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Ontario

EMO11-00047

24 February 2011

Manager
Mobile Technology and Services
DGEPS, Industry Canada
300 Slater Street
Ottawa ON K1A 0C8

Dear Sir/Madame:

Find attached the Province of Ontario's detailed response to the Industry Canada consultation paper, *Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum (Canada Gazette No. SMSE-018-10)*.

With the migration from analog to digital television and the reallocation of radio spectrum in the 700 MHz range, we have a once in a lifetime opportunity to significantly enhance public safety communications interoperability with the United States and finally equip our emergency responders with the correct suite of technologies they need to do their jobs. Ontario has reviewed the matter in close cooperation with our partners at both the federal, provincial/territorial and municipal levels and we have weighed both technical studies and potential business modelling into the answers contained herein. One thing remains clear in all of this study: public safety professionals in Ontario do indeed need the full 20 MHz of spectrum in the 700 MHz range to do their jobs now and into the future and to gain enhanced interoperability with our partners in the United States.

Although there are significant challenges with interoperability of communications in other spectrum bands, aligning 700 MHz band spectrum allocations for public safety is entirely feasible and presents a historic opportunity to enhance our cross-border communications interoperability. On behalf of public safety agencies across Ontario, I urge Industry Canada to allocate 20 MHz of spectrum in the 700 MHz range to public safety use. Canadians deserve and expect nothing less.

Sincerely,

Daniel Hefkey
Commissioner of Community Safety

c: Tom Kontra, A/Assistant Deputy Minister and Chief

Annex A
Commissioner Letter
Dated: February 2011

Ontario's Response to the Industry Canada Consultation Questions on 700 MHz Allocation

	Item	Discussion
1.	4.1	**What is the general need for additional commercial mobile spectrum at this time and what do you anticipate the future needs to be?** Ontario believes that the public safety community in this Province and across Canada must have an appropriate allocation of spectrum in the 700 MHz range to support mission critical data requirements for first responders and public safety professional in Ontario both now and into the next generation of LTE technologies. The Province believes that, in general, additional commercial mobile spectrum is needed in order to promote and sustain growth in the provision of commercial wireless broadband services in Ontario and support Industry Canada's stated intention to make 700 MHz commercial spectrum available via auction. However, we are firmly convinced that a portion of the 700 MHz band should be allocated for public safety and public service use in order to provide dedicated capacity for mission-critical data applications used to support emergency response operations. The Centre for Security Science technical assessment of the 700 MHz spectrum requirements for broadband mobile data communications for public safety and security shows that the amount of bandwidth required to satisfy current needs to conduct missions during routine but major emergency situations with modern tools and applications is greater than 20 MHz in the near-to-mid term, and likely to exceed 20MHz in the long term, despite advances in technology. This result is based on an analysis that applies relatively conservative estimates for the growth in demand for mobile data communications for public safety and security applications, and relatively aggressive estimates for the rate of technological improvement of spectrum efficiency projected into the future. Ontario believes that this 20 MHz of spectrum should not be subject to the wider auction but rather should be directly licensed to the public safety community.
2.	4.2	**Provide general deployment information on the current use of your existing holdings in each mobile spectrum band. In the case where current holdings are not being used, provide information on its planned use, including timelines.** The Province does not have existing spectrum holdings in any of the bands referenced in the consultation paper.
3.	4.3	**Indicate your need for additional spectrum for commercial mobile service applications and how much spectrum is required.** a. **What deployment timelines are being considered?** b. **What types of applications/uses are envisioned?** c. **To what degree will your business' anticipated spectrum needs**

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		be addressed by having access to the 700 MHz and/or 2500 MHz spectrum? Public Safety Canada's technical study of their needs for additional spectrum to support mobile wireless broadband services clearly demonstrated that in various predictable events involving emergency responders, the need for spectrum far exceeded the 10+10 MHz allocation being considered. The requirement for a 10+10 MHz allocation is primarily driven by the use of video and the 700 MHz spectrum has favourable propagation characteristics in comparison to 2500 MHz band. In considering an effectively designed network with a multi-cell environment to support the use of video applications, a 10+10MHz spectrum allocation is the minimum spectrum required to ensure maximum use of video channels with minimum co-channel interference.
4.	4.4	**Do you plan to use 700 MHz spectrum acquired in the auction with, or on behalf of, another entity, which may participate in the auction? If yes, with which entity?** It is Ontario's strong belief that the bandwidth needed by the public safety community in Canada will be allocated to public safety for licensing to the community and not subject to the auction in 2012. However, the Province envisions an innovative build out on the allocated bandwidth that will require the participation of commercial partners. It is highly probable that many different commercial partners will be utilized by various provinces and territories in the creation of a system of systems that utilizes this broadband super highway across Canada. By way of governance, a public safety consortium comprised of representatives from federal, provincial, territorial and related agencies is being considered that can administer access to authorized emergency use entities, coordinate spectrum use, and oversee the infrastructure to support access.
5.	4.5	**Provide comments on the extent to which alternate spectrum access arrangements have been investigated/considered to respond to your need for additional spectrum. In addition, provide specific efficiency measures investigated or implemented for current holdings.** The 700 MHz spectrum has the optimum propagation characteristics for mobile wireless broadband services including the ability to travel extended distances and penetrate buildings and other obstacles. The use of the 700MHz spectrum will allow public safety practitioners to do their jobs to the extent and with the tools that Canadians expect. It is the Province's view that the 700 MHz band is particularly well suited to the geographic and demographic situations both in the far reaches of Ontario and in our urban centres due to its favourable propagation characteristics in comparison to 2500 MHz band. Other alternatives have not been explored as the bandwidth in question is the right tool to underpin the required LTE technologies for the dissemination of mission critical data. For all of these reasons, our response focuses on the 700 MHz band.

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6.	5.1	**Based on the criteria listed above, which of the four band plan options should be adopted in Canada? Why is this option preferred over the other options? If Option 3 (APT band plan) is selected, what should the block sizes be?** **In providing your responses, include supporting arguments, including potential benefits to wireless subscribers.** The Province of Ontario acknowledges that we have a singular, historic opportunity to enhance our interoperability with the United States where public safety and emergency response matters are concerned. It is Ontario's firm position that Option 1-- Harmonise with the US band plan—should be adopted. This includes the allocation of the second, 10 MHz block, the D Block as it is known in the United States, to the public safety community. This would mean a total allocation of 20 MHz of spectrum to the public safety community in Canada. Ontario supports the view that the 700 MHz band plan should enable: • a harmonization of equipment specifications to the maximum extent possible, enabling economies of scale and greater equipment availability for consumer and infrastructure equipment and; • cross-border frequency coordination. We believe that these objectives apply equally commercial and public safety applications of the spectrum. Harmonization with the US will enable public safety users to benefit from economies of scale in equipment manufacture associated with a homogeneous North American market. It will also enable interoperability of user devices between Canada and the US, which is of critical importance in emergency events requiring mutual aid between agencies on both sides of the border. While we concede that Option 3 "maximizes the available contiguous spectrum in the 700 MHz band," we do not support adoption of Option 3 (APT band plan). This is an unpractical proposal at this stage. If this band plan were adopted, Canadian public safety users would face extended timelines availability of equipment designed for this band plan. More importantly, this band plan: • Requires relocation of existing 700 MHz narrowband public safety users; • Would introduce significant cross-border interference issues, and; • Would make cross-border interoperability impossible
7.	5.2	**The band plans presented in the options above include guardbands. Should the Department auction the guardbands, or should these frequencies be held in reserve for future use such that they are technically compatible with services in the adjacent bands?** Industry Canada should not auction guardbands at this time. Rather, guardbands should be held in reserve until technical requirements for mutual protection of public safety narrowband and broadband systems and commercial broadband systems are

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		better understood. This will only occur once deployment plans for these types of systems in the 700 MHz band are further developed (i.e. type of RF access technology, system architecture, etc). In addition, further developments in the US related to band plans and guardbands will need to be considered.
8.	5.3	**Do public safety agencies need spectrum for broadband applications? If so:** Yes, Ontario's view is that public safety agencies need the full 20 MHz of spectrum (10 MHz plus 10 MHz). The need for public safety practitioners is supported by a recent independent study completed by CRC that conservatively illustrated that 20 MHz is not even enough at times. What is key to appreciate for our deduced needs is the requirement of the next generation of LTE technology and to not judge the requirement based solely on today's technology. **(a) How much and for which type of applications?** The Province believes that the public safety community requires allocation of 20 MHz (10 + 10) of broadband spectrum in the 700 MHz band to support current and future wireless broadband applications. A discussion of the basis for this bandwidth demand is provided below. The primary driver for wireless broadband capacity for public safety is the need for multimedia content delivery to and from emergency field personnel with centralized management of this content--video, imaging, mapping. The availability of compact, integrated devices capable of managing multimedia content is a key requirement and public safety needs to leverage technology developments in the commercial marketplace to fulfill this requirement. This will require adoption of standardized technologies (e.g. 3GPP Long Term Evolution) developed for the commercial marketplace and spectrum allocations suitable for deployment of those technologies. A wide range of broadband applications are envisaged for deployment by public safety, including: • Computer Aided Dispatch (CAD) systems access • Automatic Vehicle Location (AVL) and tracking • Emergency responder personnel tracking • Streaming of live video feeds to and from the field for a variety of purposes: o Tactical surveillance o Incident recording o Distribution of Next-Generation 911 video information from the public to first responders and other field personnel • Field access to GIS/mapping systems with dynamic, tagged information for enhanced situational awareness: o Weather o Road closures o Power outage o Earthquake feeds

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		o Emergency alert (hazard) information o Incident information o Health hazard and disease outbreak case information • Electronic incident command systems and “Common Operating Picture” applications • Access to on-line databases of multimedia content: o Records (RMS) and case management systems access (Fire, Police, etc.) o Building plans, HAZMAT/CBRNE and other hazard inventories o Resource inventory databases o Still image database access (e.g. facial recognition) o CPIC access o Biometric analysis o Insurance record and registry databases (vehicles, vessels, aircraft) • Telemedicine applications within emergency medical services: o Vital signs telemetry o Patient records access o Future video/audio feeds for remote emergency mobile consultation/assessment o Future high resolution mobile imaging and diagnostic applications o Possible future mobile robotic applications and procedures and similar • Human tracking systems: o Evacuee tracking o Mobile patient/client telemetry monitoring and alerting systems o Corrections mobile monitoring and alerting systems • Access to enterprise networks o Email and office automation systems o Unified messaging and communications (e.g. VoIP telephony) o Intranet and Internet access o Enterprise applications (personnel systems, etc.) • Vehicle telemetry and control • User device software updates and maintenance/downloads • License plate recognition • E-ticketing • Robot control • Sensor and machine-to-machine communications (fixed and portable)

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		These applications apply to and will be used by a wide variety of emergency response organizations and users at all levels of government, in addition to first responder (Police, Fire, EMS) agencies: • Natural resource operations (wildfire management, environmental response, conservation officers) • Emergency Management organizations • Corrections and Sheriff's Services • Coroners Service • Transportation agencies, including Commercial Vehicle Inspection • Search and rescue – Air, Ground, Marine • Border enforcement • Utilities (electrical, gas, water, sewer) and Public Works • Health services providers in addition to EMS agencies (Hospitals, Clinics, etc.) For this reason, we believe that spectrum dedicated to public safety and the networks built using that spectrum must be available to a wide variety of agencies providing public safety services and other types of public services involving protection of life and property. While we recognize that Industry Canada is not seeking comments on the definition of "Public Safety" at this time, we believe this should be the subject of future consultation. <u>Broadband Capacity Demand Estimation</u> Public safety agencies using a public safety broadband network must have sufficient capacity to handle day to day operations as well as managing major incidents. In capacity models built to analyze projected bandwidth needs, three levels of incidents were considered, including day to day, major incident, and catastrophic; and projections were made for the number of public safety personnel, front-line vehicles, and command vehicles that would normally respond. The broadband demand at an incident scene can be divided into three general classes of usage: ***Computer Aided Dispatch (CAD) functions:*** Overhead functions associated with a person or vehicle, including incident data, GPS information, medical telemetry and other status messaging and queries. While each individually consumes relatively low down/uplink bandwidth, it can be significant when considered in aggregate across many personnel and vehicles. ***Incident scene database lookups, downloads and information searches:*** In general, all expected initial data, including downloads of manuals, incident scene images, maps, topography information and building plans, must be downloaded and available in the first 10 minutes of an incident so commanders can quickly assess the scene and develop a response strategy. Demand is scaled with size and complexity of the incident. ***Video streaming:*** Personal video cameras for responders in the hot zone, incident car videos

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		positioned around the perimeter, and situational awareness cameras deployed around the scene. Video is uplinked via the network and a subset of streams is down-linked and switchable on command to the on-scene commander. Calculating the above broadband uplink and downlink demands and comparing them to the expected average capacity of a single LTE serving sector (cell edge performance, especially in the uplink, would be considerably less, while optimistic peak rates can be much higher), and adding a minimum background load of 20% for non-incident related (day-to-day) activities across the sector coverage area, show that 5+5 MHz of spectrum capacity is insufficient to service the uplink demands for even a Level 1 incident. 10+10 MHz services the demands of a Level 1 and Level 2 incident, but potentially falls short for the Level 3 incident workload demands.[1] **(b)What are the anticipated deployment plans and the possible constraints, if any, in implementing these plans?** The *Communications Interoperability Strategy and Action Plan for Canada*, January 2011, provides a foundation to quickly establish broadband capabilities in the 700 MHz band. The plan calls for a system of systems based on standards determined by the Interoperability Working Group. The public safety community will work with industry to establish partnerships that create the infrastructure to quickly launch broadband capabilities. **(c) Is there suitable alternate spectrum to the 700 MHz to meet these broadband requirements?** Other spectrum allocations have been considered and are not suitable for the broadband requirements. The advantageous characteristics of the 700 MHz spectrum make it ideal for public safety applications.
9.	5.4	**Comments are sought on the need for public safety broadband radio systems to be interoperable:** **(a) between various Canadian public safety agencies;** Interoperability between and among Canadian public safety agencies is a fundamental requirement of a national public safety broadband network—an aspect upon which the Auditor General has observed upon as needing attention. National interoperability would enable enhanced flexibility of response, the elimination of gaps between borders and jurisdictions. Additionally, the mobility of emergency responders across the country would be greatly improved, enabling personnel working in another jurisdiction to have access to the tools and systems they would normally utilize in their home jurisdiction. This can only be achieved by building and operating all systems across the country according to common technical and operational standards, using common radio spectrum with an effective governance structure.

[1] Based on Motorola analysis results presented to the FCC Office of Engineering and Technology, the Public Safety and Homeland Security Bureau and the Wireless Telecommunications Bureau on April 9, 2010. Presentation filed as public record in Ex Parte by Motorola on April 12, 2010 on WT Docket 06-150 and PS Docket 06-229.

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		(b) between Canadian and U.S. public safety agencies. Interoperability across the Canada-US border is a fundamental requirement for a public safety wireless broadband and will require establishment a bi-lateral governance structure to oversee cross-border technical and operational matters. The recent ratification of the *Communications Interoperability Strategy for Canada* in January, 2011 gives the public safety community a strong model for this governance. For example, the Province believes that the CANUS Interoperability Working Group identified in the Communications Interoperability Strategy for Canada can form the basis of such a governance structure. It is imperative that the Canadian 700 MHz public safety broadband spectrum allocation align with the US band plan identified in Figure 5.7 of the consultation paper, which makes provision for the potential allocation of the D Block to public safety. This will ensure that broadband user devices will function on any public safety network in either country. This not only provides the required cross border interoperability functionality, but creates a much larger market for specialized public safety devices creating scale and lower costs. The FCC in the US has recently mandated the use of LTE technology for 700 MHz public safety wireless broadband systems, setting a precedent applicable to both countries.
10.	5.5	**What are the challenges faced today by public safety agencies to have cross-border radio interoperability in other frequency bands?** **Supporting rationale for your responses to the above questions should be provided.** As discussed above, Ontario is of the view that current spectrum holdings by public safety agencies in this Province are not suitable for deployment of mission-critical wireless broadband services so allocation of new spectrum to public safety in Ontario will be needed. As there is no spectrum currently allocated that can support wide-area broadband services, we will focus our comments on issues related to cross-border radio interoperability for narrowband (primarily voice) services. The primary challenges related to cross-border interoperability are: • Fragmentation of the radio spectrum, resulting in different agencies using different bands with incompatible equipment. • Un-harmonized band plans and spectrum utilization rules on either side of the border (historically in VHF and UHF bands, more recently in 800 MHz due to rebanding in the US) • Lack of harmonized interoperability channels for cross-border use • Spectrum congestion, particularly along the border • Different licensing and coordination rules for different bands and between Canada and the US in the same band • Inability for Canadian users to access channels and infrastructure licensed in the US and vice-versa These challenges were widely debated and discussed during the Canada-US Cross

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		Border Interoperable Communications Workshop held in September 2010 in Windsor, ON. In addition, cross border interoperability for both voice and data can be challenging due to increased security considerations. This applies to both encrypted voice (for cross border investigative work) and data. In such cases, it is desirable to have a two way control mechanism that allows the sharing of voice and / or data only when needed and authorized. This ensures that both the Canadian and US agencies have authorized the interoperability on a case by case basis (for a specific operation) so that no unauthorized information is shared with the other country. For broadband data (and encrypted voice) sharing, encryption can be used to protect the data over the air and the sharing application residing on the network can provide the firewall and interoperability control mechanisms.
11.	5.6	**Notwithstanding your responses to questions 5-3 to 5-5, the Department seeks comments on whether public safety broadband needs can be met by using commercial systems with priority access rights for public safety, at commercial rates.** **(a) Your views and comments are invited on priority access rights, including pre-emption, and on the feasibility of such a system.** In times of emergency, bandwidth on wireless broadband networks is a critical and finite resource. The radio spectrum is the fundamental resource required to enable bandwidth/capacity available on wireless networks. Public safety needs to directly control this critical resource and cannot be dependent on commercial carriers to make resource allocation decisions on behalf of public safety, particularly in times of crisis. Ontario's view is that merely having priority access on someone else's bandwidth is s not feasible. There have been too many examples in the past of ineffective priority access available in emergencies. Public safety's experience with use of commercial wireless systems for mission critical operations has shown that: • Commercial operators are unwilling to enter into prioritized-service agreements with public safety agencies; • Commercial networks get significantly congested during significant emergency events; • Outages of commercial networks do occur and restoration time can be long; • Effective technical mechanisms for prioritization and pre-emption on broadband wireless networks do not currently exist; • Coverage and capacity requirements for commercial networks and users are not necessarily the same as for public safety users; • Previous attempts at implementing prioritization mechanisms on commercial networks have either failed (e.g. PAD) or had limited success (e.g. WPS). The failed D block auction in the US in 2008 illustrates that commercial operators do not fundamentally believe that there is alignment between the needs of public safety and the needs of the mass market such that both types of users can share common spectrum and common network infrastructure.

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		Commercial network operators are primarily motivated by maximizing usage, revenue generation and hence, profitability, on their networks. To do this they must address the needs of the majority of users in their network designs and operational policies. This is reinforced by the necessity to secure sufficient revenue to cover not just the life cycle cost of the network infrastructure, but also the amortized cost of the commercial spectrum the network is built upon. **(b) What public safety technical and operational requirements cannot be met by commercial systems, from either a public safety or commercial operator point of view?** Bandwidth availability. The availability of bandwidth for first responders to support mission-critical communications during significant emergency events is a shortfall. It has been observed many times that the highest level of capacity demand by the general public on commercial wireless networks occurs in the vicinity of emergency incidents, at the same time and location as capacity demand by public safety is at its highest. We cannot comment on the technical effectiveness of current or future priority access mechanisms supported by wireless broadband standards such as LTE. However, we do believe that to be effective, any resource prioritization or priority access policy must address the application level and be based on the relative priority of different applications across the user population. It is not sufficient for priority to be applied solely at the device level. We believe this type of priority access will be extremely difficult to implement successfully when high priority public safety traffic is mixed with a high volume of low-priority or best effort traffic from the general public. We believe prioritization can only be effective when public safety agencies determine among themselves, via an appropriate governance process and in the absence of commercial influence, basic policies for traffic prioritization that can be applied to dedicated public safety spectrum. **(c) What specific rules, if any, should be mandated by the Department to make such a system viable?** Rules and regulations are not enough to curb natural law where priority access and pre-emption are concerned. Ontario believes this is fundamentally the wrong approach. Rules mandating conditions on the use of the spectrum would be insufficient to make use of a commercial network via ble due to the additional considerations and complexities noted. Alternatively, the public safety community can establish partnerships and innovative agreements with industry for access to supplemental capacity during major events. Similarly, partnerships can be created to mutually benefit by sharing other parts of the communications infrastructure for diverse operations and other needs.
12.	5.7	**Comments are sought on the need for regional (local, provincial, etc.) dedicated broadband networks to provide access to all public safety agencies, and the institutional feasibility of implementing such a system.** Some provinces may elect to build out province-wide systems covering all urban and rural areas, while in other provinces a mix of regional/urban systems and

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		provincially-controlled rural systems may emerge. In all cases, there should only be a single network in any given geographic area, with all systems across the country being built to the same technical standards to ensure interoperability. These networks need to be built using spectrum dedicated to public safety so that public safety can control resource allocation and the technical and operational specifications of the network. The network deployment model will be dependent on establishment of an effective governance structure for the use of public safety broadband spectrum and the resulting "system-of-systems". This governance model will have components at the Federal, Provincial and Regional/Local levels, with the F/P/T aspects being aligned with the governance model identified in the *Communications Interoperability Strategy for Canada*. Within this structure, governance at the F/P/T level would be vested with SOREM and would have decision-making authority related to technical and operational matters needed to ensure national interoperability. It is envisaged that in the majority of cases, public safety broadband networks would be built either at the Provincial or Regional level, with such systems linking into the F/P/T governance structure at the national level. Financial oversight would need to be vested with those organizations or bodies actually building and operating individual (Provincial or Regional) systems. It is also envisaged that these networks would primarily be built following a Public-Private-Partnership model, where private industry would have a significant role to play in the construction and operation of the backbone networks and public bodies would be responsible for funding, operational policy and user support. To make these systems financially viable, the user base needs to be as broad as possible, addressing all first responder agencies at the local, provincial and federal level, in addition to all agencies having a mandate for operations in support of emergency response and life safety missions. In many cases, financial viability will be directly determined by the ability of the wireless broadband network to support agency cost savings through leveraging of new technologies dependent on wireless broadband connectivity (e.g. multi-media streaming – voice, video, data/telemetry and imagery). The Province believes that licensing of dedicated broadband spectrum at no cost to public safety agencies will provide significant financial advantage in favour of the construction and ongoing operation of public safety wireless broadband networks and will accelerate user adoption and application deployment. Specifics of business model and financial viability for such a system has not been studied or defined in detail to date and clearly some Federal initiating input must be sought as we develop innovative and viable business models for the allocated spectrum. Much work remains to be done, although we believe that some of the key enablers related to "institutional feasibility" already exist. For example: • *The Communications Interoperability Strategy for Canada*, which provides a national governance framework • The Emergency Communications Corporations Act in BC, which defines the governance model for regional shared public safety communications systems

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12.	5.8	**Is there a need for a dedicated national interoperable broadband network to provide access to all public safety agencies? The Department seeks comments on the institutional feasibility of implementing such a system.** Absolutely. As discussed above in question 5.7, Ontario sees this matter as a historic opportunity to build a national system of systems to serve both current and future generations of Canadians. The Province believes that a nation-wide public safety broadband network should be built out across the country with networks being built with differing geographical scope depending on the needs of those jurisdictions. Cross border interoperability for province's and territories is essential and we have an opportunity to greatly enhance it with adaptation of option (see Ontario's support for option one in section 5.1) **Provide supporting arguments for your responses to the above questions.** We do not envisage that a single national network would be built. Rather a national "system-of-systems" would be implemented, where there would be a single network in any given geographic area, with all networks across the country being built to the same technical standards to ensure interoperability
13.	**5.9**	**If band plan Option 1, 2a, or 2b in Section 5.1 is chosen, which one of the three options described above should be adopted and why is this option preferred over the other options? Provide supporting rationale.** Option 3 (10 + 10 MHz) is the plan that affords the public safety community the maximum interoperability with the United States. Ontario believes Industry Canada must adopt Option 3. The supporting rationale is as follows: • This option provides for harmonization with the current US direction, as announced by the White House recently; • Public safety will require 20 MHz of dedicated spectrum in order to ensure availability of sufficient bandwidth to support significant emergency events; • We do not believe, and experience borne this out, that spectrum can be effectively shared between public safety and commercial users as discussed in 5-6 above.
14.	**5.10**	**If commercial operators are mandated to support public safety services, what tier size should be applied in order to ensure adequate public safety coverage?** Ontario is not in favour of mandating commercial operators to support public safety services. Rather, dedicated spectrum should be allocated to public safety.
15.	**5.11**	**If the APT band plan (See Option 3 in Section 5.1) is adopted:** 1. **Given that the APT band plan requires a 55 MHz duplexing separation, can Canadian public safety services operate their current narrowband systems in this band plan configuration? If not,**

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		what are possible alternatives to address public safety needs? Ontario does not recommend nor support the adoption of the APT bandwidth plan. 2. **Should spectrum be designated for dedicated public safety broadband systems, and how much?** Not applicable. **You are also invited to comment on any related aspects that are not addressed above, including whether the decision should be delayed until the U.S. situation is known.** The key here is interoperability with the United States. Ontario accepts that the decision on allocation could perhaps be delayed until the FCC makes a decision in the United States; however the technical studies that we have relied upon indicate that the second 10 MHz is an absolute requirement. Why not demonstrate leadership based on scientific fact and bonafide requirement. Furthermore, the most recent indications from the United States and the White House illustrate that the Americans are leaning toward the awarding of the D Block to the public safety community. Ontario belives that the full 10 +10 MHz should be allocated to the public safety community in Canada now.
16.	5.12	**The Department seeks comments on whether the auction of 700 MHz commercial spectrum should be based on uniform tier sizes across all spectrum blocks, or a mixture of tier sizes.** Ontario is of the opinion that the public safety spectrum (the full 10 + 10 MHz) should not be auctioned but allocated to an appropriate national or provincial body with a mandate to oversee the effective utilization of the spectrum on behalf of public safety.
17.	5.13	**Based on your answer above, what tier size(s) should be adopted? Provide supporting arguments for your responses to the above questions.** Not applicable.
18.	5.14	**Effective immediately, no new broadcasting certificates will be issued for LPTV stations in TV channels 52-59 (698-746 MHz).** **The Department proposes that the displacement of the incumbent LPTV stations be subject to a notification period of one year for LPTV stations located in urban areas[25] or in specific geographic areas, such as along highway corridors; and a period of two years for LPTV stations in all other areas. A displacement notification can be issued only after technical determination is made concluding that continued operation of the incumbent LPTV station would impede the deployment of new licensed systems in the 700 MHz band.**

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		The Department seeks comments on the transition policy proposed above. The Province supports the Department's proposal. We believe that the proposal would have little adverse impact in Ontario and we support the proposal.
19.	**5.15**	**The Department seeks comments regarding its proposal to permit low-power licensed devices, including wireless microphones, to operate in the band 698-764 MHz and 776-794 MHz only until March 31, 2012.** The Province has no comment at this time.
20.	6.1	**The Department seeks comments on its proposed changes to the *Canadian Table of Frequency Allocations* for the band 698-806 MHz.** The Province supports the Industry Canada proposed changes to the Table.
21.	6.2	**The Department proposes to refer to the commercial radio systems to be deployed in the 700 MHz band as Mobile Broadband Services (MBS). The MBS systems would be compliant with the RP-14 definition for CMRS. Subject to technical compatibility considerations, there will be no restrictions on the services to be offered by licensees under MBS. The 700 MHz band will be dedicated to MBS with the exception of any frequency ranges possibly designated for public safety.** **The Department seeks comments on the spectrum utilization policy proposed above.** The Province has no comment at this time.
22.	7.1	**The Department seeks comments on the current state of competition and its anticipated evolution, including the impact on consumers in the Canadian wireless services market:** a. **in general;** Areas of high competition often overlap with areas of high customer density. This density appears to be resulting in frequency exhaustion in many urban centers that have adequate competition. Rural and Remote locations typically have fragmented single service provider, or no service provider at all situations. This is mostly due to marginal business case resulting from low customer density. Many small telecommunications Internet fixed Service Providers's (ISP's) currently exist and can be sustained in the rural and remote market places. They are successful and experienced in making similar marginal business cases work in sustainable fashion.

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		If given access to spectrum access at rates that reflect the local business case conditions (remember the big guys are not interested in going into these markets) the small/medium ISPs could build and enhance their current business, provide local mobile services and enhance local economic development. In addition the characteristics of the 700 MHz band are very favourable for the geographic terrain in rural and remote Ontario that these small and medium sized service providers would be operating in. b. **in terms of its contributions and interaction to the broader Canadian telecommunications service market;** Competition only exists where there is a sufficient market economic activity to justify the infrastructure deployment and offer a profit opportunity. The current spectrum allocation process needs to reflect this reality by linking spectrum costs to geographic market place value (excluding any localized dense urban locals that might distort the value opportunity). A process that recognizes these real world characteristics would also have to include a reasonable "use it or lose it" clause, to preclude speculative hording of the spectrum resource. c. **in comparison with the wireless markets of other jurisdictions.** We believe that our response in (a) and (b) are representative of the situation in other jurisdictions as well, but will leave the determination to the respective authorities in those jurisdictions.
23.	7.2	**Provide views, and any supporting evidence, on the impacts of government measures adopted in the AWS auctions, including the impacts on consumers and on the state of competition. In particular, what has been the impact, if any, of such measures on industry concentration, barriers to entry or expansion of services, and the availability of new or improved service offerings and pricing plans?** The Province has no comment at this time.
24.	7.3	**In light of the current conditions in the Canadian wireless service market(s), is there a need for specific measures in the 700 MHz and/or 2500 MHz auction to increase or sustain competition?** The pricing of spectrum needs to be linked with the geographic market place value to provide opportunity for small to moderate service providers to gain access to spectrum and build sustainable business models.
25.	7.4	**The Government of Canada has undertaken a consultation on potential**

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		changes to the foreign investment restrictions that apply to the telecommunications sector. How would the adoption of any of these proposed changes impact your responses to the questions above? **Provide supporting evidence and rationale for all responses.** The Province has no comment at this time
26.	7.5	**If the Department determines that there is a need for measures to promote competition, which of the above mechanisms would be most appropriate and why should this mechanism be considered over the other? Comments should also indicate if further restrictions should apply so that policy objectives are met, for example, over a given time period?** The Province has no comment at this time
27.	7.6	**In light of your response above, and recognizing that pending decisions on the specific band plan, spectrum for public safety system, tier sizes and open access requirements could influence your response:** **(a) If the Department were to implement spectrum aggregation limits (caps):** i. **Should the cap apply to the 700 MHz band only or be broader?** ii. **What should the size of the cap be?** iii. **Should bidders and their affiliates or associates share the cap?** iv. **How long should the cap remain in effect?** **(b) If the Department were to implement a set-aside in the 700 MHz auction:** i. **Who should be entitled to bid in the set-aside block(s) and should the entitled bidders be restricted to bidding on the set-aside only?** ii. **How much spectrum should be set-aside and which block(s) should be set-aside?** iii. **If the set-aside were to include multiple blocks of spectrum, should they be contiguous?** iv. **What restrictions should be put in place to ensure that policy objectives are met (for example, should trading of the set-aside spectrum be restricted for a given time period)?**
28.	7.7	**Are there other mechanisms that should be considered and, if so, how should these be applied?** The Province has no comment at this time.

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29.	7.8	**The Government of Canada has undertaken a consultation on potential changes to the foreign investment restrictions that apply to the telecommunications sector. How would the adoption of any of the proposed changes affect your responses to the questions above?** **Provide supporting evidence and rationale for all responses.** **Note: The possible implementation of a set-aside regarding the 2500 MHz spectrum to be auctioned will be dealt with in a separate consultation.** The Province has no comment at this time
30.	8.1	**In the above context, the Department seeks comments on challenges and specific problems affecting the deployment of broadband mobile services to low-density rural and remote areas.** The Province has no comment at this time
31.	8.2	**Is there a need for further regulatory measures or changes to existing regulatory rules (e.g. RP-19) to facilitate service deployments in rural and remote areas that remain unserved and/or underserved?** The Province has no comment at this time
32.	8.3	**Should the Department decide that measures are necessary, comments are sought on specific measures that could be adopted within the 700 MHz spectrum auction process to ensure further deployment of advanced mobile services in rural and remote areas (e.g. roll-out conditions, tier structure, etc.).** **Rationale and supporting evidence that substantiate your responses should be provided.** The Province has no comment at this time
33.	9.1	**The Department seeks comments on whether there is a need for government intervention to promote open access, by increasing access by users to handsets and/or applications.** The Province has no comment at this time.
34.	9.2	**If government intervention is needed, which of the following options should be implemented?** **Option 1: Mandated open access requirements across all future commercial mobile bands** **Option 2: Mandated open access requirements for the entire**

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		commercial mobile spectrum in the 700 MHz band. **Option 3: Mandated open access requirements for the "C Block" (746-757/776-787 MHz) as in the United States.** **Please provide supporting arguments for your responses, and any additional comments related to provisions of open platforms for devices and applications.** The Province has no comment at this time.
35.	10.1	**The Department is considering three options to proceed with the 700 MHz and 2500 MHz bands auction processes:** **Option 1: to conduct an auction for licences in the 700 MHz band first, followed by an auction for licences in the 2500 MHz band approximately one year later;** **Option 2: to conduct an auction for licences in the 2500 MHz band first, followed by an auction for licences in the 700 MHz band approximately one year later;** **Option 3: to conduct one combined auction for licences in both the 700 MHz and 2500 MHz bands, which would be six months later than the first auction in the case of separate auctions.** **Industry Canada is seeking views on the merits or disadvantages of proceeding with each of the various options stated above. The Department seeks to understand the magnitude of interdependencies between the two bands from a business/operational perspective. Specifically, comments are sought as to the extent spectrum in these bands is interchangeable or complementary from both a technological and a strategic perspective. In addition, views on the business and financial capabilities of participating in a joint auction for both bands are sought. Comments should include the rationale for selecting one option rather than another.** Industry Canada should dedicate the full 10 + 10 MHz in the 700 MHz range of the spectrum for the use of public safety. This allocation should be excluded from the auction. The Province does not support linking the auction in the two bands.