Industry Canada Industrie Canada

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Policy Framework for the Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range

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Canada

Introduction

This paper provides policy decisions on the key elements of the policy framework for the auction for spectrum licences in the 2 GHz range including Advanced Wireless Services (AWS).

On February 16, 2007, Industry Canada announced in *Canada Gazette* Notice DGTP-002-07, the release of a paper entitled *Consultation on a Framework to Auction Spectrum in the 2 GHz Range including Advanced Wireless Services.* The deadline for the receipt of comments was May 25, 2007 and there was an opportunity to provide reply comments by June 27, 2007. Sixty parties provided comments which were posted on Industry Canada's Spectrum Management and Telecommunications website (http://www.ic.gc.ca/spectrumauctions).

The department has taken into account all comments received and wishes to thank participants for their views.

The policy decisions contained in this paper are final. The auction framework document will be issued before the end of 2007 and will elaborate auction application procedures, licensing parameters, technical considerations, bidder applications and timing for next steps such as a mock auction for bidder familiarization. In making this announcement now, the department's intention is to provide as much clarity and certainty as possible for potential participants in the auction in a timely manner. The department intends to move quickly to ensure there are no delays in the auction, which is expected to be held in the first half of 2008.

In addition, Industry Canada will undertake a supplementary public consultation on specific changes to the conditions of licence for current licensees to implement the policy measures announced in this document. This supplementary consultation will be announced in a notice in the *Canada Gazette,* Part I to be published as soon as possible. The consultation will also be posted on Industry Canada's Spectrum Management and Telecommunications website. Following the consultation, the final conditions of licence will be made public so that all those affected are aware of the changes prior to the deadline for auction applications.

Considerations

As stated in the *Spectrum Policy Framework for Canada*, the policy objective for managing the radio frequency spectrum resource is to maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource. In considering the opening of this part of the radio spectrum to commercial applications through this auction, it was important for the department to examine whether measures should be taken to increase access to spectrum and foster greater competition in the wireless market.

In reaching a decision on the auction policy framework, consideration was given to the comments received, the spectrum involved in the auction, the current state of the Canadian wireless market and the broader telecommunications market in which wireless is an increasingly important segment. The department considered levels of competition and industry structure, barriers to entry, and the applicable legislation including the *Radiocommunication Act*, the *Telecommunications Act* and the *Competition Act* as they apply to the largely deregulated wireless market.

Also considered were the *Framework for Spectrum Auctions in Canada* issued in 2001, which is the basic policy document from which specific auction frameworks are developed, and the government's recent policy initiatives related to spectrum and telecommunications. In particular, these include both the *Spectrum Policy Framework for Canada*, released by the department in June 2007 and the policy direction to the Canadian Radio-television and Telecommunications Commission (CRTC), issued by the Governor in Council on April 4, 2007, in which the government stated its policy to rely on market forces to the maximum extent feasible. This approach is consistent with recommendations of the Telecommunications Policy Review Panel (the Telecom Panel). As well, the Governor in Council, in its variance of the CRTC's framework for deregulation (forbearance) of local telephone markets, established a new framework for forbearance based, in part, on the presence of three facilities-based competitors for residential markets and two facilities-based competitors for business markets.

Industry Canada is aware of the importance of a modern and innovative telecommunications infrastructure to Canada's overall competitiveness in a global economy, and the growing reliance on wireless services by Canadians. As noted by the Telecom Panel, fostering the use of information and communications technologies (ICTs) is an important means of improving overall productivity in modern economies. An advanced telecommunications infrastructure is essential to fostering ICT usage.

The department is committed to government policies which seek to rely on market forces to the maximum extent feasible for the provision of telecommunications services to Canadians. This policy approach can only be pursued in an environment where market forces can be expected to deliver, now and in the future, a level of competition sufficient to protect the interests of users. Accordingly, in making this resource available, a critical consideration has been to implement an auction framework that will help ensure that market forces support a telecommunications infrastructure that delivers innovation and consumer choice at competitive prices.

The current wireless market includes a mix of national, regional and local providers. Three national network operators that are integrated with wireline telecommunications carriers account for 94% of the national wireless market. A contributing factor in this market distribution was the acquisition of wireless-only new entrants by integrated carriers. There are two regionally based wireless network operators also integrated with local wireline carriers and a few local network operators. There are also Mobile Virtual Network Operators (MVNOs) which lease capacity from facilities-based wireless carriers on terms negotiated with those carriers. Many, but not all, Canadians have access to a choice of three facilities-based providers.

In considering the wireless market in Canada, the Telecom Panel expressed the view that: "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." The Panel expressed the belief that, "because of the growing importance of this [the wireless] segment, Canada should develop a more efficient and vibrant wireless industry." The Panel went on to recommend "continued use of regulatory mechanisms such as spectrum caps (aggregation limits) where spectrum is scarce in order to provide an opportunity for new entrants to acquire spectrum and for Canadians to have an expanded choice of service providers." (Recommendation 5-9) It also recommended that the CRTC be empowered to regulate and promote the sharing of antenna towers used for wireless telecommunications as a further means to enable competitive entry. (Recommendation 5-5)

In the context of the public consultation on the auction for AWS spectrum licences, there has been considerable debate about the extent of competition in Canada's wireless market. Participants who were of the view that no measures are required to foster competition provided evidence that the wireless industry is sufficiently competitive. Those who supported measures to foster competition provided evidence that the industry is not as competitive as it could be; that competition could be enhanced; that consumers could benefit from greater competition; and that there are parties with both the interest and the potential to compete in the market. A number of studies were submitted examining the nature of competition in this market as well as providing international pricing comparisons. These studies presented divergent results and assessments. In supporting their arguments, parties have also referenced the government policy initiatives noted above, the Telecom Panel's report, as well as decisions of the CRTC to deregulate the wireless industry, and decisions by the Competition Bureau to permit certain mergers.

Industry Canada is of the view that the policy decision at hand raises issues distinct from those previously considered by the CRTC and the Competition Bureau. Radio frequency spectrum is a finite public resource essential to entry into wireless markets, and that resource is not readily available on the open market. Access to spectrum is a barrier to entry that only government can lift, and the amount and type of spectrum that can be made available at any given time are dependent on a range of international and domestic factors. In this instance, the spectrum being made available for auction has characteristics and is of sufficient amount to make potential new entry feasible. The department must consider whether the market, and in particular consumers, could benefit from further competition which would strengthen Canada's ability to rely on market forces to the maximum extent feasible. In this context, the department notes that other countries with competitive wireless markets, notably the U.S. and the U.K., have taken and continue to take measures to facilitate access to spectrum resources and market entry.

In addition to access to spectrum, a consideration particular to the Canadian wireless market is the presence of Canadian ownership requirements under the *Telecommunications Act* which apply to all facilities-based carriers. These requirements ensure that Canada's telecommunications infrastructure is owned and controlled by Canadians. However they also act as restrictions on foreign investment which constitutes a barrier to market entry. The question of foreign ownership restrictions is being studied by the Competition Policy Review Panel. Removal or liberalization of these requirements would require legislative changes.

The telecommunications services market has characteristics which distinguish it from other industries. In particular, even new entrants that own and operate their network facilities (facilities-based entrants) require access to certain facilities of, and interconnection with, incumbents, while other service providers require access to the established network infrastructure to compete with incumbent carriers' own services (e.g. VoIP, Internet access, and MVNOs). These characteristics unavoidably provide incumbent carriers with both incentives and opportunities to prevent market entry or constrain competition, even in markets with multiple providers. With respect to spectrum auctions, submissions received in the AWS consultation have shown how incumbents have an incentive to pay a premium for spectrum to prevent market entry. The ability of incumbents to effectively act on these incentives and opportunities depends on a number of factors. These include how competitive the market is, notably ease of entry, and the prevailing policy and regulatory framework. In the case of the forthcoming auction, the policy framework can serve to constrain such behaviour, thereby promoting competition.

Less than 20 years ago, telecommunications markets in Canada and around the world were generally monopolies. In Canada, the past 20 years have seen periods of dynamic market entry followed by industry consolidation. Most markets for telecommunications services, particularly services provided over the Internet, are competitive and virtually all retail market segments have been price-deregulated except in geographic areas where there is little or no competition. However, the current market structure is such that the loss of a national or regional facilities-based carrier, either wireline or wireless, could be sufficient to remove, in one or more regions of Canada, the conditions established by the Governor in Council for the deregulation of local telephone service. Ensuring opportunities for new facilities-based entrants into telecommunications markets is therefore an important policy issue.

Industry Canada agrees with the Telecom Panel's characterization of the wireless industry's importance. The department also agrees with the Panel's assessment that measures which enable dynamic entry, viable multiple providers and market incentives for innovation are important if Canada is to continue to develop an efficient and vibrant wireless industry. In this context, and taking into account the barriers to entry and industry characteristics discussed previously, the department is of the view that policy measures which seek to foster facilities-based wireless competition are consistent with the government's policy to rely on market forces to the maximum extent feasible. The *Framework for Spectrum Auctions in Canada* identifies market conditions in which measures such as a spectrum set-aside or cap will be considered. The department is of the view that notwithstanding that wireless markets in Canada are competitive at this time, market conditions are such that establishing measures for the auction for AWS spectrum licences to sustain and enhance competition is warranted.

In taking the measures outlined in this paper, Industry Canada recognizes that it can guarantee neither new entry nor success of eventual new entrants. The measures being taken are intended to ensure an opportunity for entry by addressing the potential to exploit spectrum as an entry barrier. The department is satisfied that the potential benefits of new entry warrant these measures. Conversely, the department is also satisfied that in the absence of these measures, there exists a potential that reliance on market forces alone may serve to unduly restrict market entry, which could reduce innovation to the detriment of the industry's advancement and, ultimately, to wireless users across Canada.

In developing these measures, Industry Canada has been cognizant of its policy to ensure that regulation is proportionate to its purpose and interferes with market forces only to the extent necessary to achieve the intended objective. The specific measures, and the degree to which measures are needed, were carefully considered and are intended to address the needs and concerns expressed by both potential new entrants and incumbent operators, and the interests of consumers. With these considerations in mind, the department is adopting the framework outlined below.

The current spectrum licensing regime recognizes the complementary nature and the division of responsibilities among Industry Canada, the CRTC and the Competition Bureau. These policy decisions are without prejudice or inference as to any existing CRTC tariffs, proceedings, future determinations or findings by the CRTC or the Competition Bureau.

Spectrum Set-aside

Forty MHz of AWS spectrum will be set aside for new entrants only in frequency blocks B, C and D (see Figure 1).

The amount of set-aside spectrum takes into account the need for new entry in all regions of Canada while considering the interests of incumbent operators and their current spectrum holdings.

Consideration was given to the use of a spectrum aggregation limit, also referred to as a spectrum cap. Given the amount of spectrum being auctioned and the varying spectrum needs expressed by respondents, a spectrum set-aside is considered the most appropriate approach as it provides the greatest flexibility to auction participants in determining their needs.

To be eligible for the set-aside, a new entrant is defined as:

> *An entity, including affiliates and associated entities, which holds less than 10 percent of the national wireless market based on revenue.*

An affiliate is defined as:

> *A person who controls the entity, or who is controlled by the entity or by any person who controls the entity. "Control" means control in any manner that results in control in fact, whether directly through the ownership of securities or indirectly through a trust, agreement or arrangement, the ownership of a body corporate or otherwise. Control in fact is the ongoing power or ability, whether exercised or not, to determine or decide the strategic decision-making activities of an enterprise, or to manage or run the day-to-day operations of an enterprise.*
>
> *"Affiliate", defined by reference to control in fact, differs from "affiliate" for the purposes of the Competition Act. Consequently in order to avoid contravening section 47 of the Competition Act, a bidder who enters into such an agreement or arrangement with any one or more of its Affiliates may have to make the agreement or arrangement known to the department at or before the time when any subsequent agreement or arrangement is made.*

An associated entity is defined as:

> *Any entities who enter into any partnerships, joint ventures, agreements (including agreements in principle) to merge, consortia or any arrangements, agreements or understandings of any kind, either explicit or implicit, relating to the acquisition of the licences being auctioned or relating to the post-auction market structure, will be treated as Associated Entities. The existence of such agreements, arrangements or understandings must be disclosed in writing to the department at the time of application and this information will be disclosed to other bidders and to the public. Changes made after the application deadline which create an Association with another applicant are not permitted, and any applicant who has formed such an Association will be disqualified from participating in the auction.*

Should an entity qualify as a new entrant at the time of licensing, this designation would remain valid throughout the term of its licence even if the entity is successful in growing its market share beyond 10 percent of the national market share based on revenue.

While all licence transfers must be approved by the Minister, licences obtained through the set-aside may not be transferred to companies that do not meet the criteria of a new entrant for a period of 5 years from the date of issuance.

Opening Bids

The opening bid for each service area and for both the set-aside spectrum and non-set-aside spectrum blocks will be equivalent to the lower of a) the current Personal Communications Services/cellular licence fee or b) the 2001 PCS auction results. This amount represents rates currently paid for spectrum by incumbent operators. Bids at or above this amount ensure that Canadians obtain a return for the use of this spectrum comparable to returns currently being generated from similar spectrum resources. As in previous auctions, the department will review bidding activity and may or may not reduce the opening bid. For set-aside spectrum, the opening bid values may be reduced only if bidding activity reveals a need to reduce opening bid values for non-set-aside spectrum. For all spectrum being made available, the department may decide not to reduce the opening bid and in this event, the spectrum may remain unassigned to be re-auctioned at a later time.

The opening bids are provided in the tables found in Annex 1.

Frequency Blocks

Many respondents suggested the use of the same blocks as the U.S. to facilitate cross-border service. There are also advantages to the use of the U.S. block sizes to reflect equipment availability. Consequently, Industry Canada will use the same basic block structure as used in the U.S., described in Figure 1. Figure 1 also shows spectrum blocks B, C and D for the set-aside.

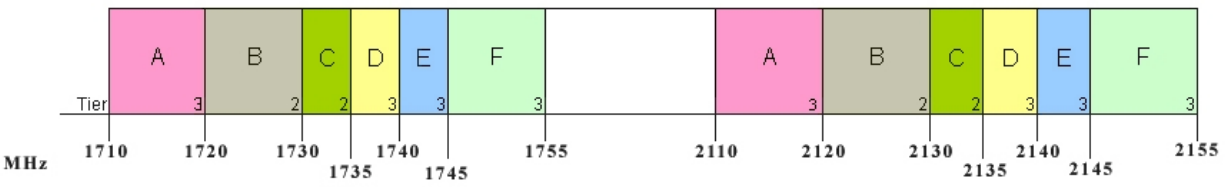

Figure 1: AWS Frequency Blocks and Set-aside

Geographic Tiers

For spectrum auctions, Industry Canada divides Canada into geographic service areas called “tiers” based on the geographic areas of Statistics Canada 1996 census subdivisions as follows:

- Tier 1 is a single national service area;
- Tier 2 consists of 8 provincial and 6 large regional service areas;
- Tier 3 consists of 59 regional service areas; and
- Tier 4 comprises 172 localized service areas.

For the AWS spectrum, the department had proposed a range of Tier 2, 3 and 4 service areas. Comments received indicated that tier size should reflect the potential use of the spectrum across the country and the costs of providing mobile services. Licensing large geographic areas may lead to rural/urban imbalances. On the other hand, licensing small areas may fragment the geographic markets such that efficient use of mobile spectrum could be compromised. For example, a bidder who succeeds in winning an entire region except for the largest urban centre may not have a viable business opportunity. Taking into account these issues, the department is adopting the use of Tier 2 and 3 service areas as described in Figure 2.

Blocks	Pairing	Amount	Tier	Licences
A	1710-1720 MHz / 2110-2120 MHz	2x10 MHz	3	59
B	1720-1730 MHz / 2120-2130 MHz	2x10 MHz	2	14
C	1730-1735 MHz / 2130-2135 MHz	2x5 MHz	2	14
D	1735-1740 MHz / 2135-2140 MHz	2x5 MHz	3	59
E	1740-1745 MHz / 2140-2145 MHz	2x5 MHz	3	59
F	1745-1755MHz / 2145-2155 MHz	2x10 MHz	3	59

Figure 2: Tiers for New Canadian Band Plan

Roaming

As part of the AWS consultation, Industry Canada asked whether mandated roaming was needed to foster the development of competitive wireless communications services; whether the lack of mandated roaming could unduly inhibit market entry; and, if mandated, to what bands and services this should apply and what mechanisms could best implement this measure.

In general, roaming allows a subscriber from one network to access another operator’s network when outside the subscriber’s home area. This is known as “out-of-territory” roaming. In addition, roaming is sometimes mandated within a new entrant’s licensed service territory, known as in-territory roaming, as a means to facilitate market entry. At various times, both in-territory and out-of-territory roaming have been mandated in Canada and in other countries notably within the European Union. When digital PCS was introduced in 1995, incumbent cellular operators had the ability to offer new PCS providers access

to their nationwide analogue cellular network. Since the value of mobile services is closely related to the coverage of the network, any new entrants would have been at a considerable disadvantage vis-à-vis established incumbents. To allow the new entrants to establish themselves, mandated roaming on the analogue cellular network was made a condition of licence on the PCS licence of cellular incumbents. Also, a rule was established whereby incumbent cellular operators could not deploy PCS until they had concluded a roaming arrangement with a new entrant or until all new entrants had obtained such an arrangement.

In the AWS consultation, potential new entrants considered that mandated roaming is essential to the business case of any new entrant because of the importance of coverage in a high-mobility service. Some argued that new entrants cannot negotiate as equals with established players even in a market with multiple providers. New entrants asked for the same measures previously used by the department in 1995 with a somewhat different implementation mechanism. This argument was reinforced when the Federal Communications Commission mandated out-of-territory roaming in the U.S. market for all commercial mobile radio services.

The department agrees that mandated roaming is important to promote competition and supports the orderly development of radiocommunication in light of the policy objectives of the *Telecommunications Act*. Recognizing that one or more regionally based new entrants may emerge from this auction, the department is mandating roaming outside of licensees' territories for at least the 10-year term of AWS licences. Roaming is to be made available at commercial rates. As well, to facilitate new entry, incumbents will be required to make roaming available to new entrants within their licensed service areas, also at commercial rates, for a period of 5 years while the licensee builds out its network. In the event that a national new entrant is successful in the auction, roaming within its licensed areas may be extended for an additional 5 years if the spectrum is used in accordance with the roll-out targets specified in Annex 2.

A national new entrant is defined as a new entrant that has acquired licences for all Tier 2 or Tier 3 service areas, or a combination of Tier 2 and Tier 3 service areas, covering all of Canada in the AWS or PCS bands. This definition includes a group of new entrants collectively holding all Tier 2 or Tier 3 service areas, or a combination of Tier 2 and Tier 3 service areas, covering all of Canada in the AWS or PCS bands and cooperating to provide a national service.

Specifically, Industry Canada will be requiring that, where technically feasible, cellular, PCS and AWS licensees offer automatic digital roaming on their networks:

- to all cellular, PCS and AWS licensees outside of their licensed area, for at least the 10-year term of AWS licences;
- to all new entrants, in their licensed areas for a period of 5 years commencing with the date of issuance of their licence; and
- to national new entrants who have substantially met the 5-year roll-out requirements outlined on their licence, as determined by Industry Canada, for an additional 5 years.

Roaming arrangements must be offered wherever technically feasible, negotiated expeditiously and in good faith. Negotiations between carriers will be time limited. Should the parties be unable to come to an agreement within the established time frame, the parties will be required to undertake binding arbitration. Binding arbitration is an approach consistent with the settlement of commercial disputes. **By**

using this process, the department expects that roaming would be offered at commercial rates that are reasonably comparable to rates that are currently charged to others for similar services.

The department will undertake a supplementary consultation process addressing amendments to existing spectrum licences. This supplementary consultation will deal with the implementation of the above noted policy measures, procedures and time frames for the arbitration process. Further details on this consultation are provided in the paragraph dealing with conditions of licence later in this document.

Antenna Tower and Site Sharing

On June 28, 2007, Industry Canada released updated antenna siting procedures which come into effect January 1, 2008 (http://www.ic.gc.ca/antenna). These procedures apply to all towers in all frequency bands. Key changes include clear processes for public notification, consultation and added community involvement. The revised procedures require any licensee wishing to construct a new tower to first consider sharing and co-locating with existing infrastructure. Further, operators of existing antenna systems are expected to negotiate in good faith to facilitate sharing. The issue of amending all or some existing authorizations to facilitate compliance with the tower sharing part of the policy was deferred to this AWS policy for further consideration.

Canadians are increasingly expressing concern about new antenna towers due to issues that include the impact of towers on their property values, environmental, and “right to enjoy” considerations. Sharing sites is a method of alleviating these concerns, thereby meeting the real technical requirements of carriers without the need to install new towers. As suitable antenna sites become increasingly scarce and strategic, competition issues arise as well. For many commercial operators, the costs associated with antenna sites, which can be in the millions of dollars, turn into an asset over time.

New entrants contend that they cannot gain ready access to new antenna sites and that rates charged are artificially high so as to preclude new entrant access. On the other hand, there can be completely valid reasons, normally technical in nature, which make sharing impractical or impossible. Such reasons include structural stability, incompatibility due to radio interference and, in the case of government-owned towers and sites, national security issues, for example.

The reports of the Telecom Panel and the National Antenna Tower Policy Review indicate that there are compelling social and economic reasons to mandate antenna tower and site sharing. These reasons include dealing with antenna tower proliferation and local concerns as well as how these facilities can be used as barriers to entry and competition.

Industry Canada has concluded that it is in accordance with the orderly development and efficient operation of radiocommunication in Canada to mandate antenna tower and site sharing and to prohibit exclusive site arrangements for all licensees including broadcasting certificate holders. Licensees will be directed to binding arbitration to resolve disputes where they cannot finalize an agreement to share within certain time frames. Before the auction commences, the department will undertake a supplementary consultation to add these conditions to existing licences, excluding those where sharing would affect national security or where the site is used for personal enjoyment (e.g. amateur radio). The final decision on the operation and wording of the licence conditions regarding sharing will be taken before the auction starts.

Roll-out Obligations, Licence Term and Renewal

Roll-out obligations are normally used to ensure that the spectrum is used and to deter access to the spectrum either for speculation without use, or spectrum warehousing with no specific use intended. Roll-out obligations have been used in previous licensing processes. A further purpose of roll-out obligations may be to encourage the delivery of service in all regions of Canada.

Taking into account the overall policy framework for this auction, and the stated intentions of both incumbents and new entrants, the department is of the view that specific roll-out obligations are appropriate only in relation to roaming provisions for national new entrants. Allowing general flexibility in this respect will enable winning bidders to respond to market factors in determining infrastructure build-out decisions. Nonetheless, the department will take into account the roll-out targets in Annex 2, both in considering eventual renewal of AWS licences as discussed below and in considering any application from a national new entrant for extension of in-territory roaming beyond the initial 5 years.

The AWS licences will be issued for a 10-year term similar to other spectrum licences. AWS licence renewal will be subject to a public consultation process initiated in year eight, as proposed in the AWS consultation paper. The nature and details of this process will be developed through a separate consultation to be initiated by the department in the context of the *Framework for Spectrum Auctions in Canada*. The renewal process developed through that consultation may apply to all auctioned licences, including AWS.

The renewal process, which will form the basis of the follow-up consultation, will include consideration of:

- the extent of geographic coverage across the licensed area;
- whether there is interest in the licence from other parties;
- whether licence fees should apply for a subsequent licence term; and
- whether renewal in whole or in part supports the orderly development of radiocommunication in light of the policy objectives of the *Telecommunications Act* given known future factors, pressures and the spectrum environment.

Beyond consideration of the above factors, other reasons for non or partial renewal may include:

- a fundamental reallocation of spectrum to a new service is required;
- an overriding policy need or spectrum management concern arises;
- national security, treaty or other international obligations or requirements;
- a breach of licence condition;
- the spectrum has not been deployed, or not sufficiently deployed over the licensed area;
- whether there is interest from others for access to the spectrum; and
- other relevant factors which might be raised in the public consultation.

While licences are renewable where the spectrum is used in accordance with the AWS licence, the department will make appropriate decisions at the appropriate time.

PCS Expansion Band

In the AWS consultation paper, Industry Canada sought comments on the proposed use of the spectrum 1910-1915 MHz /1990-1995 MHz (5 + 5 MHz) as an extension to the existing PCS band. Comments received generally supported the proposal.

In the auction process, the department will use geographic Tier 2 as proposed in the AWS consultation paper. The department will apply the same technical standards currently used for PCS. The Standard Radio System Plan (SRSP) and Radio Standards Specification (RSS) will be updated by the department in consultation with the industry in accordance with usual practices. The opening bids and roll-out conditions for this spectrum are the same as for the AWS band which are outlined in Annexes 1 and 2.

The Band 1670-1675 MHz

Comments received showed interest in having this band opened for flexible use by fixed and mobile services. Comments supported the proposal by the department with respect to block size and geographic area. To support all known technologies, including those identified as IMT-2000 (i.e. International Mobile Telecommunications), this spectrum will be auctioned in a single 5 MHz block. Furthermore, the department will allow licensees to employ either Frequency Division Duplexing or Time Division Duplexing technology in this band subject to conformity with technical standards.

In the auction process, Industry Canada will use geographic Tier 2 as proposed in the AWS consultation paper. The technical specifications including Standard Radio System Plan and Radio Standards Specification will be developed by the department in consultation with the industry in accordance with usual practices. The opening bids for this spectrum will be one-half the 10 MHz amount as shown in Annex 1, as it is only 5 MHz of spectrum. Roll-out conditions for this spectrum are the same as for the AWS band.

Auction Design

Industry Canada will use its existing simultaneous multiple-round ascending auction software for this auction. This is the auction software that has been used in the previous four auctions conducted by the department. More details will be elaborated in a subsequent paper that will be released before the end of 2007. This paper will contain all necessary technical and procedural aspects related to the auction as well as timing, pre-auction deposits, and the auction application process.

Conditions of Licence

To implement measures such as mandatory antenna tower and site sharing and mandatory roaming for all licensees, conditions of licence will have to be added to existing licences.

Section 5(1)*(b)* of the *Radiocommunication Act* gives the Minister the power to amend any existing condition of licence. Industry Canada will undertake a public consultation on the conditions of licence being proposed. This consultation will be confined to the implementation of the policy measures announced earlier in this document. It will address conditions of licence for both mandatory antenna tower and site sharing and mandated roaming and will propose:

- wording of the conditions of licence; and
- provisions on the operative conditions such as dispute resolution mechanisms and time frames.

This supplementary consultation on the conditions of licence will be announced in a *Canada Gazette* notice to be published as soon as possible. The consultation will also be posted on Industry Canada's Spectrum Management and Telecommunications website.

The comment period will be 30 days so as to ensure that affected licensees are aware of the new provisions and have an opportunity to provide comments. A reply comment period is not considered necessary in this circumstance.

Following the consultation, the final conditions of licence will be made public so that all those affected are aware of the changes. They will be announced before the deadline for applications for the auction, to allow parties to make fully informed decisions, in a *Canada Gazette* notice and also posted on Industry Canada's Spectrum Management and Telecommunications website.

Other conditions of licence that are similar to existing cellular and PCS spectrum licences also apply. These will be provided in the auction framework document and include divisibility and transferability, lawful access, displacement of incumbents, radio station installations, provision of technical information, compliance with legislation, regulations and other obligations, international coordination, research and development and annual reporting.

The department will apply similar technical standards to AWS as currently used for PCS where possible. The Standard Radio System Plan and Radio Standards Specification will be updated by the department in consultation with the industry in accordance with usual practices.

Timing for the Auction and Next Steps

Interested parties should note the following milestones for the auction:

December	-	Publication by the department of the auction framework
January	-	Clarification period on policy and procedures - Parties submit questions
February	-	Finalization of clarification process - The department responds to questions
March	-	Bidder applications
May	-	Mock auction and auction

Annex 1 - Opening Bids

Tier 2 Service Areas	AWS Opening Bids		
	10 MHz	20 MHz	40 MHz
Newfoundland & Labrador	$300,000	$600,000	$1,200,000
Nova Scotia & Prince Edward Island	$1,152,500	$2,305,000	$4,610,000
New Brunswick	$625,000	$1,250,000	$2,500,000
Eastern Quebec	$900,000	$1,800,000	$3,600,000
Southern Quebec	$14,659,587	$29,319,174	$58,638,348
Eastern Ontario and Outaouais	$2,587,500	$5,175,000	$10,350,000
Northern Quebec	$40,000	$80,000	$160,000
Southern Ontario	$25,075,077	$50,150,154	$100,300,308
Northern Ontario	$600,000	$1,200,000	$2,400,000
Manitoba	$1,182,500	$2,365,000	$4,730,000
Saskatchewan	$600,000	$1,200,000	$2,400,000
Alberta	$3,975,000	$7,950,000	$15,900,000
British Columbia	$6,830,000	$13,660,000	$27,320,000
Yukon, Northwest Territories & Nunavut	$20,000	$40,000	$80,000
Total	**$58,547,164**	**$117,094,328**	**$234,188,656**

Annex 1 (continued) - Opening Bids

Tier 3 Service Areas	AWS Opening Bids		
	10 MHz	20 MHz	40 MHz
Newfoundland & Labrador	$300,000	$600,000	$1,200,000
Prince Edward Island	$149,465	$298,930	$597,860
Mainland Nova Scotia	$840,590	$1,681,180	$3,362,360
Cape Breton	$162,445	$324,890	$649,780
Southern New Brunswick	$143,470	$286,940	$573,880
Western New Brunswick	$179,379	$358,758	$717,516
Eastern New Brunswick	$302,151	$604,302	$1,208,604
Bas du fleuve/Gaspésie	$168,756	$337,512	$675,024
Québec	$519,310	$1,038,620	$2,077,240
Chicoutimi/Jonquière	$211,934	$423,868	$847,736
Eastern Townships	$1,450,576	$2,901,152	$5,802,304
Trois-Rivières	$2,133,849	$4,267,698	$8,535,396
Montréal	$10,770,301	$21,540,602	$43,081,204
Upper Outaouais	$304,861	$609,722	$1,219,444
Ottawa/Outaouais	$1,542,662	$3,085,324	$6,170,648
Pembroke	$131,869	$263,738	$527,476
Abitibi	$40,000	$80,000	$160,000
Cornwall	$80,375	$160,750	$321,500
Brockville	$101,039	$202,078	$404,156
Kingston	$198,388	$396,776	$793,552
Belleville	$225,069	$450,138	$900,276
Cobourg	$72,789	$145,578	$291,156
Peterborough	$235,309	$470,618	$941,236
Huntsville	$205,817	$411,634	$823,268
Toronto	$16,038,692	$32,077,384	$64,154,768
Barrie	$1,682,857	$3,365,714	$6,731,428
Guelph/Kitchener	$1,727,528	$3,455,056	$6,910,112
Listowel/Goderich/Stratford	$381,306	$762,612	$1,525,224
Niagara-St. Catharines	$1,010,193	$2,020,386	$4,040,772
London/Woodstock/St. Thomas	$2,178,939	$4,357,878	$8,715,756
Chatham	$304,588	$609,176	$1,218,352
Windsor/Leamington	$1,070,644	$2,141,288	$4,282,576
Strathroy	$474,513	$949,026	$1,898,052
North Bay	$93,385	$186,770	$373,540
Sault Ste. Marie	$103,490	$206,980	$413,960
Sudbury	$131,847	$263,694	$527,388
Kirkland Lake	$91,899	$183,798	$367,596
Thunder Bay	$179,380	$358,760	$717,520
Winnipeg	$1,000,131	$2,000,262	$4,000,524
Brandon	$182,369	$364,738	$729,476
Regina	$214,942	$429,884	$859,768

Tier 3 Service Areas	AWS Opening Bids		
	10 MHz	**20 MHz**	**40 MHz**
Moose Jaw	$64,136	$128,272	$256,544
Saskatoon	$320,922	$641,844	$1,283,688
Edmonton	$1,599,805	$3,199,610	$6,399,220
Medicine Hat/Brooks	$234,433	$468,866	$937,732
Lethbridge	$208,355	$416,710	$833,420
Calgary	$1,456,450	$2,912,900	$5,825,800
Red Deer	$264,800	$529,600	$1,059,200
Grande Prairie	$211,156	$422,312	$844,624
Kootenays	$232,316	$464,632	$929,264
Okanagan/Columbia	$644,345	$1,288,690	$2,577,380
Vancouver	$4,037,651	$8,075,302	$16,150,604
Victoria	$680,351	$1,360,702	$2,721,404
Nanaimo	$289,693	$579,386	$1,158,772
Courtenay	$185,300	$370,600	$741,200
Thompson/Cariboo	$304,634	$609,268	$1,218,536
Prince George	$349,585	$699,170	$1,398,340
Dawson Creek	$106,125	$212,250	$424,500
Yukon, Northwest Territories & Nunavut	$20,000	$40,000	$80,000
Total	**$58,547,164**	**$117,094,328**	**$234,188,656**

Annex 2 - Roll-out Targets

The following table lists the minimum 5-year roll-out targets for each Tier 2 service area.

Tier 2 Roll-out Targets:

Tier 2	Service Area Name	Population	Minimum Population coverage
2-01	Newfoundland & Labrador	513,282	30%
2-02	Nova Scotia & Prince Edward Island	1,043,232	30%
2-03	New Brunswick	728,997	40%
2-04	Eastern Quebec	1,590,736	50%
2-05	Southern Quebec	5,151,224	50%
2-06	Eastern Ontario & Outaouais	2,122,177	50%
2-07	Northern Quebec	187,081	30%
2-08	Southern Ontario	8,811,117	50%
2-09	Northern Ontario	785,481	50%
2-10	Manitoba	1,118,283	50%
2-11	Saskatchewan	975,717	40%
2-12	Alberta	2,979,436	50%
2-13	British Columbia	3,907,624	50%
2-14	Yukon, Northwest Territories & Nunavut	92,707	20%

Annex 2 (continued) - Roll-out Targets

The following table lists the minimum 5-year roll-out targets for each Tier 3 service area.

Tier 3 Roll-out Targets:

Tier 3	Service Area Name	Population	Minimum Population Coverage
3-01	Newfoundland & Labrador	513,282	30%
3-02	Prince Edward Island	135,294	30%
3-03	Mainland Nova Scotia	760,894	40%
3-04	Cape Breton	147,044	30%
3-05	Southern New Brunswick	167,343	50%
3-06	Western New Brunswick	209,227	30%
3-07	Eastern New Brunswick	352,427	30%
3-08	Bas du fleuve/Gaspésie	298,273	15%
3-09	Québec	917,873	50%
3-10	Chicoutimi-Jonquière	374,590	40%
3-11	Eastern Townships	509,717	30%
3-12	Trois-Rivières	749,812	30%
3-13	Montréal	3,784,570	50%
3-14	Upper Outaouais	107,125	10%
3-15	Ottawa/Outaouais	1,265,237	50%
3-16	Pembroke	108,154	15%
3-17	Abitibi	187,081	30%
3-18	Cornwall	65,921	50%
3-19	Brockville	82,869	40%
3-20	Kingston	162,711	50%
3-21	Belleville	184,594	40%
3-22	Cobourg	59,699	30%
3-23	Peterborough	192,992	50%
3-24	Huntsville	72,322	30%
3-25	Toronto	5,635,827	50%
3-26	Barrie	591,338	30%
3-27	Guelph/Kitchener	607,035	50%
3-28	Listowel/Goderich/Stratford	133,987	15%
3-29	Niagara-St. Catharines	354,971	50%
3-30	London/Woodstock/St. Thomas	765,656	50%
3-31	Chatham	107,029	50%
3-32	Windsor/Leamington	376,213	50%
3-33	Strathroy	166,739	50%
3-34	North Bay	122,253	40%

Tier 3	Service Area Name	Population	Minimum Population Coverage
3-35	Sault Ste. Marie	135,482	50%
3-36	Sudbury	172,605	50%
3-37	Kirkland Lake	120,308	30%
3-38	Thunder Bay	234,833	40%
3-39	Winnipeg	945,818	50%
3-40	Brandon	172,465	20%
3-41	Regina	349,538	40%
3-42	Moose Jaw	104,297	25%
3-43	Saskatoon	521,882	40%
3-44	Edmonton	1,199,124	50%
3-45	Medicine Hat/Brooks	175,718	30%
3-46	Lethbridge	156,171	40%
3-47	Calgary	1,091,673	50%
3-48	Red Deer	198,479	25%
3-49	Grande Prairie	158,271	25%
3-50	Kootenays	132,914	15%
3-51	Okanagan/Columbia	368,647	40%
3-52	Vancouver	2,310,047	50%
3-53	Victoria	389,247	50%
3-54	Nanaimo	165,741	40%
3-55	Courtenay	106,015	50%
3-56	Thompson/Cariboo	174,289	40%
3-57	Prince George	200,007	40%
3-58	Dawson Creek	60,717	30%
3-59	Yukon, Northwest Territories & Nunavut	92,707	20%