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June 15, 2009

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**Re: Canada Gazette, Part I, April 11, 2009, Gazette Notice No. DGRB-001-09,
Consultation on the Revisions to the Framework for Spectrum Auctions
in Canada**

Rogers Communications Inc. (Rogers) appreciates the opportunity to provide comments on the above-noted consultation.

The documents are being sent in Adobe Acrobat Professional Version 8.0.
Operating System: Microsoft Windows XP.

Yours very truly,

A handwritten signature in black ink, appearing to be "Dawn Hunt", written over a white background.

Dawn Hunt

Attach.

**Comments of Rogers Communications Inc.
(Rogers)**

Canada Gazette Notice No. DGRB-001-09

Consultation on Revisions to the Framework for
Spectrum Auctions in Canada

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Executive Summary

The guiding principle behind the management of spectrum in Canada should be the generation of long-term benefits for consumers through the timely provision of wireless services by competing networks.

Canada has a competitive marketplace that is poised to become even more competitive with the introduction of several new carriers. There is therefore no justification for any intervention in the spectrum markets including set-asides and caps. The 2008 AWS auction demonstrated the damage such measures can cause.

Industry Canada's role in the wireless market it is to provide the certainty companies need to invest and innovate. This can be accomplished by ensuring that spectrum is released promptly, at the same time as other regulators around the world and by establishing a comprehensive and reliable 5 year schedule outlining the release of future spectrum including 700 MHz and 2.5 GHz.

As witnessed during the 2008 AWS auction, simultaneous multi-round auctions (SMRA) have significant flaws. The Department should explore new auction formats such as the combinatorial clock auction which has been successfully used in Europe.

The wireless industry is at a turning point. As the wireless industry evolves, moving from voice to data, auction policy must follow suit. Carriers must be able to assemble enough contiguous spectrum to deliver 4G services or else the entire auction process will not advance the wireless industry.

The auction framework must align with international trends in how radio frequency bands are used. The ties between specific spectrum blocks and technologies mean carriers must have the opportunity to obtain spectrum at all frequencies, no matter what their other holdings, in order to take advantage of the latest developments. If Industry Canada prevents a carrier from participating in an auction, it effectively is deciding who will be the winners and losers in the Canadian wireless industry.

In order to allow package bidding and limit the aggregation risk witnessed in the AWS auction, the auction blocks should be limited to Tier 2 structures if multiple frequencies are made available. However, if needed to address the needs of local providers, a small portion of the spectrum could be made available at Tier 3 or Tier 4 levels.

Licence terms should be extended from 10 years to 15 years, which aligns with both international terms and the investment horizons of the carriers who rely on the spectrum. There should be a high expectation of renewal and renewal fees should align with the United States to only recover administrative costs.

Industrial policy should not interfere with spectrum policy. The R&D requirement, which is not required in any other jurisdiction, should be eliminated.

Introduction

1. Rogers welcomes the opportunity to comment on the *Consultation on Revisions to the Framework for Spectrum Auctions in Canada* (“Consultation Paper”). The issues raised in the Consultation Paper go far beyond simply establishing a set of guidelines for future auctions. Rather, they will directly influence the future structure and nature of the Canadian wireless industry, impacting its levels of competition, innovation and productivity. Rogers therefore recommends a thorough review of the current auction framework, to examine whether it is achieving its goals, and to determine how the framework can be improved to ensure Canadians enjoy the advantages of the next generation of wireless services.
2. The wireless sector delivers services that have become a part of everyday life for many Canadians and plays a crucial role in the Canadian economy at large. Not only are wireless communications services highly valued by customers in their own right, they also form a key input into many sectors of the economy. In the U.S., the productivity of the wireless industry to the economy alone was worth \$185 billion in 2005.¹ Wireless services have also led to significant social and economic change that could not have been predicted 25 years ago. The next generation of wireless data services has even greater potential to revolutionize society in ways that we can only begin to imagine. Given the breadth of these benefits, enabling a vibrant wireless sector should be an important goal for Industry Canada.
3. Spectrum is essential to providing wireless services. Spectrum at the frequencies needed for wide-area wireless communications, however, is scarce. Given the importance that consumers place on wireless services, failure to make the best use of spectrum amounts to a major lost opportunity. The consequences of failing to properly allocate spectrum will be higher costs to consumers and poorer quality of service. Without timely access to appropriate spectrum, Canada will fall behind the rest of the world in delivering the next generation of revolutionary wireless services.
4. Industry Canada’s consultation is timely, as the wireless sector is at a turning point in wireless data services. Providing high-speed data connectivity on the move is transforming many aspects of daily life. These new services will require significant amounts of additional spectrum to support them, and continued large investments in new networks.
5. The auction framework must therefore look to the future. Carriers’ needs for spectrum are already changing as the emphasis moves from narrowband voice to broadband data. 4G, the next generation of wireless services, requires larger blocks

¹ Ovum. The Increasingly Important Impact of Wireless Broadband Technology and Services in the U.S. Economy. A follow up to the 2005 Ovum Report on the Impact of the US Wireless Telecom Industry on the US Economy. (2008). Pg. 2.

to provide both spectrum utilization and traffic efficiency gains. The more contiguous spectrum available, the more efficient it is. In simple terms, doubling the amount of spectrum more than doubles the capacity. Without large blocks of contiguous spectrum 4G is no more efficient than 3G. Small blocks fundamentally undermine the benefits of 4G.

6. In order to maximize the economic benefits of wireless services, the Department's spectrum policy must provide the proper environment to invest and innovate. Wireless carriers and other stakeholders need confidence that the proper assets, including spectrum, will be made available to support their long-term investment horizons. To create this confidence, the Department's spectrum allocation policy should be guided by three principles:
 - i. Certainty – In order to make the substantial investments required to provide advanced wireless services, carriers must have advance knowledge of what spectrum will be made available, in what quantities and when, as well as the terms and conditions of the actual licences.
 - ii. Neutrality – The auction framework should have no preconceptions towards either the nature of the licences or the status of bidders. The use of specific frequencies and blocks should be determined by need and all bidders should compete on an equal footing.
 - iii. Technological compatibility – The allocation of spectrum must align with global trends in wireless technology. Spectrum allocations in Canada must be aligned with global allocations and related wireless technology standards, and released in a timely manner to allow Canadian carriers to take advantage of international economies of scale in both network and terminal equipment. For example, delays to allocations, such as the 700 MHz spectrum, harm Canada's ability to remain competitive and also result in wireless carriers having to make unnecessary trade-offs in their long-term rollout and technology plans.

Appropriate Level of Regulation

Comments are sought on the appropriate level of regulation that the Department should use when managing spectrum into the future with respect to the subjects raised in this paper.

Guiding Principles

7. The guiding principle behind the management of spectrum in Canada should be the generation of long-term benefits for consumers through the timely provision of wireless services by competing networks.
8. This objective expresses Industry Canada's current guiding policy. In its June 2007 *Spectrum Policy Framework*, Industry Canada's objectives for spectrum allocation was stated as:

*To maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum resource.*²

9. This is later followed by a clear statement in favour of using market mechanisms:

*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*³

10. Keeping with this policy, Industry Canada should maintain as small a presence in the wireless industry as possible with minimal regulation. Any intervention into this competitive market must be carefully justified and address a demonstrable competition problem.
11. The wireless sector however is not suffering from a lack of competition. It is a dynamic industry that sustains three major national facilities-based operators and several regional carriers and resellers, despite the low population density and the high cost of serving Canada. Several new carriers are also on the verge of entering the market.

² Industry Canada. *Spectrum Policy Framework for Canada*. (June 2007). Pg 8.

³ Industry Canada. *Policy Framework for the Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range*. (November 2007). Pg. 2

12. Canada has an excellent track record of early adoption of new wireless technologies spurred on by the rivalry between operators. Therefore, there is no evidence of competition problems that would require any further intrusion by Industry Canada.
13. In fact, the opposite is true. Despite an extensive lobbying effort over the last couple of years to portray the Canadian wireless industry as a technology backwater, falling further behind the rest of the world, competitive demands have led Canadian carriers to deploy cutting-edge networks. Rogers offers one of the most advanced, high quality networks in the world, delivering the latest generation of services to Canadian consumers and businesses. Our voice quality and data speeds are competitive and often superior to those of the American networks. 3G services have been offered in Canada for years and Canada is ahead of the U.S. in rolling out many 3G services and data rates. Data prices have fallen dramatically while data usage has exploded. This is especially impressive in light of Canada's unique geographic and demographic challenges. These accomplishments are not the result of a complacent marketplace but rather evidence of an extremely competitive environment in which it is necessary to deliver innovative high quality services to succeed.
14. Given that competition is effective in the wireless industry, there is no justification for any intervention in the spectrum markets including set-asides and caps. The Department's priority should be to ensure a neutral spectrum allocation process that stresses equality between the participants. Each carrier should be on an equal footing in seeking needed spectrum in configurations that allow for the delivery of the latest generation of data services.

The Consequences of Auction Interference

15. As any carrier who has participated in a spectrum auction can attest, auctions by their very nature can be complex. Tainting the process with additional agendas however creates further complexities and may distort the entire auction process. The purpose of an auction should be to allocate a scarce resource to whoever values it the most highly and will therefore put it to its best use. In order to accomplish this, the auction framework should create a level playing field treating all participants equally. If Industry Canada has other policy objectives, it should use other tools available to it to accomplish them.
16. The 2008 Advanced Wireless Services (AWS) spectrum auction is a clear illustration of the hazards of introducing interventionist agendas into the auction process. After deciding to introduce additional facilities-based carriers into the Canadian wireless industry, Industry Canada decided to use an auction set-aside to accomplish this goal. The set-aside however resulted in significant unintended consequences. It created massive gaming opportunities, which were exploited successfully by several new entrants at the expense of the incumbent carriers. As a result, prices on some licences were artificially inflated while other valuable blocks were obtained at steep discounts. While Industry Canada's objective to add new carriers was achieved, it

came at the cost of disrupting the efficient allocation of spectrum and placing a disproportionate cost burden on incumbents.

17. Using auction rules as a policy tool should therefore be reserved as a means of last resort. All other tools available to the Department should be exhausted before any consideration is given to the auction framework. Even then, the use of such tools must be balanced against their consequences.
18. Most spectrum regulators in OECD countries do not use spectrum caps. Countries with no caps include Germany, the U.K., France, Italy, Spain, Sweden and Denmark. Regulators have recognised their limitations and how they distort auctions.
19. For example, if we look at recent practice in the U.K., we can see that a set-aside was used in the 2000 3G auction, with one licence being reserved for an entrant. This clearly created an implicit subsidy for the entrant and there was a mass of speculative bidders in the auction seeking to benefit from this. However, since then Ofcom has not used set-asides in any subsequent auction. There are no caps at all in the currently proposed 2.6 GHz auction for the U.K. Current proposals for the auctioning of digital dividend spectrum contain only a comparatively loose cap that basically acts as a reserve price to protect the seller and will be very unlikely to reduce what any bidder could reasonably expect to win from the auction.
20. The logic of Ofcom's general approach to spectrum caps can be seen most clearly from its stated policy on secondary trading. In the course of introducing measures to allow secondary trading of spectrum, Ofcom considered in some detail the merits and consequences of imposing spectrum caps and competition screening in advance of any transaction. It concluded that the post-transaction application of competition law wherever possible was the best approach and that caps were likely to be ineffective:

Ofcom [...] continues to be of the view that spectrum caps are unlikely to be effective in preventing anti-competitive behaviour. In particular, spectrum caps fail to take account of the level of market power and the fact that, in many cases, there may be alternative ways of delivering the downstream service other than by using spectrum.⁴

21. The bias against interfering with the auction process has been echoed in the United States. In 1996, the United States set aside the C Block of the Personal Communication Services (PCS) spectrum for new entrants. As well, the new entrants were provided subsidies such as instalment payment plans. The end results can be considered an unmitigated disaster, with subsequent years of bankruptcies, litigation and unused spectrum. As explained by Michael Gallagher, the former U.S. Assistant Secretary of Commerce for Communication and Information, "despite the

⁴ Ofcom. Ensuring effective competition following the introduction of spectrum trading. (September 2004). Paragraph 3.48

best intentions, this risky attempt by government to manipulate the market ended up exacting a huge toll on spectrum constrained wireless carriers, wireless hungry Americans and the U.S. Treasury.”⁵ The Federal Communications Commission (FCC) has since abandoned set-asides and no such measures were used in the 2006 AWS auction. Instead any party interested in obtaining spectrum had to follow the same rules as every other interested party.

Industry Canada’s Role

Spectrum Release Schedule

22. Industry Canada’s role in the wireless market should be to provide the certainty needed for Canadian carriers to invest and innovate. Providing carriers with the information they require to make informed investment decisions will lead to increased capital spending and the faster deployment of the latest technologies.
23. Auctions of spectrum in different bands should not be considered as isolated one-off events. Rather, Industry Canada needs to think about its program of future spectrum release in a comprehensive manner. In order to invest the billions of dollars that drive growth and innovation in the industry, carriers need a clear understanding of spectrum availability over the long term.
24. Wireless carriers have different needs and different resources. As such, they will value each type of available spectrum differently. This creates risk for bidders if related spectrum is awarded in separate processes. Bidders may have to make decisions about purchasing spectrum in one band without knowing how much spectrum might be made available later in another band or when it might be made available. This situation is particularly true now that higher and lower frequency bands need to be used in concert to provide both wide area coverage and high capacity to meet the growing demands of broadband mobile data services. This risk therefore affects all types of bidders, both incumbents and entrants.
25. Some governments may be tempted to provide as little information as possible about its future plans in order to drive up prices. This may raise more revenue as bidders need to buy spectrum now to guard against later scarcity. However, such an approach does not promote investment, in fact it deters it. The artificially higher prices paid for spectrum will result in lower network investment in the future.
26. This situation has already occurred to some degree with the recent AWS award and the future 700 MHz award. Had 700 MHz spectrum and AWS spectrum been available in a single award process, some participants would certainly have looked carefully at the best balance of 700 MHz spectrum and AWS spectrum to meet their

⁵ Michael D. Gallagher. “Canada at the crossroads: U.S. experience shows right path for wireless.” Hill Times (June 4, 2007).

long-term needs. The Department should have either auctioned the two types of spectrum together, or at least provided a firm date for the 700 MHz auction so carriers could plan accordingly. Instead firms bid more than they might otherwise have, because of a fear of being shut out of the provision of 4G services (given that 4G network and terminal technologies will emerge only in specific bands).

27. Rogers therefore calls on Industry Canada to release a comprehensive 5 year schedule outlining the release of future spectrum including 700 MHz, 2.5 GHz and other spectrum. The timetable should set out the approximate dates for the auctions of each spectrum type and detail how much spectrum will be made available. This information will assist incumbents and new entrants alike.

Prompt Release of Spectrum

28. Spectrum needs to be made available at the right time in order to benefit from emerging regional or global standards. Making spectrum in a band available too early, before there is any reasonable clarity about how these frequencies might be used elsewhere, creates uncertainty for bidders. However, delaying the availability of spectrum in a band potentially shuts operators out of deploying new technologies. Overall, the interests of consumers are best served by bringing spectrum to market as technological standards are becoming firm and similar spectrum is being released worldwide.

Appropriate Auction Format

The Department is seeking comments on selecting appropriate auction format, including:

- *comments on the various types of spectrum auctions and auction formats to be used; and*
- *comments on circumstances under which a particular format or attribute should or should not be applied.*

29. There are two key components that the Department must address in establishing Canada's future auction framework: auction design and block design (including sizes and alignments).

Auction Design

SMRA Format

30. The SMRA format has been widely used for spectrum auctions. It is fairly simple to implement and for bidders to understand. Until recently, it has served as the reliable, fall back option for spectrum regulators running auctions. However, it is clear that there are significant issues in using the SMRA format due to its inability to cope with aggregation risks. SMRA auctions can also be distorted relatively easily by complicated lot structures and the implementation of asymmetrical bidding rules such as set-asides.
31. In many SMRA auctions, bidders face two types of aggregation risk: geographic and capacity. Geographic risk is the failure to assemble a sustainable footprint. The carrier is stranded with a scattered group of licences without the nucleus needed to build a business upon. Capacity risk is the failure to obtain enough spectrum to deliver service. Once again, the carrier is stranded with licences but does not have enough contiguous spectrum to operate. Each of these cases represents a failure as resources are wasted and the launch of additional services is delayed.
32. In an SMRA there is very little opportunity for bidders to control these aggregation risks. A bidder might bid for a combination of lots needed for a geographic footprint or to obtain a wide enough frequency block to deploy spectrally efficient technologies, but then ultimately fail to achieve this objective. Winning only part of the combination of lots may not allow services to be deployed at all, or may lead to inefficient deployment. The spectrum lots that are won fail to form part of a workable combination and become stranded assets. This risk is particularly severe if there is a moratorium on secondary trading. Ultimately, this may lead to operators without sustainable market positions. As a result, in order to avoid these consequences, bidders adjust their bidding strategies, further skewing the auction's final result.
33. Measures such as staged activity requirements, waivers and withdrawals are often added to the auction rules for an SMRA to help bidders manage aggregation risks. However, these refinements simply tinker at the margins of the problem; they do not give bidders a risk-free means of aggregating lots into workable combinations. To address aggregation risks properly requires a move from the simple SMRA to more sophisticated auction formats involving Package Bidding.

The 2008 AWS Auction

34. The above flaws could all be witnessed in the 2008 AWS auction. It performed badly and future auctions must not repeat the same mistakes. Its failure was primarily due to the interaction between its complicated lot structure and the auction format. Industry Canada will need to look at other auction formats that better suit the requirements of spectrum users for future awards.

35. To begin with, as mentioned earlier, the set-aside for new entrants created substantial gaming opportunities. Due to the limited supply of non-set aside spectrum, new entrants were able to treat major urban area licences outside the set aside as 'free parking zones'. Entrants could confidently rely on being overbid by incumbent operators who required these blocks as centrepieces of their footprint. This meant that entrants could maintain their eligibility points to bid while retaining flexibility to switch between lots later and could avoid commitments that might expose them to aggregation risks. The extreme length of the auction was due in large part to the very poor incentives for entrants to shed eligibility.
36. By comparing the bids made by bidders with their likely target licences as revealed by their bidding behaviour at the end of the auction, it appears that over one-quarter of the bids made in the auction can be categorized as gaming behaviour. The set-aside in the AWS auction created a disproportionate amount of gaming, far more than the average experienced in worldwide auctions, and cannot be allowed to be repeated in Canada.
37. Furthermore, the complex lot structure in the AWS auction (with 292 licences as compared with only 56 in the 2001 PCS auction) exacerbated aggregation risks for bidders and created impediments to switching between different licences. Aggregation risks were particularly severe for national bidders due to the large number of licences that had to be assembled to create a national footprint.
38. Complicating matters further were the mix of lots which made switching even more difficult, even when blocks should have been substitutes for each other. It was especially difficult to switch from bidding for one combination of lots to another combination of lots in order to seek the best value.
39. Part of the problem was that there were different sized blocks (10 MHz and 20 MHz) and different regional structures (Tier 2 and Tier 3). This structure seems to be aimed at providing something for every different type of bidder. However, it had the effect of making it harder for bidders both to aggregate licences and to switch between lots (and especially to switch from one combination of lots to another) that should have been close substitutes. For instance, it was in practice impossible to switch fluidly back and forth between groups of Tier 2 and Tier 3 lots making up similar footprints.
40. Proof of the AWS auction's failure can be found in the numbers. In an efficient auction, similar lots should sell for similar amounts. In the AWS auction, equally sized lots were sold for multiples of each other. For example, the Newfoundland A block sold for more than 8 times the identically sized Newfoundland B block⁶. Some bidders obtained spectrum at a substantial discount to the other bidders. This was a function of the set-aside, the aggregation risk and the difficulty of switching between

⁶ The Newfoundland A block sold for \$6,380,000 and the Newfoundland B block sold for \$760,000.

licences. All told, Rogers calculates that it, Bell and Telus paid between them \$250m-\$400m more than their spectrum blocks' fair prices. Solutions must be found to avoid a re-occurrence.

Block Design

41. Alongside the auction design, how Industry Canada designs the licence block structure will have important implications to the wireless industry and will either assist or hurt carriers' efforts to deploy the next generation of wireless service.

Block Sizes

42. The auction framework must be forward looking. Operators' need for spectrum will change as we move from a voice-centric to a data-centric world. The next generation of wireless technology, known as 4G, uses modulation techniques that utilize wider blocks of spectrum to increase both spectral and traffic handling efficiency. Essentially, 4G technologies become more efficient as the amount of spectrum available to a network operator in a band increases. Larger contiguous blocks of frequencies have a disproportionately greater value than smaller, or separate, blocks of frequencies. Small, fragmented blocks will in fact threaten the ability of carriers to deploy viable and efficient 4G wireless services.
43. Policies that lead to the fragmentation of spectrum holdings (with operators holding relatively small amounts of spectrum across many bands) will discourage advanced wireless services by raising deployment costs and limiting achievable data speeds. Such fragmentation may occur either through poor auction design or through ill-conceived constraints on the amounts of spectrum that operators can hold in a band. The need for substantive contiguous blocks is a technical requirement that the Department can simply not ignore. The auction framework should not prevent carriers from assembling enough contiguous spectrum to deliver viable and efficient 4G services otherwise the entire auction process will not advance the wireless industry in Canada.
44. Creating sufficiently sized blocks is not necessarily best achieved by simply offering larger fixed sized blocks of spectrum. Doing so, would involve making an assumption about the optimal size of contiguous spectrum blocks that is needed by operators. That decision should be made by the individual carriers. Rather, the Department should consider a flexible system in which operators may assemble small blocks into the properly sized contiguous blocks they require.
45. Newer auction designs can accommodate the twin objectives of allowing bidders to assemble larger contiguous blocks of spectrum without aggregation risk while also allowing the market to determine the amount of contiguous spectrum won by each bidder. For example, combinatorial auctions with package bidding have been used

successfully in the U.K., to a limited extent the U.S. and are planned for a number of other countries (including the Netherlands and Denmark). These auction designs are ideally suited to situations where contiguous spectrum is important, but it is unclear to the spectrum regulator how much contiguous spectrum bidders need. Combinatorial auctions will be discussed later in this paper.

46. Facilitating flexible, risk-free bidding for larger blocks of spectrum (especially contiguous spectrum) is in the general public interest. All bidders, both incumbents and entrants, will be increasingly affected by this issue given current technological trends. Using combinatorial auctions with smaller lots (by frequency) that can be aggregated does not favour any particular class of bidder; indeed, it is likely to be pro-competitive as it makes it easier for entrants to bid for sufficient spectrum to offer viable services without the risk of getting smaller, but useless, amounts.

Block Numbers

47. Recent auctions in Canada such as the PCS auction and the AWS auction have used regional licensing structures. These structures have created significant problems for bidders wishing to aggregate lots geographically.
48. It is important that future auctions make it easier to aggregate lots across regions. However, combinatorial auctions are likely to be impractical if bidders are trying to aggregate lots both geographically (say across a Tier 3 or Tier 4 structure) and across frequencies. The number of potential packages that would need to be considered would be very large. This is a problem both for bidders, in terms of the number of packages for which they might need to place bids, and for the auctioneer in computing who should win. Therefore, in order to allow package bidding and limit aggregation risk, the auction blocks should be limited to Tier 2 structures if multiple frequencies are made available.
49. At the same time, we recognise that a Tier 2 structure for all lots is unlikely to be acceptable for small local providers wishing to acquire spectrum in particular locations. One simple solution to this problem is to encourage bidders to form joint ventures and pool their interests prior to an auction. Another is to encourage secondary market transactions in which licences can be geographically subdivided and transferred after an auction.
50. If such approaches fail to meet the needs of localised bidders, it is important that the benefits of allowing risk-free aggregation of larger geographical licences are not lost. A compromise approach might be to offer a small frequency range on a Tier 3 or even Tier 4 level, but to offer the large majority of the available spectrum at a much higher level of aggregation, e.g. Tier 2 or even nationally. Bidders would be able to bid for packages of the larger licences, but in addition make stand-alone bids for the smaller licences. This would allow combinatorial auction designs to be used without excessive complexity.

Block Alignment

51. When deciding what spectrum to release and when to release it, Industry Canada needs to be realistic about the position of the Canadian wireless sector within global markets. Canada cannot buck regional or global trends in how particular bands are to be used. Technologies are often band-specific, particularly at the outset of the technology, and are determined at a global or regional scale rather than a national one. Both network equipment and especially terminal devices are subject to strong economies of scale in production. Equipment manufacturers are generally unwilling to create devices for bands that are only available in one or a small number of countries. Canada is a relatively small market by international standards.
52. Canada therefore does not have the scale to dictate the production of equipment in bands that are inconsistent with larger regions. Canada's population is one tenth of the population of the United States and the European Union. The largest three Canadian carriers, Rogers, Bell and Telus have 8 million, 6.5 million and 6 million customers respectively. These subscriber numbers pale in comparison to the three largest carriers in the world, China Mobile, Vodafone and Telefonica which have 457 million, 260 million, and 172 million respectively, and are only about one tenth the size of the main U.S. carriers. Manufacturers will align themselves with the demands of these carriers. Canadian spectrum policy must recognise this reality and follow suit.
53. The ties between specific spectrum blocks and technologies also mean carriers must have the opportunity to obtain spectrum at all frequencies, no matter what their other holdings. A technology or equipment made available in one band today might not be offered in another band for years. A carrier's other spectrum will not act as a substitute, particularly given the change in focus to broadband data, and if they are missing a key spectrum band, they will not be able to compete. If Industry Canada prevents a carrier from participating in an auction, it effectively is deciding who will be allowed to offer the next generation of wireless services. It would mean that Industry Canada's role is picking the winners and losers in the Canadian wireless industry.

Moving Forward in Auction Design

54. In establishing its future auction framework, Industry Canada must recognize (1) the limitations of the SMRA and (2) the need for properly sized and aligned licence blocks. Rogers believes that the existing SMRA auction format is inadequate as it leaves all bidders – entrants and incumbents alike – unduly exposed to aggregation risks. The complexity of the licence structure adopted for some auctions, such as the recent AWS award, has served to exaggerate these risks and also create incentives for gaming behaviour that distort auction outcomes.
55. Industry Canada should therefore consider alternative multiple-round auction models for use in future awards. When considering these alternative formats, there are four key principles that Industry should take into account:
- Openness - Industry Canada should continue to use open auction formats (i.e. multiple round processes) for all major spectrum awards. Open auctions allow for price discovery and ease valuation uncertainty for bidders. Even though wireless services are now well established, bidders in auctions still face significant, common sources of uncertainty, for example in relation to demand for new high bandwidth data services, new technology deployment costs, and linkages between spectrum availability across different frequency bands. Future auctions in Canada must therefore remain open and perform the key market function they were designed to do, helping establish a spectrum band's value.
 - Neutrality - Spectrum should be made available in as neutral a manner as possible. By 'neutral', we mean where possible creating a level playing field on which different users and different services / technologies can compete for spectrum. A neutral auction should ensure that spectrum goes to the users and uses that value it highest, thereby creating the greatest value for downstream consumers and for Canada as a whole. Rogers believes that competition is best created by offering spectrum, as far as possible, in homogeneous lots that bidders can assemble as they see fit. Neutral competition is not achieved by creating many different types of licences with different regulatory obligations in the hope that at least some licences prove attractive to bidders.
 - Avoidance of aggregation risks - A level playing field is possible between bidders only if aggregation risks can be avoided. This includes both aggregation risks across geographic regions and across frequency blocks. The latter will be even more important in the future with spread-spectrum technologies such as LTE. The most effective way of reducing or eliminating aggregation risks is to introducing package bidding within an open process.
 - Minimization of gaming opportunities - The strategic complexity associated with the SMRA and existing lot structures creates too many opportunities for gaming behaviour. Future auction formats should encourage straightforward

bidding, ensuring that bidders are rewarded, not penalised, for revealing their true target licences and real valuations.

56. Good auction design allows different types of bidders to pursue their objectives through simple, low-risk bidding strategies and achieves efficient outcomes. In this regard, Industry Canada can learn from developments in other jurisdictions. We can identify three main developments in open auction design in recent years:

- The augmented switching SMRA (AS-SMRA) - This format, used extensively in Scandinavia, is a modification of the SMRA and is designed to reduce the exposure of bidders to winning fragmented and/or non-contiguous assignments of spectrum.
- The hierarchical package bidding auction (HPBA) - This format, recently used for the U.S. 700MHz auction, is also a modification of the SMRA. It allows for certain pre-defined packages of lots, so as to reduce geographic aggregation risks for a limited set of bidders.
- The combinatorial clock auction (CCA) - This is a package bid format that is used in the U.K. and is being considered by other European countries (e.g. the Netherlands, Austria and Denmark). It is designed to eliminate aggregation risks, including concerns about frequency contiguity, and also to remove incentives for gaming behaviour.

57. Rogers strongly recommends that Industry Canada study each of these formats closely. These new auction formats have emerged as a response to the failures of the simple SMRA format, each one aimed at addressing particular problems, such as geographical aggregation risks and frequency contiguity. Of the three, Rogers believes that the CCA offers the greatest scope for improvements on the traditional SMRA, as it is the only approach that allows comprehensive use of package bidding to eliminate aggregation risks. By contrast, the AS-SMRA does not entirely remove aggregation risks and may create new gaming opportunities, while the HPBA does not allow for sufficient flexibility in choice of package bids to create a neutral auction.

58. The basic structure of a CCA assumes that lots can be organised into categories. Within each category, all lots can be treated as identical for the purposes of the auction. The auction then consists of a number of open or 'primary rounds', followed by a further 'supplementary bids round', in which bidders submit mutually exclusive bids for packages of lots. The open, primary rounds are intended to allow price discovery and produce a rough estimate of a market-clearing price for spectrum. This reduces common value uncertainty for bidders in a similar manner to the open rounds of an SMRA. The subsequent supplementary bids round provides an opportunity for bidders to make bids for any other packages they may be interested in and possibly also to improve some of the bids they made for packages during the

primary rounds. This approach ensures that bidders are able to express their full value for every possible package of lots that they are eligible to bid for.

59. As with the standard SMRA, the CCA uses bid increments and activity rules to manage the pace of the auction and encourage bidders to disclose their demand in response to rising prices. Apart from the use of package bidding, the biggest changes are in the way that winners and prices are determined. In a CCA, the entirety of bids made during the primary rounds and the supplementary bids are taken. From these, the auctioneer then selects the combination of bids that maximises total value, taking at most one bid from each bidder (subject to the constraint that no more lots are allocated than are available). This approach ensures that the outcome is always fully efficient, provided that bidders have behaved honestly. A 'second price' rule is used, in which bidders pay only the amount necessary to ensure there are winners (i.e. sufficient that there are no losers willing to pay for their lots at the prevailing prices), rather than what they actually bid. This approach greatly simplifies bidding strategy, as – unlike in an SMRA – bidders have no significant incentive to reduce their bids below value or reduce their demand in an attempt to manipulate final prices.

60. Although algorithms are required to determine winners and prices, this complexity is on the auctioneer side and not on the bidder side. The entire framework is intended to eliminate aggregation risks, allow bidders to pursue substitute options and learn during the open rounds in a straightforward way. There are likely to be few significant gaming opportunities if the format is properly implemented.

61. This approach is also highly flexible. A CCA can market-test spectrum packaging in a way that is simply impossible with more traditional formats. For example, the CCA auctions proposed for the 2.6 GHz bands in the U.K. and in Holland allow market determination of the split of the band between paired and unpaired spectrum. This is a major innovation compared with traditional spectrum auctions in which the spectrum authority picked the packaging of the spectrum and sold fixed lots reflecting this. Thus far, the European deployments of CCAs have all focused on addressing aggregation of frequencies for national licences, but there is no reason in principle why the format could not also be extended to address geographic aggregation risks as well.

Auctions for Satellite Licensing

Comments are sought on the Department using auctions to issue satellite licences.

62. Rogers has no position currently regarding satellite licences.

Licence Renewal

The Department is seeking comments on the proposals regarding renewal of long-term licences.

Licence Term

63. Rogers believes that the licence term for renewed cellular and PCS licences should be longer than the 10-year term proposed by the Department and that these licences should have a high expectation of renewal. This approach would provide licensees with a greater degree of certainty with respect to the ongoing viability of their operations, for corporate planning purposes and in order to secure additional funding for their substantial ongoing investments.
64. While it is true that the Department's use of a 10-year term is consistent with the licence term typically used by the U.S. FCC, other jurisdictions use much longer terms. The U.K.'s Ofcom, for example, uses indefinite licence terms for 2G spectrum licences⁷ and 21-year terms for 3G spectrum licences.⁸ The Australian Communications and Media Agency uses 25-year terms for 2G licences and 15-year terms for 3G licences.⁹ Rogers believes that a 15-year licence term for spectrum licences would be a reasonable first step in the direction of the much longer or indefinite licence terms that are used elsewhere in the world.

Renewals

65. Rogers agrees with the Department's proposal that "licenses continue to have a high expectation of renewal as per the existing Framework". It is essential that carriers that comply with their licence conditions have the certainty needed to make the billion dollar investments required to deploy advanced wireless networks.
66. Rogers however is concerned with some apparent inconsistencies in the Department's renewal policies. In Appendix A of the *Consultation on the Renewal of Cellular and Personal Communication Services (PCS) Spectrum Licences*, the Department has provided the proposed conditions of licence for the renewed cellular and PCS licences. The Department has proposed in Section 1, Licence Term, to mirror the language that it used in the AWS conditions of licence. This appears to be a change to the renewal expectancy of cellular and PCS licences since it deviates from the language that is found in the existing cellular and PCS conditions of licence.

⁷ Ofcom. Application of Spectrum Liberalisation and Trading to the Mobile Sector. (February 2009). Section 1.8.

⁸ Ibid, Section 9.6.

⁹ ACMA. Five Year Spectrum Outlook: 2009-2013. (March 2009). Pg. 23.

67. Specifically, the existing conditions of licences provide that the licence “will likely be renewed” unless, among other things, a breach of licence has occurred. The proposed conditions of licence do not contain any language regarding the likelihood of renewal. Although the AWS conditions of licence do not contain any language regarding the likelihood of renewal, the Department has amended section 4.1 of the AWS Licensing Framework such that it states that “the AWS licences will have a high expectation of renewal”.¹⁰
68. Rogers believes that the Department should clearly state in the conditions of licence for all licences, including the renewed cellular and PCS licences, that the licences will have a high expectation of renewal.

Renewal Fees

Rogers considers that if renewal fees are used, these should be used simply to recover the administrative costs of the renewal process, as is the case in the U.S. Renewal fees need to be set in a way in which they can be anticipated by licence holders and administrative cost recovery is the simplest way to do this. Such a regime would be much more predictable than alternatives such as market-based pricing and would encourage efficient allocation of spectrum.

69. In the U.S. cellular and PCS licensees are merely required to pay a “Regulatory Fee” that is intended to recover no more than the cost of the U.S. FCC’s regulatory activities on behalf of the wireless industry. This fee is re-calculated on an annual basis to reflect the expected level of the FCC’s costs and the forecasted number of wireless subscribers in a given year.¹¹ To illustrate, the Regulatory Fee as of April 2009, was set at \$0.17 per wireless unit (equivalent to a working wireless telephone number).¹² Rogers notes that the total amount that it would remit to the Department each year on the basis of the FCC’s Regulatory Fee is a fraction of what it currently remits to the Department in spectrum licence fees.
70. If licence fees will be imposed for renewed licences, they should be set at a nominal level to only recover the Department’s administrative costs, as is the case in the U.S. To do otherwise would place Canadian wireless carriers at a significant disadvantage relative to their peers in other jurisdictions. Further, it is important for the Department to understand that spectrum licence fees, like all costs, are passed on to consumers.

¹⁰ Industry Canada. Responses to Questions for Clarification in the AWS Policy and Licensing Frameworks. (February 2008). Pg. 24-25.

¹¹ Title 47 of the *Code of Federal Regulations*, Part 1 § 1.1163.

¹² *Federal Communications Commission Wireless Telecommunications Bureau Fee Filing Guide, April 2009*, Part C.

Therefore, higher spectrum licence fees will raise the prices for wireless services in Canada, making Canada less competitive compared to our trading partners, which do not have these higher fees. To be clear, if the Department expects Canadian wireless prices to more closely resemble wireless prices in the U.S., then it should harmonize its spectrum licence fees with the U.S. FCC's Regulatory Fee. Lower spectrum licence fees will eliminate a significant financial drag on licensees and will result in more affordable services and greater investment in advanced wireless networks and services.

R&D Obligations

Comments are sought on the continued need for licensees to invest a percentage of adjusted gross revenues in R&D.

71. Rogers opposes the research and development (R&D) condition of licence. As the Department has noted elsewhere, "Initially, this condition of licence was established to stimulate R&D in the telecommunications sector" and more than a billion dollars has been invested in R&D since the first licences were issued by the Department in the mid-1980s.¹³ The R&D condition therefore has served its purpose and should be eliminated.

72. Rogers agrees with the *Telecommunications Policy Review Panel Final Report* and the *OECD Telecommunications Regulatory Institutional Structures and Responsibilities* report that cautioned against the mix of regulation and industrial development strategy.¹⁴ The Department has other alternatives for encouraging R&D in Canada.

73. We would also note that the U.S., U.K. and Australia do not impose an R&D condition of licence and Rogers is not aware of any other jurisdiction that imposes such a condition of licence. In any event, market forces will ensure that wireless equipment manufacturers and licensees will continue to invest heavily in R&D to enhance their competitive position.

Urban and Rural Licences

Comments are sought on a proposal to establish a new Tier level that would differentiate urban and rural areas; or whether another mechanism could achieve a differentiation between urban and rural areas.

¹³ Industry Canada. Consultation on Revisions to the Framework for Spectrum Auctions in Canada (DGRB-001-09). (April 2008). Pg.9.

¹⁴ Ibid, Pg.10.

74. Rogers believes there are more appropriate policy tools to address rural development than the auction framework. The Department has at its disposal other methods to spur investment in rural regions of Canada in order that all Canadians benefit from advanced wireless services. Creating new tier blocks which split the urban areas from the rural areas (creating a donut shaped block with an urban centre and rural exterior) could alter bidding behaviour in an auction, creating gaming opportunities and aggregation risks much as already seen in the AWS auction. Donut shaped blocks would add a level of complication that can be ill afforded in an already complex auction structure.
75. Furthermore, these customized shaped blocks will be even more inconsistent with the upcoming frequencies than the current Tier 4 blocks. The Tier 4 blocks as they currently are defined are too small for the propagation reach of the 700 MHz spectrum. They would already suffer interference and constraint issues. Splitting the blocks even further would only increase the problems.
76. The Department should instead concentrate on the policies that are already working to deliver services to rural regions. These include promoting joint ventures between incumbent licence holders and rural focussed firms. Rogers has voluntarily entered into several such arrangements. The Department should also promote a secondary market in spectrum, ensuring licences are divisible and easily transferred when required. Finally, the Department should continue to provide financial incentives for carriers to deliver services in uneconomic regions such as they recently did with the Building Canada Fund.