generated by fixed telecommunications, the operating profit of the wireless segment surpassed the operating profit generated by wireline communications by a significant margin. As highlighted by Statistic Canada, wireless operating profit generated in 2006 was in excess of $4B while all wireline telecommunications generated slightly in excess of $3.5B.

Nevertheless, Canadian carriers increased their capital expenditures by 3.6% in 2006 for wireline services while very little or no growth occurred in wireless capital expenditures (0.5% as per Statistic Canada).

When analyzing the mobile communications industry in Canada, the question is not really if the industry is financially successful, since it obviously is.
The better question is how Canada’s performance metrics compare to that of other countries and if found lagging, what can be done about it.

2.1 The status of mobile services in Canada: key industry performance metrics

- On the question of penetration

It is a verifiable and recognized fact that penetration for mobile telecommunications services in Canada significantly lags what has been achieved in other developed countries and that the relative worldwide positioning of Canada continues to slip every year.

At the end of 2004, Canada’s mobile penetration ranking had slipped to 29 out of 30 among OECD countries, as is highlighted in Figure 2.

However, Canada was not always a laggard in mobile penetration. In 1996, just at the time of launch of PCS or second generation mobile services, Canada’s mobile penetration stood at 11.6% while the OECD average was 10.9% and the EU 15 countries were at 8.9%. Canada was then in a favorable global competitive position in mobile communications services, as has been the case with most telecommunications services such as wireline telephone service and High Speed Internet service.

\[10\] The Daily, Statistic Canada, May 14, 2007
In 2006, mobile penetration in the US, our neighbor and largest trading partner, increased from 70% to 78% of the population. During the same year, in Canada, mobile penetration increased from 52% to 57%. Essentially, even though Canada’s mobile market is substantially less mature than the US market, its growth rate is substantially slower than the growth rate experienced in the US. This is exactly the opposite of what should be expected. Essentially, the difference in penetration between the US and Canadian market implies that we are “missing” 6.5 Million mobile subscribers in this country (see the following Figure), more than all the current number of subscribers of either Telus or Bell, a fact often overlooked when discussing the viability of a fourth mobile carrier in Canada.
The poor mobile penetration performance of Canada does not imply that incumbent Canadian mobile carriers are poor operators. Rather, our assessment is that it is indicative of a lower overall competitive rivalry in Canada compared to other countries, as a result of the fact that Canada has fewer mobile operators than what is generally found in other countries. The fact that the number of mobile carriers has a definite impact on service penetration has also been observed in other countries. As a matter of fact, as highlighted by the EU in their review of mobile markets in Europe, “Penetration tends to be the highest in countries with a greater number of service providers”\(^{11}\) (emphasis added).

Furthermore, the Canadian mobile telecommunications market is also characterized by the fact that two (2) out three (3) major incumbents, namely Bell Canada and Telus, are also the two largest incumbent wireline carriers. This translates into a slower, more managed introduction of new services in the market as well as into higher prices, hence the negative impact on the level of interest from Canadian consumers compared to those of other

countries. For example, this characteristic has impacted the level of innovation in new services, notably when it comes to offering the so called “large bucket” packages, with even thousands of minutes included per month. These types of services were introduced very successfully in the US to promote the use of mobile telephone at the expense of conventional wireline telephone, but are essentially non existent in Canada.

This assessment of the Canadian mobile telecommunications market has been corroborated by the final Report of the Telecommunications Policy Review Panel submitted to the Minister of Industry in March 2006 when the panel asked “Wireless: Are we really in the Game?”. The TPRP Report highlights the following in its discussion of the mobile market in Canada.

“The smaller number of mobile providers in Canada — and the fact that all three national wireless service providers are also owned by large telecommunications service providers that also provide wireline services — may mean that there is less competition in the Canadian wireless market than in the U.S. market, which consequently has resulted in higher prices, less innovation, lower uptake and lower rates of usage.”\(^\text{12}\)

Canada needs new facilities-based mobile carriers for Canadian consumers and businesses to rapidly gain access to the benefits of increased innovation and enhanced 3G mobile services as well as overall lower prices.

Mobile communications services are no longer an adjunct or complementary service. Mobile communications services have become essential to many Canadian consumers and businesses. A significant proportion of Canadian households has disconnected their fixed phone line and only uses their mobile phones for voice services.

\(^{12}\) TPRP Report, submitted to Industry Canada, April 2005, Chapter 1, P. 21
On the question of pricing, ARPU and margins

As highlighted in Table 2, Canadians pay close to the same amount for mobile communications services on monthly basis as US consumers do. However Canadians “get” two times fewer minutes of voice communications as their US counterparts do. In other words, Canadians pay twice as much as US consumers for each minute of use of their mobile phone.

Table 2 – Canada /US ARPU and MoU comparison

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada (Carrier results)</td>
<td>$ 56.60</td>
<td>420</td>
</tr>
<tr>
<td>USA (as per CTIA)</td>
<td>$ 57.50</td>
<td>820</td>
</tr>
</tbody>
</table>

A recent report published by Moody’s Investor Services comes to the same conclusion.

“We note that the wireless penetration rate in Canada continues to lag well behind that in the US (roughly 76% currently) and the gap has widened by about 9 percent points since 2002. We believe Canada’s subscriber growth has been – and continues to be – inhibited by relatively higher rate plans, given pricing is roughly twice as high in Canada compared to the U.S on a per minute basis (emphasis added).

Canadian ARPU expanded by about 6% in 2006 to roughly $56. This was actually an acceleration of ARPU growth, which increased by about 4% in each 2004 and 2005.”

Prices in Canada continue to increase, as demonstrated by the significant increases in revenues per user generated by all Canadian mobile carriers in 2006 as noted by Moody’s as well as by Statistic Canada. As reported by Statistic Canada, “The operating revenue
per subscriber also increased at the end of 2006, climbing 7.2% to approximately $190 per subscriber compared to $177 in the fourth quarter of 2005.”¹³ Note: This is operating revenue expressed on a quarterly basis.

A similar conclusion was also reached by Seaboard Group in their March 2007 Report entitled “Lament for a Wireless Nation” which states that “For the heavy mobile phone user, the penalty for being Canadian is a cell phone bill that is 1.5X higher than a comparable U.S. bill. The premium for being Canadian is only 16% when compared to the average European heavy user.

For the average user the Canadian cell phone bill is 33% higher than in the U.S. This is down from the 60% difference we recorded in our last study”.

Although increased usage can also lead to higher revenue per user, another cause in Canada has been increasing prices such as increases in monthly access fees charged to users as well as the very high prices charged for long distance calls over mobile phones. 

The increases in pricing have had a positive impact on margins reported by Canadian mobile carriers as highlighted in the following Table.

---

Table 3 – US/Canada comparison of Operating Margins – IQ 2007 –

<table>
<thead>
<tr>
<th>Margins for Wireless Operations</th>
<th>Canada</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rogers*</td>
<td>Bell</td>
</tr>
<tr>
<td>EBITDA Margin (%)</td>
<td>49.4%</td>
<td>45.7%</td>
</tr>
<tr>
<td>OIBDA Margin (%)</td>
<td></td>
<td>38.7%</td>
</tr>
</tbody>
</table>

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Sources: All IQ 2007 Carrier Results

* Telus EBITDA (as adjusted) to network revenue reflecting a non-cash charge related to share option awards granted prior to 2005.

Rogers reports Operating Profit Margin defined as revenues less operating expenses divided by network revenues (in %)

As shown above, operating margins reported in Canada, before depreciation and amortization, are significantly higher than those reported in the US, hence the higher profitability of Canadian carriers as a result of the less intense competitive environment.

2.2 Investment Levels

It is a well recognized and documented fact that Canadian incumbent mobile carriers have invested significantly into their mobile networks over more than 20 years.

However, it is a somewhat less known fact that Canadian wireless carriers have been laggards in capital investment in recent years when compared with US carriers.

This is in spite of the fact that US carriers face a more challenging competitive environment, not only in terms of the average number of carriers active in any given market, but also in terms of the average revenue per minute generated over their networks.
The following Figure compares the capex intensity of the major Canadian and US mobile carriers over the last 6 years. This includes the largest Canadian mobile carriers, namely Bell, Rogers, Telus and MTS operating in Manitoba, with the largest 5 mobile carriers in the US, namely AT&T (Cingular), Verizon, Sprint Nextel, T-Mobile and Qwest.

Although capex intensity has significantly declined in both countries since year 2000, Canada’s was always lower than the US. Over the last 4 years, US capex intensity has averaged roughly 18% of revenues while Canada was at 16% in 2003 and been steady at approximately 13% since then. Thus, capex intensity has been at least 38% higher in the US than in Canada for the last 3 years.
It does not appear to be much of a stretch of the imagination to conclude that the decline in capex intensity of Canadian mobile carriers over recent years may be the cause of the slower deployment of enhanced 3G technologies in the Canadian market.

2.3 Mobile license conditions to promote new entry

Table 4 provides a summary of mobile license conditions put forward in a number of countries that have resulted in increased competition and thus positive outcomes for consumers and businesses.

This analysis was developed by LEMAY-YATES ASSOCIATES Inc. (LYA) on behalf of QMI to assess which license award processes and license conditions were used in other
developed countries to increase the level of competition in mobile markets and promote the emergence of new carriers, in conditions when mobile markets are fairly well developed as is the case now in Canada\textsuperscript{14}.

The key conclusions derived from this review are reproduced below:

“The key factors that have yielded new entry as well as sustained the number of facilities based mobile carriers in the countries reviewed are:

1. Awarding more licenses than there are incumbent carriers,
2. Spectrum set aside for new entrant, either as a condition of the auction process or via a criterion set as part of a comparative assessment (“beauty contest”),
3. Mandated roaming and resale,
4. No restrictions on foreign investment, both in the US and European countries,
5. License conditions that stipulate that each licensee can detain only 1 license.
6. The number of licensees affiliated with incumbent local telephone companies.

Other conditions which have supported entry and especially the sustainability of new carriers also include:

7. Slower network roll out requirements for 3G licensees, compared to the initial PCS licenses.
8. Extension of the duration of the licenses to 15 and even 20 years
9. Issuing a large number of regional licenses as is done in the US with the ensuing deployment of regional carriers, coupled with mandated roaming

\textsuperscript{14} A copy of the full report is provided in Appendix to the QMI Submission.
10. The permission to share tower sites and network equipment under guidelines from the regulator ensuring that the level of competition is maintained and that agreements are not exclusive or discriminatory. While many regulators were initially wary of allowing infrastructure and network sharing thinking this would limit competition, the practical aspects of raising capital and ensuring a viable business for 3G operators as well as significant environmental impact and concerns demonstrate that in many cases, the benefits of infrastructure and network sharing outweigh the disadvantages. “.
### Table 4 - Summary of mobile license award process and license conditions in selected countries

<table>
<thead>
<tr>
<th>Successful result - entry of new competition(s) via 3G/AWS licenses</th>
<th>CANADA</th>
<th>US</th>
<th>UK</th>
<th>Germany</th>
<th>Ireland</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>CANADA</td>
<td>AWS not yet licensed</td>
<td>YES (auction resulted in one new national carrier)</td>
<td>NO (auction had six winners, but only 4 incumbents are in service)</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>Expanded regional carrier footprint, plus cable consortium (AWS auction Sept 2006)</td>
<td>5 national</td>
<td>6 national (12 blocks auctioned; 2 per licensee)</td>
<td>NO (winning combination of licenses decided by bidders)</td>
<td>YES (licenses awarded as beauty contests)</td>
<td>3 licenses awarded in 2002, 1 license awarded in 2005 and later revoked. At least 1 new entrant, potential for 1 more.</td>
</tr>
<tr>
<td>UK</td>
<td>NO (spectrum cap removed in 2004)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Germany</td>
<td>NO (spectrum cap removed in 2003)</td>
<td>YES (one license per bidder)</td>
<td>YES</td>
<td>YES (licenses awarded as beauty contests)</td>
<td>YES (3G roaming onto 2G)</td>
<td>YES</td>
</tr>
<tr>
<td>Ireland</td>
<td>YES (common carrier requirement - manual)</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>YES</td>
<td>NO initially, but modified post auction</td>
<td>Allowed and in place under guidelines from regulator</td>
<td>YES</td>
<td>YES</td>
<td>Can not be mandated by Regulator. Is strongly recommended</td>
</tr>
<tr>
<td>Number of 2G/3G licenses awarded</td>
<td>6 PCS per area cover country</td>
<td>6 PCS and 6 AWS per area cover country</td>
<td>5 national</td>
<td>6 national (12 blocks auctioned; 2 per licensee)</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Specific licenses designated for new entrants</td>
<td>NO</td>
<td>note 2</td>
<td>YES</td>
<td>NO (winning combination of licenses decided by bidders)</td>
<td>YES (licenses awarded as beauty contests)</td>
<td>YES (licenses awarded as beauty contests)</td>
</tr>
<tr>
<td>Total spectrum holdings limited</td>
<td>NO (spectrum cap removed in 2004)</td>
<td>NO (spectrum cap removed in 2003)</td>
<td>YES (one license per bidder)</td>
<td>YES</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Mandatory digital roaming</td>
<td>NO (analog only)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Mandatory tower sharing rules</td>
<td>NO</td>
<td>NO, but there are third party tower management firms</td>
<td>YES</td>
<td>Not mandatory but allowed and agreements in place under guidelines from regulator</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Infrastructure sharing allowed under guidelines from regulator</td>
<td>YES (common carrier requirement - manual)</td>
<td>NO initially, but modified post auction</td>
<td>Allowed and in place under guidelines from regulator</td>
<td>YES</td>
<td>YES</td>
<td>Can not be mandated by Regulator. Is strongly recommended</td>
</tr>
<tr>
<td>Less stringent build out requirements for entrants</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Structural separation of ILEC mobile operations</td>
<td>YES (removed in 1998)</td>
<td>YES (removed in 2002)</td>
<td>YES (BT divested mobile operations)</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Obligation to provide service to MVNOs</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO. Resale is however mandated and widely used.</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Foreign control of mobile carriers allowed</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Duration of license</td>
<td>10 years</td>
<td>10 years (PCS); 15 years (AWS)</td>
<td>20 years</td>
<td>20 years</td>
<td>20 years</td>
<td>15 years</td>
</tr>
</tbody>
</table>

Note 1: PCS was originally structured in six blocks; the 30 MHz C block was subsequently divided into three 10 MHz licenses
Note 2: For PCS, the FCC set aside the C and F blocks for entrants; For AWS the FCC relied on various license types to facilitate bidding by large/small entities
Note 3: Auction in 2000 resulted in six national licensees; subsequently one license was returned and one operator has not yet started up, leaving 4 national operators
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Similar spectrum award rules as well as license conditions are being recommended for use in Canada by QMI as the better means to increase the level of competition in mobile communications in Canada and hence increase public welfare derived from these services.
3. QMI responses and recommendations the Questions Posed by IC in DGTP-002-07

Sections 3 and 4 of this Submission detail the responses and recommendations of QMI to the 16 overall questions posed by Industry Canada as part of DGTP-002-07.

3.1 Auction rules and license conditions fostering a competitive wireless market

QMI highlights that all issues addressed in the consultation do not have the same bearing on the future of mobile communications in Canada.

The five (5) questions related to:

1. measures to enable market entry;
2. the implementation of a spectrum set aside;
3. spectrum aggregation limits on auctioned spectrum;
4. license service areas; and
5. mandated roaming and its implementation

are the key determinants to promote entry by new carriers and are thus critical if Canadian consumers and businesses are to benefit from increased competition in the foreseeable future.

3.2 Need for measures to enable market entry

In consideration of the present circumstances, the Department seeks comment on whether there is a need for measures intended to enable market entry in the AWS spectrum auction.

QMI Response
3.2.1 Why a spectrum set aside is required

Spectrum is an unavoidable barrier to entry for any would-be mobile telecommunications carrier in Canada or elsewhere. There are a limited number of options to acquire spectrum. It can either be secured during a government initiated spectrum award process or spectrum can be obtained via the acquisition of an existing mobile carrier serving the required territories.

In light of the oligopolistic nature of Canada’s mobile market and of the fact that all Canadian mobile carriers are fully integrated with extensive wireline operations, government initiated spectrum award is really the only choice for QMI to enter the mobile market in Canada as a facilities-based carrier.

I. QMI recommends that a spectrum set aside for new entrants is the most effective approach as well as a necessity for new carriers to enter the upcoming AWS auction with the objective of becoming full-fledged facilities-based mobile carriers.

The underlying rationale for a spectrum set aside is the fact that without a set aside, the emergence of one or more new mobile carrier(s) in Canada is very dubious. An AWS spectrum auction without spectrum set aside would essentially lead to a repeat of the scenario that unfolded in the 2001 PCS spectrum auction in Canada, where the incumbents secured all of the PCS spectrum awarded at that time except for spectrum obtained by W2N in British Columbia, in Alberta and in parts of Eastern Quebec.\(^\text{15}\)

As was eloquently demonstrated in the 2001 PCS auction in Canada and in other auctions in other countries, the value of any mobile spectrum is highest for incumbent operators. Incumbent operators not only require spectrum to provide service to their increasing base of customers but also, acquiring additional spectrum is an effective means of blocking entry and of ensuring that no new competitors emerge. This results in higher spectrum valuations for incumbents whenever spectrum is made available, regardless of their own
needs. These valuations can not reasonably be matched by new entrants for whom the value associated with keeping competitors at bay can not be included in the Net Present Value analysis for the spectrum.

Hence the results obtained in the 2001 Canadian PCS spectrum auction and the very high risk of inefficient use of spectrum again in the future AWS auction that could result from excess concentration of spectrum beyond the needs of current operators, if a set aside is not implemented.

QMI’s assessment of license award processes and license conditions in other countries highlight the fact that ex ante government intervention in spectrum award using the approach of spectrum set aside is a must have condition for new entrants to emerge. Other than the UK which has successfully conducted a 3G spectrum auction with a new entrant set aside, countries such as Ireland and Sweden also reserved a license for a new entrant as part of their 3G spectrum award which was conducted using a comparative assessment process (or ‘beauty contest’).

A spectrum set aside by no means implies that spectrum would be given free or sold at a discount to the winning bidder. On the contrary, based on experiences in other countries, one should expect vigorous bidding among potential new entrants for the set aside spectrum resulting in maximizing prices obtained for the spectrum commensurate to the business opportunity it provides to a new carrier.

A good example of the unfolding and of the results achieved in an auction with a set aside is provided by the auction of 3G spectrum in the UK in 2000, which auction can be qualified as yielding a very positive outcome.

The positive outcome of the UK 3G auctions was that all incumbent carriers obtained additional spectrum and that a new operator emerged following the auction, namely 3 owned by Hutchison Whampoa. In its 2001 Report, The UK’s Comptroller and Auditor

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15 W2N spectrum has since been acquired by Bell Canada

Canada Gazette Notice DGTP 002-07
QMI Submission - May 25, 2007
General noted that the UK mobile communications market now has five capable operators rather than four prior to the auction.\footnote{The \textit{Auction of Radio Spectrum for the Third Generation of Mobile Telephones}, Report by the Comptroller and Auditor General, 19 October 2001.}

Based on the results of this auction, one can hardly argue that the new entrant obtained spectrum free, especially considering the significant capital investment and hence high risk associated with such a venture.

Additional details on the rules and results of the UK auction are found in Appendix to this Submission.

3.2.2 \textit{Concluding remarks on the need for a spectrum set aside}

Again, ensuring that spectrum is licensed to a new entrant is a necessary first step to a more dynamic and competitive mobile wireless marketplace.

Indeed, the incumbents have also dominated in other more recent auctions for attractive fixed wireless spectrum in the 2300 MHz and 3500 MHz spectrum bands. Moreover, through consolidation, they have eliminated any new entrants to the mobile wireless industry, further entrenching their market dominance and augmenting their spectrum holdings. To recall, Telus purchased Clearnet in the year 2000, Rogers purchased Microcell and Inukshuk in 2004, and in 2006 Bell purchased 50\% of Inukshuk to hold this company’s spectrum along with Rogers.

Given the very significant spectrum holdings of Canada’s incumbent mobile operators – Bell, Telus and Rogers – it is difficult to see how all the spectrum they currently own, prior to the AWS auction, can be efficiently used. Rather, many of their spectrum acquisitions must be seen for what they are: defensive acquisitions and anti-competitive hoarding to raise entry barriers for newcomers, and even to close market entry. It is clear that any future allocation of spectrum for advanced 3G wireless services must have
conditions and processes in place to ensure that such continued anti-competitive market exclusion and inefficient spectrum hoarding does not take place.

A new entrant must be allowed to emerge in the Canadian mobile industry and a spectrum set aside is clearly required as a measure to enable market entry.

A spectrum set aside for new entrants does not equate to free or discounted spectrum to new entrants. As demonstrated in the UK example, when spectrum is set aside, new entrants pay a fair price commensurate to their own business opportunity.

3.3 The proposed implementation of a spectrum set aside

Industry Canada has requested comments on the proposed implementation of a spectrum set aside along the four questions outlined below. QMI’s proposed implementation is provided for each question.

First of all, QMI highlights that the current Industry Canada proposal comprises a total of seven (7) licenses to be awarded in each region in the upcoming auctions, consisting of:

- Five licenses in the AWS bands (1710-1755 and 2110-2155 MHz),
- one license in the 1670-1675 MHz band, and finally
- one license in the PCS expansion band of 1910-1915 and 1990-1995 MHz made available as a paired block.

As no more than 3 incumbent facilities-based mobile carriers currently serve each region in Canada, there are enough licenses for both incumbent carriers and new entrants in every region of the country.

The spectrum in the PCS Expansion band is better suited to fulfill the needs of incumbent carriers who already use adjacent frequencies.
The 1670-1675 MHz band does not provide enough capacity to alone support a new entrant in the market.

The AWS spectrum is the only suitable spectrum for a new entrant set aside.

3.3.1 Who should or should not be entitled to bid for set aside spectrum

II. QMI recommends that incumbent carriers and their affiliates be restricted from bidding on the set aside spectrum in all license areas where themselves or any of their affiliates already hold spectrum assets in any of the spectrum bands currently issued for mobile services, be it for voice, data, video or mobile Internet applications.

- All the cellular frequency bands
- The PCS frequency bands
- All the ESMR frequencies
- Future frequency bands that may be converted to mobile operation before the start of the auction.

This measure will ensure that the set aside spectrum would only be awarded to new entrants who, in turn, would have the required motivation to build out their networks and launch their service offerings in the shortest possible timeframe.

3.3.2 The amount of spectrum that should be set aside

The following Table compares total spectrum assets of Canadian mobile carriers prior to the upcoming AWS and other spectrum auction with the total spectrum assets of the major US Mobile carriers, in this case post AWS auction.
This data in this Table was developed by assessing spectrum holdings of these carriers in major cities across Canada (Toronto, Montreal, Vancouver, Ottawa-Gatineau, Calgary and Edmonton) as well as major cities in the US (NYC, LA, Chicago, Dallas, Atlanta, Detroit, Boston, Seattle, Minneapolis, St-Louis, Tampa, Pittsburgh, Denver, Albany, etc.)

Table 5\textsuperscript{17} – Canada /US comparison of spectrum holdings prior to and post AWS auction

<table>
<thead>
<tr>
<th>Spectrum Holdings in Major Cities</th>
<th>Mhz</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In Canada, prior to AWS auction</strong></td>
<td></td>
</tr>
<tr>
<td>Bell Canada</td>
<td>40 to 55</td>
</tr>
<tr>
<td>Telus (1)</td>
<td>50 to 55</td>
</tr>
<tr>
<td>Rogers</td>
<td>75 to 85</td>
</tr>
<tr>
<td><strong>In the US, post AWS Auction</strong></td>
<td></td>
</tr>
<tr>
<td>AT&amp;T</td>
<td>45 to 90</td>
</tr>
<tr>
<td>Verizon</td>
<td>30 to 85</td>
</tr>
<tr>
<td>Sprint Nextel/SpectrumCo (2)</td>
<td>43 to 63</td>
</tr>
<tr>
<td>T-Mobile</td>
<td>40 to 70</td>
</tr>
</tbody>
</table>

(1) Counting ESMR spectrum as an average of 10 Mhz.
(2) SpectrumCO is a different corporate entity than Sprint Nextel. Their spectrum holdings have been combined for this Table as the two companies are launching new services in cooperation. SpectrumCO obtained 20 MHz of AWS spectrum in the latest US auction.


Spectrum is the “nerf de la guerre\textsuperscript{18}” for mobile carriers.

The following arguments highlight the fact that Canadian carriers already benefit from significant spectrum holdings and that new entrants need to acquire enough spectrum set aside to effectively compete.

\textsuperscript{17} Table 2 above also excludes extensive spectrum holdings of the incumbents in the frequency bands of 2.3, 2.5, 2.6 and 3.4 Ghz, which spectrum is expected to eventually become useful for mobile applications.

\textsuperscript{18} Nerf de la guerre: the critical foundation
• **Canadian incumbent mobile carriers are already well equipped in terms of spectrum**

As is demonstrated in Table 5, the spectrum assets of Canadian carriers **prior** to the upcoming spectrum auction compare very well with the spectrum holdings of US Carriers, even **post** the US AWS auction. This is especially true in the case of Rogers Communications Inc. (RCI).

Based on the information presented in the Table and on the comparison with spectrum holdings of US carriers, it can be reasonably assumed that Canadian carriers currently operate well below the total amount of spectrum they currently own.

In addition, Canadian incumbent mobile carriers have also acquired significant amount of spectrum in other frequency bands that can now and in the future be used for mobile applications, further strengthening their spectrum assets.

As correctly pointed out by Industry Canada in DGTP-002-07 (p. 16) “Other spectrum bands have been recently the subject of new spectrum allocations or licensing activity that may have an effect of the spectrum capacity requirements for AWS services, including”:

• The bands 2300 MHz and 3500 MHz for WCS and Fixed Wireless Access were auctioned in 2004 and 2005. These bands are currently licensed as fixed but next generation wireless equipment providing mobile services are expected to eventually be deployed in these bands.

• The band 2500-2690 MHz, previously allocated to fixed services and to broadcasting, which was made available for mobile service use via a Policy statement in March 2006.

Bell, Telus and Rogers are already the largest owners of spectrum in the frequency bands listed above.
Furthermore, the frequency band 3650 to 3700 MHz, also proposed for flexible use by Industry Canada, is currently the subject of a consultation.

- **New entrants cannot effectively compete if restrained by a significant spectrum deficit**

At the time of the award of PCS spectrum in Canada in December 1995, Industry Canada had awarded 30 Mhz for the new entrants, Clearnet and Microcell, to provide them with enough capacity to effectively compete against the incumbent. This was when mobile services consisted essentially of voice communications and when text messaging applications were just emerging, both services with limited bandwidth requirements. Incumbents were capped at 10 MHz of additional PCS spectrum in 1995 which resulted in a total of 35 MHz of mobile spectrum. The incumbents, Rogers and the ILEC affiliates, both also benefited from the better transmission characteristic, or coverage performance, of their cellular spectrum in the 800 Mhz band, an advantage that still prevails today.

Taking all of these into consideration, Industry Canada awarded 30 MHz of PCS spectrum to the new entrants and hence, their “spectrum deficit” was only 5 MHz, after the award of the PCS licenses.

Similarly, in the UK in year 2000, the 3G license with the most spectrum (35 MHz) was set aside for a new mobile carrier to compete effectively with the incumbents, well before the emergence of Long Term Evolution technology and of high quality mobile TV applications being promoted to the mass market.

- **Minimum spectrum requirements for the set aside**

All Canadian incumbents already own 40 MHz or more in all their service areas prior to the AWS auctions, and each will undoubtedly acquire more spectrum in the upcoming auction. RCI already enjoys 75 MHz or more in each market, which is more spectrum pre-AWS auction than what most US carriers enjoy post AWS auction. Telus and Bell have the ability to each increase their mobile spectrum holdings during the auction.
QMI considers that a minimum total spectrum of 40 MHz is therefore required to enable new entrants to compete effectively with the incumbents, considering the services to be delivered to mobile customers in Canada and the increase in mobile penetration rate since 1995.

III. Hence, QMI recommends that a total of 40 MHz of AWS spectrum be set aside for new entrants.

This leaves substantial spectrum assets and many licenses available in every region and city to be divided amongst the 3 incumbents in the upcoming auction.

IV. QMI also recommends that new entrants be eligible to bid on any spectrum block, similar to how the set aside was implemented during the UK 3G auctions.
3.3.3 Spectrum blocks to be set aside

Should a single block be set aside or should the set-aside be provided via 2 or more blocks

QMI response

V. QMI recommends that 2 spectrum blocks be reserved for the set aside for new entrants, one 30 MHz frequency block on a Tier 2 basis and one 10 MHz block on a Tier 3 basis.

VI. QMI also recommends that the two spectrum blocks set aside provide for continuous spectrum as this will highly benefit the deployment of future mobile technology such as LTE. (Long Term Evolution).

QMI highlights the fact that set aside Tier 3 license areas would be very beneficial to smaller entities wishing to acquire spectrum in more rural areas. More details on this issue are provided in our response to the question on AWS service areas (see Section 4.4).

3.3.4 Why setting aside 40 Mhz of spectrum for new entrants in Canada is clearly in the public interest

QMI firmly believes that setting aside 40 MHz of AWS spectrum across Canada is in the best interest of Canadian consumers and businesses and will greatly benefit the public welfare.

As a matter of fact, it is a prerequisite to ensure that the Canadian mobile market develops with renewed vigor and increased competitive rivalry to eventually match the experience of other developed countries worldwide.
On the question of public welfare

Public welfare obtained from mobile communications would be significantly enhanced if Canada achieves a higher growth rate for mobile penetration. As highlighted in Figure 3 in Section 2, approximately 6.5 Million more Canadians could enjoy the benefits of mobile communications today, if our penetration rate was the same as that of the US at year-end 2006. This is more subscribers than Telus has, more subscribers than Bell has and slightly less than Rogers.

In addition, as highlighted in Section 2, Canadian consumers obtain twice as less minutes of voice communications as US consumers for a similar amount of money per month when it comes to mobile communications. This discrepancy is quite significant and is not found in other telecommunications services offered to consumers such as High Speed Internet and local telephone service, for which service prices in Canada compare favorably well to those found in the US.

In addition, as also demonstrated in Section 2, there has been a chronic underinvestment in the Canadian mobile industry over recent years. Capital investment in mobile technology enables new services and innovation which increases consumer benefits. Increased capital investment is a well recognized after effect of increased competition.

Thus, when it comes to mobile communications services, Canada has a significant and growing deficit in public welfare.

Furthermore, Canadian incumbent carriers, as was demonstrated in the preceding section, are already spectrum rich or at least well-off compared to their US counterparts, and will be even more so after the upcoming spectrum auction. If spectrum is not set aside, as has been demonstrated in the 2001 auctions in Canada as well as in other countries, the incumbents will acquire and therefore hoard all available spectrum since it is reasonable to expect that any spectrum is worth more to them than it is to a new entrant. This end result
from the upcoming auctions would not provide Canadians with any benefit from increased competition nor from a new entrant mobile carrier in all the regions of the country.

On the other hand, all Canadians could benefit from the development of additional full fledged mobile carriers in a position to offer high quality voice and video services to their subscribers, if the upcoming auction rules include a spectrum set aside.

The bandwidth requirements to provide these services with the level of quality necessary to stimulate user demand and the development of new applications are increasing rapidly. As an example, Ericsson estimates that the amount of bandwidth provided per antenna will reach more than 100 Mbps and even more than 200 Mbps over the next few years with the Long Term Evolution (LTE) technology\(^{19}\). This is potentially in the range of 100 times faster than what is available today. In February 2007, Ericsson demonstrated speeds in the range of 144 Mbps in a 20 MHz channel at the 3GSM World Congress\(^{20}\).

It is therefore important to ensure that a sufficient amount of spectrum is set aside to ensure new entrants have a real chance of becoming players in the market.

Based on QMI’s estimate, a new entrant will require a minimum of 40 MHz of spectrum over the term of its license period to become an effective competitor, especially since it will have to compete with other mobile carriers who would likely enjoy 60 to 85 MHz or more of spectrum in all their markets.

3.3.5 QMI recommendations on the post-auction implementation of the set aside

Spectrum is an important asset for any mobile carrier and all spectrum licenses need to be fully utilized as soon as possible.

\(^{19}\) Delivering Wireless Broadband Beyond 3G, Dragan Nerandzic, CTO, Ericsson Canada, Presentation at the CWAT Public Forum on AWS Spectrum Auction, April 23, 2007

VII. To this effect, QMI recommends that all new entrant carriers who would have won the set aside spectrum retain the ability to lease on a long term basis to any other carrier any spectrum obtained as set aside spectrum during the upcoming auction, starting immediately after the award date of the set aside spectrum.

VIII. QMI also recommends that new entrants have the ability to transfer or divide set aside spectrum licenses with other new entrant carriers who will have acquired set aside spectrum as a result of the upcoming auctions, starting immediately after the award date of the set aside spectrum.

These provisions would ensure that all spectrum could be put to the best use as quickly as possible, by any carrier.

This provision would be closely coupled with network build out obligations on set aside spectrum to ensure that new entrants be required to build their networks to a minimum population coverage. Additional information on QMI’s proposed network build out obligations for new entrants using set aside spectrum is provided in the response to the questions related to licence conditions (Section 4.10 of this Submission).

Post the 1995 PCS spectrum award, Clearnet was acquired by Telus in 2000, less than 4 years after it launched its service. Microcell was later acquired by Rogers in 2004, a little over seven years after it launched its operations.

Developing a new mobile carrier is a capital intensive, long term commitment. Based on QMI’s assessment, five years is a reasonable period of time for a new operator to become a major force in the market and to guarantee that Canadian consumers and businesses get the real benefits of new entrants in all regions of the country in a sustainable manner.
IX. Based on our assessment of prior experiences in the Canadian mobile market, QMI recommends that any new entrant emerging from the AWS auction with set aside spectrum would be prohibited from selling its set aside spectrum to any of the Canadian incumbent carriers or to any of their affiliates for a period of five (5) years from the date of spectrum award.

X. However, since recent history indicates that the acquisition of a mobile carrier can have a significant negative impact on public welfare, should the AWS new entrant carrier sell its spectrum holdings to an incumbent carrier after five years, QMI recommends that a public consultation be automatically initiated on the need to return mobile spectrum to Industry Canada to address any other issue related to the evolution competitive environment that may arise out of such a transaction.

3.4 The question of spectrum aggregation limit

The Department seeks comments as to whether an auction spectrum aggregation limit should be placed on the amount of spectrum that can be acquired by a single wireless service provider and its affiliates.

QMI response

QMI strongly recommends that spectrum be set aside to ensure entry by new facilities based mobile carriers. However, a spectrum aggregation limit on additional spectrum acquisition by incumbent carriers in AWS is also important to support the implementation of the set aside as well as to ensure that all incumbent carriers can secure an adequate amount of AWS spectrum.

The principle of a spectrum aggregation limit for a specific spectrum award process was endorsed in 2004 by the Canadian Wireless Telecommunications Association. In their March 1, 2004 comments to Industry Canada pursuant to Industry Canada Notice No.
Consultation on the Spectrum for Advanced Wireless Services and Review of the Mobile Spectrum Cap Policy, the Canadian Wireless Telecommunications Association argued in favour of lifting the spectrum cap, but in favour of retaining a cap for particular license processes, including the process ultimately initiated for the allocation of AWS spectrum:

“CWTA recognizes that the Department has a number of options to consider for changes to the spectrum aggregation policy. CWTA recommends that the Department remove the spectrum aggregation limit, but limit the amount of spectrum that may be acquired by a prospective licensee within a particular licencing process (such as a comparative licensing process or an auction).”

Incumbent carriers are best positioned to bid for and acquire spectrum in the PCS Expansion band and in the 1670-1675 MHz band. Therefore, considering a set aside of 40 MHz of AWS spectrum, there remains 50 MHz of AWS spectrum available and 15 MHz of additional spectrum for a total of 65 MHz to be split among incumbent carriers.

XI. QMI strongly recommends that a spectrum cap or spectrum aggregation limit be also included as part of the upcoming auction rules for the core AWS spectrum bands and that the spectrum aggregation limit should only apply to incumbent carriers and their affiliates in any given license region where they already own mobile spectrum.

XII. QMI recommends that this proposed spectrum aggregation limit be set at 20 MHz of additional AWS spectrum for any incumbent carrier or its affiliates in any given license region.

XIII. QMI recommends that the proposed spectrum cap for incumbents be enforced for a period of five (5) years.

The 5-year period would take into account the time required for any potential re-auction of leftover AWS or other spectrum blocks as well as provide sufficient time for new entrants to deploy their networks, even if spectrum was acquired in a re-auction process,
considering that a period in the range of 3-4 years will be required for new entrants to reach close to maximum coverage.

XIV. QMI also recommends that a public consultation be initiated prior to the removal of the spectrum cap to address potential competitive issues that may develop a number of years after the award of AWS licenses.

3.5 Mandated roaming: A critical requirement

*The Department invites comments on mandating incumbent mobile wireless operators to offer roaming services – to both competing and non-competing Canadian carriers – to foster the development of competitive wireless communication services.*

**QMI response**

3.5.1 The need for mandated automatic seamless digital roaming

The framework set out by Industry Canada in DGTP-002-07 sets out that a large number of regional licenses would be put up for auction with very diverse geographic footprints. In all likelihood, different carriers will acquire spectrum on a regional basis. This would be a critical element in fostering increased competition in mobile markets in all regions across Canada, provided that roaming on a technology neutral basis i.e. including PCS and AWS services, is mandated for all carriers.

In 2005, Industry Canada issued Notice No. DGTP-006-05 entitled “Policy to Promote Digital Roaming for Rural Subscribers”. This Notice includes a policy statement reproduced below:

"*The Department continues to support roaming and resale service arrangements among cellular/PCS carriers. It is important for Canadian subscribers to benefit from extended service coverage across Canada.*

*In particular, the Department encourages regional and national cellular/PCS carriers to provide special consideration, such as the provision of digital roaming arrangements,*
to non-competing rural wireless carriers to integrate their services. This will permit rural subscribers to benefit from extended coverage across Canada and advanced communication services."

Furthermore, in Notice DGTP-006-05 as well as is the current consultation DGTP-007-02, Industry Canada correctly makes the following observations on mobile communications services in Canada:

- Mobile telephony services have become essential services to many Canadians;
- Digital roaming is commonly available to foreigners traveling in Canada; and
- It is important that all networks be fully integrated into the national telecommunications networks.

QMI considers that the emergence of regional mobile carriers would be highly beneficial to Canadian consumers and provide enhanced benefits to many consumers living in areas or regions which are undeserved by the large national mobile carriers.

To mobile subscribers, roaming is not considered a privilege but rather an integral basic characteristic of the service.

Owing to the nature of mobility based services, regional mobile carriers that could not offer services in other parts of the country via roaming agreements would face insurmountable barriers to entry. As a matter of fact, it would be highly peculiar, if not wholly unacceptable, to have Canadian regional mobile carriers able to offer roaming to their customers when visiting other countries, but not within their own country!

In DGTP-006-05, Industry Canada stated that a voluntary approach was the most desirable method of implementation for digital roaming agreements for rural wireless cellular/PCS networks.
QMI’s position is that the voluntary approach to supporting roaming agreements for PCS and AWS carriers will not be sufficient for competing new carriers in urban as well as in rural areas to develop a viable business case in the context of the upcoming auctions.

There is ample precedent highlighting the fact market forces alone are not enough to ensure that new entrant Canadian mobile carriers would be able to enter into roaming agreements with any of the incumbent national or regional mobile carriers.

Once national incumbent mobile networks are well entrenched as they are in Canada, there is a lack of incentive on their part to provide a competing carrier, even a regional carrier, with much needed roaming agreements that would then improve their ability (of the competing carrier) to attract and retain subscribers. In Canada, these difficulties are exacerbated by the technology differences deployed by the various national mobile carriers, i.e. CDMA for Bell and Telus, and GSM for Rogers.

Strong evidence to this fact is found in the prior experiences of Microcell who could never secure a digital roaming agreement with any other national mobile carrier in Canada. Incumbent carriers Bell and Telus, both having deployed the CDMA technology platform, signed a major 10-year agreement in 2001 for network sharing and resale, an agreement which was credited with saving and delaying hundreds of millions in capital investment and furthering competition by accelerating the speed of commercial offerings by Bell Canada in Western Canada and of Telus in Eastern Canada.

Excerpts from the Bell Canada press release related to this agreement are provided below. Of note, this agreement covers a wide scope of technologies (PCS and 3G) as opposed to being restrictive and entails current as well as future voice and data services.

“Bell signs wireless agreement with TELUS which will significantly expand access to digital voice and data services across Canada
- Greatly expands reciprocal coverage for both companies
- Rapid introduction of wireless competition in rural areas
- Both companies will continue to compete aggressively
TORONTO, Oct. 17 2001 -- An enhanced reciprocal agreement signed today by the wireless units of Bell Canada, Aliant and TELUS, will significantly expand access to advanced digital voice and data services across Canada and bring competition to rural areas.

This agreement extends current roaming and resale agreements and will enhance the reach of Bell Mobility's digital PCS service across rural Alberta and B.C. by providing seamless access to the TELUS Mobility network in the two provinces. Similarly, TELUS Mobility customers gain seamless access to the Bell Mobility digital PCS network in Ontario and Québec, extending TELUS Mobility's rural coverage in Ontario and Quebec.

As a result of this agreement, Bell Mobility and TELUS Mobility will each be able to avoid capital expenditures of more than $500 million (over the term of the 10-year agreement). This is the capital expenditure that would have been required for Bell Mobility to build a network to meet the needs of rural areas in Alberta and B.C. In addition, Bell Mobility will be able to fast-track the delivery of wireless PCS and 3G applications to rural areas without building hundreds of new towers, and customers will have a greater choice of providers.

The agreement signed today extends and enhances the current roaming arrangement between Bell Mobility and TELUS Mobility. The agreement covers voice and data services at 1.9 GHz and 800 MHz. It also covers the next generation of wireless technology, such as the evolution to 3G or the CDMA2000 path, including 1xRTT deployment. As a result, this reciprocal roaming agreement will speed the delivery of next generation services to Canadians and reduce capital expenditures for both Bell Mobility and TELUS Mobility in offering these services on a national basis.”

Note: emphasis added.

Many other countries have recognized the significant benefits of roaming as a key enabler of competition and have included mandated roaming as part of licence conditions. This is the case in the United Kingdom, in Ireland as well as in Sweden among others, where new entrants were introduced into the market post 3G auctions. Roaming obligations in the US are further explained in this Submission and provide an eloquent example of the consumer benefits of increased competition with an industry structure based on near national as well as regional carriers complemented with widespread roaming agreements.

XV. Taking into consideration the above and after careful analysis, QMI recommends that automatic seamless digital roaming be mandated on a technology neutral basis for all national and regional mobile carriers in Canada. QMI considers mandatory automatic seamless digital roaming to be
a pre-requisite to ensure the viability of regional licenses as currently proposed in DGTP-002-07. Incumbent carriers would be required to provide roaming over their entire service areas. New entrant AWS carriers would also be required to provide roaming onto their network as it expands.

XVI. QMI also recommends that all Canadian mobile carriers be subject to common carrier obligations as part of the terms of their spectrum licenses, in cellular, PCS, AWS or other spectrum bands.

This obligation appears very reasonable in light of the increasing importance of mobile communications in Canada. For many Canadians, mobile communications services are not a nice addition to other telephone services, they are now the only telephone service they use!

Thus, all Canadian mobile carriers would have the obligations of offering roaming services as well as the obligation to offer their services on a resale basis to other carriers, as is the case for other telecommunications services.

3.5.2 Extensive roaming has been a fact of life for carriers in the US more for than 10 years

The FCC recognized the importance of roaming early on, especially as the US territory was a patchwork covered with regional carriers. While the FCC did not initially determine that there was a need for specific rules, it decided “to monitor the development of roaming service and to police actively any denials of reasonable requests for roaming agreements”. Subsequently, given that cellular customers generally had roaming

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21 “Roaming” means allowing the subscribers of mobile service “A” to make use of the facilities of mobile service “B” when they are in the serving territory of “B” where “A’s” equipment is technically compatible with “B’s”

22 Second Notice of Proposed Rulemaking In the matter of: Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services, FCC 95-149, April 20, 1995, paragraph 58
available to them and given that roaming was considered to be highly valued by customers, the FCC extended the basic “manual” roaming rule to cover all providers of cellular, PCS and SMR services.\textsuperscript{23} The obligation to provide roaming was then enshrined in the Code of Federal Regulations.\textsuperscript{24}

In the US, basic manual roaming is a common carrier obligation applied on a technology-neutral basis. As long as a subscriber is using a handset that is compatible with the carrier’s basestation equipment working in the area where that subscriber is roaming, then the carrier is obliged to provide service. The newly auctioned AWS licenses are captured by the same provision.\textsuperscript{25} However in Canada, basic common carrier roaming obligations do not apply to mobile carriers.

During the Cingular/AT&T merger review in 2004, the FCC concluded that the continued presence of two nationwide and numerous regional GSM carriers would be sufficient to ensure the on-going availability of automatic roaming services at competitive rates.

As highlighted in this Submission, Canada does not benefit from numerous GSM-based carriers in any given market. Thus the availability of GSM-based digital roaming services at competitive rates is not guaranteed; actually it has been non existent, hence the need for mandated automatic roaming since current Canadian industry structure market are such as to prevent reliance on conventional market forces.

\textsuperscript{23} Second Report and Order and Third Notice of Proposed Rulemaking In the matter of: Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services, FCC 96-284, August 1996, paragraph 12

\textsuperscript{24} Code of Federal Regulations, Title 47, Part 20.12 (c) “Roaming”, effective October 28, 1996: “Each carrier subject to this section must provide mobile radio service upon request to all subscribers in good standing to the services of any carrier subject to this section, including roamers, while such subscribers are located within any portion of the licensee’s licensed service area where facilities have been constructed and service to subscribers has commenced, if such subscribers are using mobile equipment that is technically compatible with the licensee’s base stations.”

\textsuperscript{25} FCC 03-251, paragraph 85
3.5.3 **Services to be subjected to mandated roaming**

Comments are sought on what services should be included in any mandated roaming and to what specific frequency band(s) roaming should apply.

**QMI response**

Roaming services should be mandated on a technology neutral basis, excluding analogue cellular technology which is in the final stage of being phased out of the Canadian market.

**XVII.** Thus, QMI recommends that automatic seamless digital roaming be mandated in the following spectrum bands:

- Original cellular frequency bands at 800 MHz
- PCs spectrum bands including the PCS Expansion spectrum band
- AWS spectrum bands and
- the 1670–1675 MHz spectrum band.

**XVIII.** QMI also recommends that current as well as future digital voice, data and video services should be included in mandatory automatic seamless digital roaming, similar to the roaming and network sharing agreements between Bell and Telus.

3.5.4 **Mechanisms to implement automatic seamless digital roaming**

Comments are sought on the mechanisms that would best implement the policy objectives regarding roaming.

**QMI response**
XIX. QMI recommends that the following two principles should apply to implement policy objectives regarding digital roaming. These are:

- Mandated access, and
- Negotiated pricing.

In the European Union, inter-carrier agreements for roaming and resale are the subject of review and approbation by the EU Commission. As an example we highlight the review of a network sharing agreement between T-Mobile and O2 in Germany in 200326.

QMI recommends that a similar process be put in place in Canada, if carriers cannot reach agreement for reasonable roaming terms and conditions in a timely manner. This would ensure that roaming agreements do not become tools to engage in anti-competitive behaviour.

XX. In the event that competing carriers could not reach a roaming agreement within 30 days of an official request, QMI recommends that an arbitrage process under the guise of the Competition Bureau be initiated immediately and concluded within an additional 30 days.

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4. Technical Considerations

4.1 Questions regarding the proposed AWS band plan

Comments are sought by the Department as to whether:

1. the band plan shown in Figure 1 [for the Bands 1710-1755 MHz and 2110-2155 MHz] should be adopted in Canada – if not, please provide specific alternative options and the rationale justifying your suggestion.
2. the Department should allow TDD operation in these sub-bands if they meet the conditions listed above – if not, please provide the rationale supporting your view.

QMI response

XXI. QMI recommends that spectrum block D be split into two 10 Mhz blocks to accommodate 40 Mhz of set aside spectrum in two spectrum blocks, the E block providing 30 Mhz on a Tier 2 basis as proposed, and one 10 Mhz, namely the D1 block as defined in Table 6 below, available on a Tier 3. This approach would provide for continuous frequencies for the new entrants. QMI agrees with all other proposed AWS license blocks as proposed by Industry Canada. Based on this recommendation, the proposed AWS band plan would be as follows:

Table 6 – QMI Recommended AWS Band Plan

<table>
<thead>
<tr>
<th>AWS Block Licenses</th>
<th>Pairing</th>
<th>Amount of Spectrum</th>
<th>Proposed Tier</th>
<th>Number of Licenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1710-1715 &amp; 2110-2115 MHz</td>
<td>2 * 5 Mhz</td>
<td>4</td>
<td>172</td>
</tr>
<tr>
<td>B</td>
<td>1715-1720 &amp; 2115-2120 MHz</td>
<td>2 * 5 Mhz</td>
<td>4</td>
<td>172</td>
</tr>
<tr>
<td>C</td>
<td>1720-1730 &amp; 2120-2130 MHz</td>
<td>2 *10 MHz</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>D2</td>
<td>1730-1735 &amp; 2130-2135 MHz</td>
<td>2 * 5 Mhz</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>D1</td>
<td>1735-1740 &amp; 2135-2140 MHz</td>
<td>2 * 5 Mhz</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>E</td>
<td>1740-1755 &amp; 2140-2155 MHz</td>
<td>2*15 MHz</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>
XXII. QMI is of the view that Industry Canada could allow for TDD operation in the sub-bands provided that adequate measures are taken to limit the additional interference that may be generated by TDD operation.

4.2 Questions related to the proposed 1670-1675 MHz band plan

Comments are sought by the Department as to whether:

1. the band plan as proposed [for the Bands 1670-1675 MHz] should be adopted in Canada – if not, please provide specific alternative options and the rationale supporting your suggestion;

2. the technological neutrality related to duplexing should be adopted in Canada – if not, please provide the rationale supporting your view.

QMI response

QMI notes that the 1670-1675 MHz frequency band could potentially yield significant benefits to Canadians to provide for mobile video services.

QMI also notes its agreement with the principle of technology neutrality to be applied in all frequency bands on a going forward basis.

XXIII. QMI recommends that the Department adopt the proposed band plan for 1670-1675 MHz.

XXIV. QMI has no objection to the Department allowing duplexing in the 1670-1675 MHz frequency block.
4.3 Questions related to the proposed PCS Expansion band plan

Comments are sought by the Department as to whether:

1. the band plan as proposed [for the Bands 1910-1915 MHz and 1990-1995 MHz] should be adopted in Canada – if not, please provide specific alternative option and the rationale supporting your suggestion;

2. the standards for PCS should be applicable to this spectrum - if not, please provide the rationale supporting your view.

QMI response

XXV. QMI has no objection to the adoption by the Department of the proposed band plan for the bands 1910-1915 MHz and 1990-1995 MHz for the PCS Expansion Band.

QMI notes that the PCS standards applicable are listed as:

- SRSP-510, Technical requirements for Personal Communications Services in the Bands 1850-1910 MHz and 1930-1990 MHz, of which the latest version is Issue 3, October 2001, and
- RSS-133, 2 GHz Personal Communications Services, of which the latest version is Issue 3, June 2005.

XXVI. QMI has no objection to the application of the above two standards to the PCS Expansion frequency block.
4.4 Question related to AWS service areas for licensing

Comments are sought on the proposed tier sizes for AWS spectrum. Comments are sought on whether the block and tier sizes given above will allow the entry of new carriers in the market.

QMI Response

It is more often the case than not that large national carriers will tend to focus on the most lucrative urban areas to the detriment of significant lower population density areas of the country. The end result is generally that the more rural areas do not benefit from the latest technologies and services in a timely manner, when benchmarked against their urban counterparts.

QMI believes that awarding mobile spectrum across smaller geographic areas or tiers will be highly beneficial to Canadian consumers in all urban and rural areas across the country.

We provide below a discussion of the results of the US AWS 2006 auctions which highlights that when made available, smaller corporations will capture the opportunity to acquire spectrum.

Table 7 highlights the results of the 2006 AWS auction in the 2006, where winning bids have been segmented according to average net payment and average population covered by bidder.

As is demonstrated in Table 7, there were 9 bidders which generated more than $13.3 B US of revenues out of a total of $13.7B US, i.e. approximately 97% of all funds collected.
However, the remaining value (close to $400M) and spectrum were split among a total of 95 bidders. Of these 95, 87 acquired licenses in areas covering an average of 1 million or less of population. 52 obtained spectrum in areas covering on average 213,000 population.

QMI argues that this type of result is highly beneficial to bring innovation, new services and increased competition to rural areas and all regions with lower densities of population which can then benefit from the activities of local entrepreneurs.

Table 7 – Overview of national and small regional bidders in US 2006 AWS auctions-

<table>
<thead>
<tr>
<th>Amount paid in the AWS Auction</th>
<th>Number of Bidders</th>
<th>Total net amount payed</th>
<th>Average net amount payed</th>
<th>Average population coverage per bidder (AWS Auction only)</th>
<th>Average number of licenses acquired per bidder</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than US$1B</td>
<td>5</td>
<td>$12,094,540,000</td>
<td>$2,418,908,000</td>
<td>202,228,192</td>
<td>65</td>
</tr>
<tr>
<td>Between US$1B and US$100M</td>
<td>4</td>
<td>$1,226,940,750</td>
<td>$306,735,188</td>
<td>67,099,116</td>
<td>68</td>
</tr>
<tr>
<td>Between US$100M and US$10M</td>
<td>8</td>
<td>$269,929,000</td>
<td>$33,741,125</td>
<td>12,188,343</td>
<td>26</td>
</tr>
<tr>
<td>Between US$10M and US$1M</td>
<td>35</td>
<td>$92,562,150</td>
<td>$2,644,633</td>
<td>1,036,019</td>
<td>5</td>
</tr>
<tr>
<td>Less than US$1M</td>
<td>52</td>
<td>$16,295,250</td>
<td>$313,370</td>
<td>213,953</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>$13,700,267,150</td>
<td>$131,733,338</td>
<td>282,675,622</td>
<td>166</td>
</tr>
</tbody>
</table>


Note: Figures included 5 licenses acquired by 3 bidders in the Gulf of Mexico for a total of US$143K.

A similar environment could develop in Canada with Tier 4 and Tier 3 license areas as currently proposed by Industry Canada.

QMI believes that a multitude of spectrum licenses awarded on smaller geographic areas will accelerate the availability of new technologies across the country.

Coupled with the necessary obligations for seamless automatic digital roaming, these regional licenses will support the development of increased competition at the local level.

XXVII. As per the different AWS service areas proposed by the Department with the modification to Block D proposed by QMI (See Table 6), QMI strongly recommends that the Department award spectrum on a Tier 2 basis for Block
E, a Tier 3 basis for blocks D1, D2 and C, and a Tier 4 basis for Blocks A and B.

4.5 Question related to PCS Expansion band service areas for licensing

Comments are sought on the proposal of Tier 2 service areas for the PCS Expansion Band.

QMI response

XXVIII. QMI has no objection to the use of Tier 2 service areas for the PCS Expansion Band.

4.6 Question related to the 1670-1675 MHz service areas for licensing

Comments are sought on the proposal of Tier 2 service areas.

QMI response

QMI argues that the same rationale to foster local entrepreneurship applies to the frequency band 1670-1675 MHz as for the AWS frequency bands.

XXIX. In light of the above comment, QMI recommends that the Department adopt Tier 3 service areas for the 1670-1675 MHz spectrum block.
4.7 Question related to technical considerations for AWS

Comments are requested on technical considerations for AWS systems in the applicable bands.

QMI response

QMI notes that the technical consideration referred to in this section relate to Co-channel/adjacent area coordination and Adjacent channel/same area coordination. QMI notes that the Department will develop precise technical requirements regarding coordination between licensees at a later date and will provide out-of-block emission limits on a Radio Standards Specification (RSS) document at later date after consultation with the industry.

QMI agrees with the principles enunciated in Sections 4.3 and 4.4 of DGTP-002-07 such as use of interference mitigating techniques, etc.

QMI intends to fully participate in the upcoming Industry Canada consultations on technical considerations for AWS.
4.8 Question related to sharing of AWS systems with other services

Comments are requested on technical considerations for sharing of AWS systems with other services in the applicable bands.

QMI response

In Part I of DGTP-002-07, the Department highlights that transition provisions for fixed services already operating in the AWS bands would be (pp. 10-11):

- **Minimum of 1 year notification** for urban areas of 25,000 population or more, and along major highway corridors.
- **Minimum 2 year notification** in all other markets.

Note: emphasis added

QMI believes that the minimum deadlines proposed by the Department as part of the transition provisions for AWS frequency blocks could jeopardize the achievement of interim network deployment commitments by new entrants.

As part of its recommended license conditions for set aside new entrant spectrum, QMI recommends that all new entrant licensees with set aside spectrum commit to deploy their new networks to 50% of the population served in their Tier 2 service areas as per proposed conditions of license for set aside spectrum (see next Section).

XXX. In light of the above comments, QMI strongly recommends that the maximum notification for urban areas of 25,000 population and major highway corridors be 18 months and that the maximum notification for all other areas be 2 years.
4.9 Questions related to licence term, renewal and implementation requirements

Comments are sought on the licence term, implementation and renewal proposals. Specifically, comment is sought on:

• the proposal to use a 10-year licence term;
• whether an interim implementation requirement should be imposed;
  • if yes, respondents should provide a rationale and an explanation of the implementation parameter(s) the Department should consider, the time frame for such a measure and the means of determining compliance (e.g. technical measurement methods, affidavit, number of subscribers in area);
• whether the renewal expectancy provisions and process are suitable;
  • if not, respondents should provide a description of the rationale for different approaches;
• whether requiring application for renewal 2 years before licence expiry is appropriate;
• the means of determining compliance (e.g. technical measurement methods, affidavit, number of subscribers in area); and
• the provisions the Department should consider when a licensee is determined to not fully meet the renewal expectancy requirements (e.g. the revocation for part or all of the spectrum or geography).

QMI responses

XXXI. QMI recommends a 20-year licence term for AWS spectrum blocks as well as the other spectrum blocks to be awarded as part of the upcoming auctions.

This would be similar to what other countries have selected for 3G or AWS licenses. The major rationale for the extension of the licence term from 10 years to 20 years is the time required to recover investments in 3G network deployment at the current stage of market development.

QMI believes that the significant 3-year network build out requirements recommended for holders of Tier 2 set aside spectrum (see below) will alleviate the concerns expressed by the Department over mid-term implementation requirements for licences with terms longer than 10 years.
XXXII. QMI recommends that all new entrants be imposed a 3-year implementation period to provide services to 50% of the population covered in any set aside Tier 2 spectrum licences acquired during the auction.

This measure is critical to avoid having spectrum blocks acquired by speculators who may have no intention of deploying equipment and of offering services to Canadian consumers and businesses. QMI believes that the following recommendation will ensure adequate compliance with the proposed 3-year implementation period commitment.

XXXIII. QMI recommends that determining compliance with the interim implementation period be based on coverage maps to be provided by the new mobile carrier in all its Tier 2 licenses in conjunction with a CEO affidavit confirming that service is being offered to 50% of the population within each Tier 2 spectrum license acquired by the new entrant.

QMI notes the procedures detailed in DGTP-002-07, Section 5.3, regarding licence renewal including the 2-year delay prior to reaching the term of the licence to initiate the renewal process.

XXXIV. As QMI recommends that the licence term be extended to 20 years, QMI recommends that the licence renewal process be initiated after 18 years. QMI also recommends that the renewal process also reflect a term of 20 years for the subsequent licence. QMI has no objection to the requirements listed to be included as part of the application to extend a licence as described by the Department (description of coverage and service areas, demonstration of how licence conditions have been and will continue to be met, etc.).

XXXV. Similar to the proposed method to determine compliance for the interim implementation period, QMI recommends that, when the term of the 20-year licence is reached, compliance with all licence conditions should be determined via coverage maps and CEO affidavit, confirming provision of
service using each spectrum licence acquired during the upcoming auction process and all other licence conditions.

There may be cases when spectrum holders will fail to meet all their necessary licence conditions at the end of the 20-year licence term. For example, a licensee could potentially have deployed AWS service using only a fraction of the spectrum licenses it has acquired during the upcoming auction.

XXXVI. In these cases, QMI recommends that any licensee who does not meet its mandatory licence conditions be obligated to return unused spectrum to the Department, without monetary compensation, at the end of the 20-year term.

QMI believes that the different provisions recommended above would protect Canadian consumers against spectrum hoarding by any mobile carrier.

4.10 Questions related to conditions of licence

The Department seeks comments on the proposed conditions for the AWS, PCS expansion and 1670-1675 MHz spectrum bands.

QMI responses

The Department has listed a number of conditions as part of its proposed licence conditions in DGPT-002-07. QMI responds to each one of them below as well as reiterates recommendations for additional required licence conditions not yet included by the Department.

XXXVII. QMI recommends that the following licence conditions be added by the Department to the licence conditions applicable to all existing as well as future licensees that may emerge as a result of the upcoming auction.
1. For all mobile carriers to be subjected to common carrier obligations, as are all other telecommunications carriers in Canada,

2. For the addition of the obligation for all mobile carriers to provide for automatic seamless digital roaming and resale as part of the licence conditions for all mobile carriers and in all spectrum bands designated as mobile, and

3. A 3-year implementation period for new entrant facilities-based mobile carriers using set aside spectrum to provide services to 50% of the population covered in any Tier 2 licence, as described by QMI in Section 4.9.

Detailed comments on the licence conditions enumerated by the Department are provided below.

- **LicenceTerm:** 20-year licence term as per QMI Recommendation XXXI in Section 4.9

- **Licence Transferability and Divisibility:** QMI agrees with the Department’s view that licensees may apply to transfer licenses in whole or in part, subject to the restrictions on the transfer of new entrant set aside spectrum detailed in Section 3.3.5 of this Submission entitled QMI Recommendations on the post-auction implementation of he set aside.

- **Eligibility Criteria:** Noted and agreed.

- **Displacement of Incumbents:** Noted and agreed, taking into account QMI Recommendations regarding the maximum notifications to be provided to existing users of the spectrum. (See Section 4.8).

- **Radio Station Installations:** Notes and agreed.

- **Provision of Technical Information:** Noted and agreed.
• Compliance with Legislation, Regulations and Other Obligations: Noted and agreed.

• International Coordination: Noted and agreed.

• Lawful Intercept: Noted and agreed.

• Research and Development: Noted and agreed.

• Annual Reporting: Noted and agreed.

### 4.11 Question related to post-auction licensing process

The Department seeks comment on all aspects of the proposed post-auction licensing process for AWS, PCS expansion and 1670-1675 MHz spectrum.

**QMI response**

XXXVIII. QMI recommends that any unused spectrum be re-auctioned as quickly as possible within a period of 1 year.

Beyond the specific points noted in this submission, QMI has identified no issues of concern with the Department’s proposed licensing process and auction design.

### 4.12 Opening bids and pre-auction deposits

The Department seeks comments on the opening bids and pre-auction deposits for AWS licences.

**QMI response**
XXXIX. QMI has noted the opening bids and pre-auction deposits and has no further comment.

4.13 Bid payment

DGTP-002-07 states that “Winning bidders will be required to submit 20% of their high bids and 100% of any withdrawal penalties incurred within 10 business days of the auction’s close. This payment will be non refundable. ... The remaining 80% of the high bids will be due within 30 business days of the auction’s close. ... It is also important to note that beyond payment of the winning bid, no other licence fees or payments will be required for the duration of the licence term”...

QMI response

QMI reiterates the fact that incumbent mobile carriers in Canada did not have to pay up-front licence fees for mobile spectrum obtained via from their initial licensing in 1983 up to the 2001 PCS auction. These carriers benefited from obtaining cellular spectrum as well as PCS spectrum in 1995 via competitive award processes as opposed to auctions.

QMI also highlights that incumbent mobile carriers in Canada still pay yearly license fees for the spectrum obtained in the cellular and PCS award processes in 1983 and 1995 respectively.

In addition, prior to the 2001 PCS auction, mobile spectrum licence fees increased in conjunction with network deployment and hence revenue generation.

The following Table (also shown in the Executive Summary) details the licence fees paid by BCE Mobile in 1991 and 1993. These fees were relatively modest and progressive...
yearly payment clearly constitutes a substantial benefit provided to an incumbent mobile carrier.

Table 8 – BCE Mobile yearly licence fees in the early 1990’s

<table>
<thead>
<tr>
<th>BCE Mobile Communications Inc.</th>
<th>1991</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellular Operating Revenues</td>
<td>$288.3M</td>
<td>$386.3M</td>
</tr>
<tr>
<td>Yearly License Fees</td>
<td>$3.5M</td>
<td>$16.3M</td>
</tr>
</tbody>
</table>

Sources: BCE Mobile Annual Report 1991
BCE Mobile Communications Inc., Annual Information Form, 1993

QMI argues that it is not in the public interest to impose up-front payment of licence fees to new entrants in the upcoming auction as it results in a significant discrimination towards new entrants in 2007, compared to the conditions provided to new entrants in the 1980’s and in 1995.

QMI argues that new entrants should receive the same treatment as that granted to the incumbent mobile carriers for more than 15 years and still in place for a large portion of their spectrum.

XL. Hence, QMI recommends that new entrants be required to pay their winning bids over the term of their spectrum licences, in increasing yearly payments.

4.14 Other comment

Please note that the failure by QMI to address any issue in its Submission in response to DGTP-002-07 does not imply agreement.
5. Appendices
5.1 Appendix A: A summary of QMI’s recommendations as part of its Submission to DGTP-002-07

I. QMI recommends that a spectrum set aside for new entrants is the most effective approach as well as a necessity for new carriers to enter the upcoming AWS auction with the objective of becoming full-fledged facilities-based mobile carriers.

II. QMI recommends that incumbent carriers and their affiliates be restricted from bidding on the set aside spectrum in all license areas where themselves or any of their affiliates already hold spectrum assets in any of the spectrum bands currently issued for mobile services, be it for voice, data, video or mobile Internet applications.

- All the cellular frequency bands
- The PCS frequency bands
- All the ESMR frequencies
- Future frequency bands that may be converted to mobile operation before the start of the auction.

III. QMI recommends that a total of 40 MHz of AWS spectrum be set aside for new entrants.

IV. QMI also recommends that new entrants be eligible to bid on any spectrum block, similar to how the set aside was implemented during the UK 3G auctions.

V. QMI recommends that 2 spectrum blocks be reserved for the set aside for new entrants, one 30 Mhz frequency block on a Tier 2 basis and one 10 Mhz block on a Tier 3 basis.

VI. QMI also recommends that the two spectrum blocks set aside provide for continuous spectrum as this will highly benefit the deployment of future mobile technology such as LTE. (Long Term Evolution).

VII. To this effect, QMI recommends that all new entrant carriers who would have won the set aside spectrum retain the ability to lease on a long term basis to any other carrier any spectrum obtained as set aside spectrum during the upcoming auction, starting immediately after the award date of the set aside spectrum.

VIII. QMI also recommends that new entrants have the ability to transfer or divide set aside spectrum licenses with other new entrant carriers who will have acquired set
aside spectrum as a result of the upcoming auctions, starting immediately after the award date of the set aside spectrum.

IX. Based on our assessment of prior experiences in the Canadian mobile market, QMI recommends that any new entrant emerging from the AWS auction with set aside spectrum would be prohibited from selling its set aside spectrum to any of the Canadian incumbent carriers or to any of their affiliates for a period of five (5) years from the date of spectrum award.

X. However, since recent history indicates that the acquisition of a mobile carrier can have a significant negative impact on public welfare, should the AWS new entrant carrier sell its spectrum holdings to an incumbent carrier after five years, QMI recommends that a public consultation be automatically initiated on the need to return mobile spectrum to Industry Canada to address any other issue related to the evolution competitive environment that may arise out of such a transaction.

XI. QMI strongly recommends that a spectrum cap or spectrum aggregation limit be also included as part of the upcoming auction rules for the core AWS spectrum bands and that the spectrum aggregation limit should only apply to incumbent carriers and their affiliates in any given license region where they already own mobile spectrum.

XII. QMI recommends that this proposed spectrum aggregation limit be set at 20 MHz of additional AWS spectrum for any incumbent carrier or its affiliates in any given license region.

XIII. QMI recommends that the proposed spectrum cap for incumbents be enforced for a period of five (5) years.

XIV. QMI also recommends that a public consultation be initiated prior to the removal of the spectrum cap to address potential competitive issues that may develop a number of years after the award of AWS licenses.
XV. Taking into consideration the above and after careful analysis, QMI recommends that automatic seamless digital roaming be mandated on a technology neutral basis for all national and regional mobile carriers in Canada. QMI considers mandatory automatic seamless roaming to be a pre-requisite to ensure the viability of regional licenses as currently proposed in DGTP-002-07. Incumbent carriers would be required to provide roaming over their entire service areas. New entrant AWS carriers would also be required to provide roaming onto their network as it expands.

XVI. QMI also recommends that all Canadian mobile carriers be subject to common carrier obligations as part of the terms of their spectrum licenses, in cellular, PCS, AWS or other spectrum bands.

XVII. Thus, QMI recommends that automatic seamless digital roaming be mandated in the following spectrum bands:

- Original cellular frequency bands at 800 MHz
- PCs spectrum bands including the PCS Expansion spectrum band
- AWS spectrum bands and
- the 1670 - 1675 MHz spectrum band.

XVIII. QMI also recommends that current as well as future digital voice, data and video services should be included in mandatory automatic seamless digital roaming, similar to the roaming and network sharing agreements between Bell and Telus.

XIX. QMI recommends that the following two principles should apply to implement policy objectives regarding digital roaming. These are:

- Mandated access, and
- Negotiated pricing.

XX. In the event that competing carriers could not reach a roaming agreement within 30 days of an official request, QMI recommends that an arbitrage process under the guise of the Competition Bureau be initiated immediately and concluded within an additional 30 days.
XXI. QMI recommends that spectrum block D be split into two 10 Mhz blocks to accommodate 40 Mhz of set aside spectrum in two spectrum blocks, the E block providing 30 Mhz on a Tier 2 basis as proposed, and one 10 Mhz, namely the D1 block as defined in the Table below, available on a Tier 3. This approach would provide for continuous frequencies for the new entrants. QMI agrees with all other proposed AWS license blocks as proposed by Industry Canada. Based on this recommendation, the proposed AWS band plan would be as follows:

QMI Recommended AWS Band Plan

<table>
<thead>
<tr>
<th>AWS Block Licenses</th>
<th>Pairing</th>
<th>Amount of Spectrum</th>
<th>Proposed Tier</th>
<th>Number of Licenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1710-1715 &amp; 2110-2115 MHz</td>
<td>2 * 5 Mhz</td>
<td>4</td>
<td>172</td>
</tr>
<tr>
<td>B</td>
<td>1715-1720 &amp; 2115-2120 MHz</td>
<td>2 * 5 Mhz</td>
<td>4</td>
<td>172</td>
</tr>
<tr>
<td>C</td>
<td>1720-1730 &amp; 2120-2130 MHz</td>
<td>2 * 10 MHz</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>D2</td>
<td>1730-1735 &amp; 2130-2135 MHz</td>
<td>2 * 5 MHz</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>D1</td>
<td>1735-1740 &amp; 2135-2140 MHz</td>
<td>2 * 5 Mhz</td>
<td>3</td>
<td>59</td>
</tr>
<tr>
<td>E</td>
<td>1740-1755 &amp; 2140-2155 MHz</td>
<td>2*15 MHz</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

XXII. QMI is of the view that Industry Canada could allow for TDD operation in the sub-bands provided that adequate measures are taken to limit the additional interference that may be generated by TDD operation.

XXIII. QMI recommends that the Department adopt the proposed band plan for 1670 - 1675 Mhz.

XXIV. QMI has no objection to the Department allowing duplexing in the 1670-1675 MHz frequency block.

XXV. QMI has no objection to the adoption by the Department of the proposed band plan for the bands 1910-1915 MHz and 1990-1995 MHz for the PCS Expansion Band.

QMI notes that the PCS standards applicable are listed as:
- SRSP-510, Technical requirements for Personal Communications Services in the Bands 1850-1910 MHz and 1930-1990 MHz, of which the latest version is Issue 3, October 2001, and
- RSS-133, 2 GHz Personal Communications Services, of which the latest version is Issue 3, June 2005.
XXVI. QMI has no objection to the application of the above two standards to the PCS Expansion frequency block.

XXVII. As per the different AWS service areas proposed by the Department with the modification to Block D proposed by QMI (See Table above), QMI strongly recommends that the Department award spectrum on a Tier 2 basis for Block E, a Tier 3 basis for blocks D1, D2 and C, and a Tier 4 basis for Blocks A and B.

XXVIII. QMI has no objection to the use of Tier 2 service areas for the PCS Expansion Band.

QMI argues that the same rationale to foster local entrepreneurship applies to the frequency band 1670-1675 MHz as for the AWS frequency bands.

XXIX. In light of the above comment, QMI recommends that the Department adopt Tier 3 service areas for the 1670-1675 MHz spectrum block.

XXX. QMI strongly recommends that the maximum notification for urban areas of 25,000 population and major highway corridors be 18 months and that the maximum notification for all other areas be 2 years.

XXXI. QMI recommends a 20-year license term for AWS spectrum blocks as well as the other spectrum blocks to be awarded as part of the upcoming auctions.

This would be similar to what other countries including the US have selected for 3G or AWS licenses. The major rationale for the extension of the licence term from 10 years to 20 years is the time required to recover investments in 3G network deployment at the current stage of market development.

XXXII. QMI recommends that all new entrants be imposed a 3-year implementation period to provide services to 50% of the population covered in any set aside Tier 2 spectrum licenses acquired during the auction.

XXXIII. QMI recommends that determining compliance with the interim implementation period be based on coverage maps to be provided by the new mobile carrier in all its Tier 2 licenses in conjunction with a CEO affidavit confirming that service is being offered to 50% of the population within each Tier 2 spectrum license acquired by the new entrant.

XXXIV. As QMI recommends that the licence term be extended to 20 years, QMI recommends that the licence renewal process be initiated after 18 years. QMI also recommends that the renewal process also reflect a term of 20 years for the
subsequent licence. QMI has no objection to the requirements listed to be included as part of the application to extend a licence as described by the Department (description of coverage and service areas, demonstration of how licence conditions have been and will continue to be met, etc.).

XXXV. Similar to the proposed method to determine compliance for the interim implementation period, QMI recommends that, when the term of the 20-year licence is reached, compliance with all licence conditions should be determined via coverage maps and CEO affidavit, confirming provision of service using each spectrum licence acquired during the upcoming auction process and all other licence conditions.

XXXVI. QMI recommends that any licensee who does not meet its mandatory licence conditions be obligated to return unused spectrum to the Department, without monetary compensation, at the end of the 20-year term.

XXXVII. QMI recommends that the following licence conditions be added by the Department to the licence conditions applicable to all existing as well as future licensees that may emerge as a result of the upcoming auction.

1. For all mobile carriers to be subjected to common carrier obligations, as are all other telecommunications carriers in Canada,
2. For the addition of the obligation for all mobile carriers to provide for automatic seamless digital roaming and resale as part of the licence conditions for all mobile carriers and in all spectrum bands designated as mobile, and
3. A 3-year implementation period for new entrant facilities-based mobile carriers using set aside spectrum to provide services to 50% of the population covered in any Tier 2 licence, as described by QMI in Section 4.9.

XXXVIII. QMI recommends that any unused spectrum be re-auctioned as quickly as possible within a period of 1 year.

XXXIX. QMI has noted the opening bids and pre-auction deposits and has no further comment.
XL. Hence, QMI recommends that new entrants be required to pay their winning bids over the term of their spectrum licences in increasing yearly payments.

Please note that the failure by QMI to address any issue in its Submission in response to DGTP-002-07 does not imply agreement.
5.2 Appendix B: A successful example: The 3G auction in the UK

The UK is widely seen as an example of a positive outcome of a 3G spectrum auction. The positive outcome of the UK 3G auctions was that all incumbent carriers obtained additional spectrum and a new operator emerged following the auction, namely 3 owned by Hutchison Whampoa.

In these auctions, five (5) 3G spectrum licenses were awarded. There were 4 incumbent mobile carriers prior to the 3G auctions in the UK.

The largest license, the A license, was set aside for a new entrant. Another key rule of these auctions was that only one license could be acquired by each bidder.

A total number of 9 firms entered the auction to participate as new entrants and to bid for spectrum. New entrants could bid on either the reserved license or any of the other spectrum blocks.

The 4 incumbents split the remaining 4 licenses between themselves even though new entrants were also allowed to bid on licenses other than the set aside.

Below are more details on the results and on the amount of spectrum provided by each license. The reserve price was highest for the A license set aside as it provided the most spectrum.
### Table 9 – Results of the UK 3G Spectrum Auction

<table>
<thead>
<tr>
<th>License</th>
<th>Winning bidder</th>
<th>Spectrum Provided</th>
<th>Reserve Price (M £)</th>
<th>Winning Price (B £)</th>
<th>Winning Price/Mhz (M £/Mhz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>TiW (Hutchison)</td>
<td>30 Mhz pairs and 5 unpaired</td>
<td>125</td>
<td>4.385</td>
<td>125.29</td>
</tr>
<tr>
<td>B</td>
<td>Vodafone</td>
<td>30 Mhz paired</td>
<td>107.1</td>
<td>5.964</td>
<td>198.8</td>
</tr>
<tr>
<td>C</td>
<td>BT3G</td>
<td>20 Mhz paired and 5 Mhz unpaired</td>
<td>89.3</td>
<td>4.03</td>
<td>161.2</td>
</tr>
<tr>
<td>D</td>
<td>Pne2PNe</td>
<td>20 Mhz paired and 5 Mhz unpaired</td>
<td>89.3</td>
<td>4.003</td>
<td>160.12</td>
</tr>
<tr>
<td>E</td>
<td>Orange</td>
<td>20 Mhz paired and 5 Mhz unpaired</td>
<td>89.3</td>
<td>4.095</td>
<td>163.8</td>
</tr>
</tbody>
</table>

**Average price/Mhz for non reserved licenses** 170.98

*Source: Ofcom 3G Auction Results and LYA analysis*

The winning price for the A set aside license was the second most expensive license out of 5 awarded via this process. On a price per Mhz, the B license won by Vodafone carried the highest price.

As can be seen from the results of the various rounds of the UK 3G auction, other potential new entrants stopped bidding on the B to E licenses when the price for the licenses came close to £ 4 Billion.

The difference between the price per Mhz paid by the incumbent carriers and the price paid by the new entrant is a good example of the incremental value of spectrum to an incumbent carrier. In this case, it could be argued that based on the average price paid by incumbents, this difference amounted to approximately 25%.

Based on the results of this auction, one can hardly argue that the new entrant obtained spectrum free or at a discount, especially considering the significant capital investment and hence high risk associated with such a venture.
The UK’s Comptroller and Auditor General reviewed the UK 3G auction in its 2001 Report. In its report, it was noted that “The Agency and OFTEL wished to promote increased competition” and that, as a result of the auction, the UK mobile telecommunications market has five capable operators rather than four. The Report also notes that the new entrants, Hutchison, is a strong international player.

The Report also notes that there is “protection against reductions in competition and consumer choices”, since licenses were not assignable and that “in the event of a merger or an acquisition, the Agency could revoke a license and transfer the rights and obligations through the issue of a new licence to a new operator”.

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27 The Auction of Radio Spectrum for the Third Generation of Mobile Telephones, Report by the Comptroller and Auditor General, 19 October 2001
5.3 Appendix C: LYA Report “A Discussion of Spectrum Licence Conditions and the Impact on New Entrants”.

Provided separately.
5.4 Appendix D: The impact of the co-location of multiple towers for wireless communications: A picture gallery