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Spectrum Management and Telecommunications

Licensing Framework for Residual Spectrum Licences in the 700 MHz and AWS-3 Bands

Contents

1.	Intent	1
2.	Background	1
3.	Band Plan and Available Licences	2
3.1	700 MHz Band	2
3.2	AWS-3 Band	3
4.	Changes From Previous Licensing Processes	4
4.1	Tier Size — 700 MHz and AWS-3 Bands	4
4.2	AWS-3 Block Size	5
4.3	Available Licences	7
4.4	Competitive Measures	8
4.5	Deployment Requirements	9
5.	Conditions of Licence	11
6.	Auction Format and Rules	12
6.1	Auction Format and Timing	12
6.2	Package Bidding for AWS-3 Licences	13
6.3	Second-Price Rule	15
6.4	Opening Bids	16
7.	Bidder Participation — Affiliated and Associated Entities	18
7.1	Affiliated Entities	18
7.2	Associated Entities	20
7.3	Prohibition of Collusion and Other Communication Rules	22
7.4	Auction Integrity and Transparency (Disclosure Requirements)	25
8.	Auction Process	26
8.1	Application to Participate	27
8.2	Submissions	27
8.3	Pre-auction Financial Deposits	27
8.4	Process to Submit Applications and Financial Deposit	28
8.5	Bidder Qualification	29
8.6	Withdrawal of Application Forms	30
8.7	Change of Information	30
8.8	Submission of Auction Bids	30
8.9	Determination of Provisional Licence Winners	30
8.10	Final Payment	31
8.11	Forfeiture Penalties	32
8.12	Issuance of Licences	32
9.	Post-auction Licensing Process for Unassigned Licences	32
10.	Licence Renewal Process	32
11.	Clarification Questions Process	33
12.	Obtaining Copies	34
	Annex A — Conditions of Licence — 700 MHz	35

Annex B — Conditions of Licence — AWS-3 Licences.....	41
Annex C — Deployment Requirements for Residual Licences	46
Annex D — Bidding Examples	47
Annex E — Pricing Rule	51

1. Intent

1. Through the release of this paper, Industry Canada hereby announces the decisions resulting from the consultation process undertaken in Canada Gazette notice SLPB-002-15, [Consultation on a Licensing Framework for Residual Spectrum Licences in the 700 MHz and AWS-3 Bands](#), hereinafter referred to as the Consultation. The residual licences remained unassigned from the licensing processes for Mobile Broadband Services (MBS) and Advanced Wireless Services (AWS) in the 700 MHz and AWS-3 bands.

2. Industry Canada sought comments on licensing considerations related to auction format, rules and process, as well as on conditions of licence for residual spectrum licences in the following bands:

- 777-782 MHz/746-751 MHz (700 MHz band)
 - one licence in the Yukon, the Northwest Territories and Nunavut;
- 1755-1780/2155-2180 MHz (AWS-3 band)
 - three licences in the areas of Saskatchewan, Manitoba and Yukon, the Northwest Territories and Nunavut.

3. All comments and reply comments received on this consultation are available on [Industry Canada's](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf11023.html) website at http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf11023.html. Comments and/or reply comments were received from Bell Mobility Inc. (Bell), Bragg Communications Inc. (Eastlink), Ice Wireless Inc. (Ice Wireless), MTS Inc. (MTS), Rogers Communications (Rogers), Saskatchewan Telecommunications (SaskTel), The SSi Group of Companies (SSi) and Telus Communications Company (TELUS).

4. The following document (hereinafter referred to as the Framework) sets out the licensing framework for the spectrum that remained unassigned from the licensing processes for MBS and AWS in the 700 MHz and AWS-3 bands. The decisions include issues related to the band plans, pro-competitive measures, auction format, and rules and conditions of licence for the licences assigned through this process.

2. Background

5. The Minister of Industry, through the *Department of Industry Act*, the *Radiocommunication Act* and the *Radiocommunication Regulations*, with due regard to the objectives of the Canadian telecommunications policy set out in section 7 of the *Telecommunications Act*, is responsible for spectrum management in Canada. As such, the Minister is responsible for developing national policies for spectrum utilization and ensuring effective management of the radio frequency spectrum resource.

6. In developing a licensing framework for residual spectrum licences in the above-mentioned bands, Industry Canada was guided by the objectives stated in section 7 of the *Telecommunications Act*, the policy objective stated in the [Spectrum Policy Framework for Canada](#) (SPFC) to maximize the economic and social benefits that Canadians derive from the use

of the radio frequency spectrum, and the policy objectives outlined in SMSE-002-12, [Policy and Technical Framework: Mobile Broadband Services \(MBS\) — 700 MHz Band, Broadband Radio Service \(BRS\) — 2500 MHz Band](#), as follows:

- sustained competition in the wireless telecommunications services market so that consumers and businesses benefit from competitive pricing and choice in service offerings;
- robust investment and innovation by wireless telecommunications carriers so that Canadians benefit from world-class networks and the latest technologies; and
- availability of these benefits to Canadians across the country, including those in rural areas, in a timely fashion.

7. Industry Canada was also guided by the general approaches and processes outlined in the [Framework for Spectrum Auctions in Canada](#) (FSAC).

3. Band Plan and Available Licences

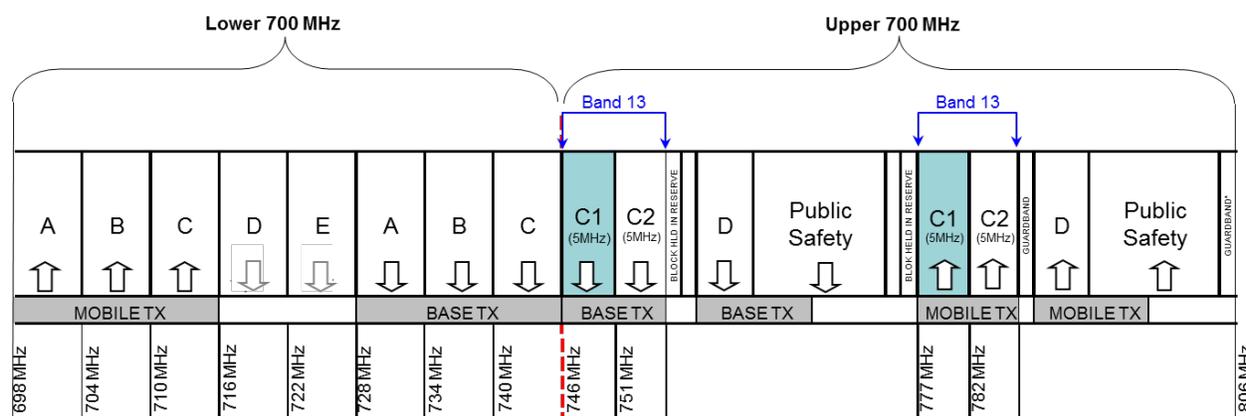
8. In accordance with the FSAC, any licences that remain unassigned at the conclusion of an auction, including licences that were forfeited, may be offered in a subsequent auction process at a date specified by Industry Canada.

9. Notifications of interest for specific unassigned spectrum licences in various bands have been received. Industry Canada is making the following licences available through a residual auction process on August 25 2015. A [Table of Key Dates](#) is available on the Department's website. Some spectrum licences remain unassigned in other bands. These will be offered through a subsequent residual auction process at a date to be determined.

3.1 700 MHz Band

10. The auction of spectrum licences for MBS in the 700 MHz band was held in January 2014, in accordance with the *Licensing Framework for Mobile Broadband Services (MBS) — 700 MHz Band* (hereinafter referred to as the 700 MHz Framework). At the conclusion of the auction, one licence remained unassigned for the paired block C1 in the Upper 700 MHz band in the Tier 2-14 service area (Yukon, Northwest Territories and Nunavut) (see Figure 1 and Table 1).

Figure 1: 700 MHz Band Plan



Notes:

- Transmission directions are based on third generation partnership project (3GPP) long term evolution (LTE) standards.
- “Band 13” is a 3GPP LTE band class defined for Upper blocks C1 and C2.

Table 1 — Available 700 MHz Spectrum

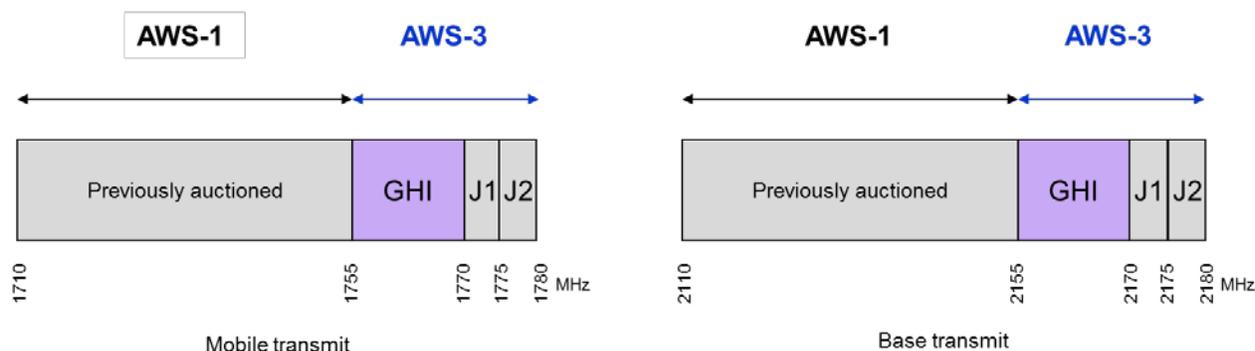
Tier	Service Area Name	Population	Frequency	Block C1 (10 MHz)
2-14	Yukon, Northwest Territories & Nunavut	107,215	777–782 MHz/746–751 MHz	5 + 5 MHz

3.2 AWS-3 Band

11. The auction of spectrum licences for AWS-3 in the bands 1755-1780 MHz and 2155-2180 MHz was held in March 2015, in accordance with the [Technical, Policy and Licensing Framework for Advanced Wireless Services in the Bands 1755-1780 MHz and 2155-2180 MHz \(AWS-3\)](#) (hereinafter referred to as the AWS-3 Framework). At the conclusion of the auction, three licences remained unassigned: block GHI in service areas 2-10 (Manitoba), 2-11 (Saskatchewan) and 2-14 (Yukon, Northwest Territories and Nunavut).

12. The band plan shown in Figure 2 and the frequencies outlined in Table 2 identify the spectrum that remained unassigned.

Figure 2: AWS-3 Band Plan (1755-1780 MHz and 2155-2180 MHz)



The following paired frequency block is available in three licence areas:

Table 2 — Available AWS-3 Spectrum

Tier	Service Area Name	Population	Frequency	Block GHI (30 MHz)
2-10	Manitoba	1,206,968	1755-1770 MHz/2155-2170 MHz	15 + 15 MHz
2-11	Saskatchewan	1,029,812	1755-1770 MHz/2155-2170 MHz	15 + 15 MHz
2-14	Yukon, Northwest Territories & Nunavut	107,215	1755-1770 MHz/2155-2170 MHz	15 + 15 MHz

4. Changes From Previous Licensing Processes

13. With the exception of the changes outlined in this section, Industry Canada proposed that the technical and policy decisions be consistent with those in the respective technical and licensing frameworks, namely the [Policy and Technical Framework: Mobile Broadband Services \(MBS\) — 700 MHz Band, Broadband Radio Service \(BRS\) — 2500 MHz Band](#) published in March 2012, the [700 MHz Framework](#) published in March 2013, and the [AWS-3 Framework](#) published in December 2014.

4.1 Tier Size — 700 MHz and AWS-3 Bands

14. Licences in the 700 MHz and AWS-3 bands were auctioned using Tier 2 service areas (a total of 14 service areas). These included block C1 in the 700 MHz band and block GHI in the AWS-3 band. Tier 2-14 covers the areas of Yukon, the Northwest Territories and Nunavut as a single service area.

15. Specifically for the North, Industry Canada proposed to auction the remaining block C1 in the 700 MHz band and the block GHI in the AWS-3 band, using Tier 4 service areas, which would result in separate licences for Yukon, the Northwest Territories and Nunavut. No changes were proposed to the tier levels for the licences available in Saskatchewan and Manitoba.

Summary of Comments

16. There was general support for the use of Tier 4 service areas in the North. SSi disagreed with the notion that smaller licence areas could facilitate entry for smaller service providers, positing that the entry price of spectrum is more important. There was general support for maintaining Tier 2 services areas in Saskatchewan and Manitoba.

Discussion

17. The rationale for larger spectrum service areas is that they generally require less coordination between licensees and typically result in faster deployment and a more effective use of radio spectrum. The three proposed northern tiers covering the Yukon, the Northwest Territories and Nunavut also cover large geographic areas which would not significantly increase required coordination between neighbouring licensees.

18. Licensing based on smaller tier sizes in the North would provide additional flexibility to bidders, who can concentrate on the geographic markets of most interest, or aggregate the tiers larger regions corresponding to their business needs.

19. Industry Canada continues to be of the view that while Tier 2 service areas enable the provision of mobile services to large areas of the country and allow licensees to offer wide area coverage, licensing the spectrum as three smaller tier areas (i.e., Tier 4) in the North could facilitate access by smaller service providers. Opening bid prices are discussed in Section 6.4 below.

20. There were no objections to maintaining the current Tier 2 licence areas in Saskatchewan and Manitoba.

21. In light of the above, Industry Canada will use the tier sizes as proposed in the Consultation.

Decision

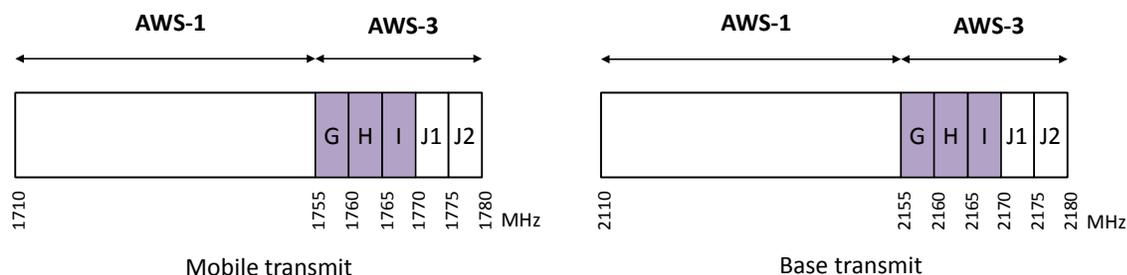
D1 — Specifically for the North, Industry Canada will use Tier 4 service areas to auction the remaining block C1 in the 700 MHz band and the block GHI in the AWS-3 band. The licences available in Saskatchewan and Manitoba will remain as Tier 2 licences.

4.2 AWS-3 Block Size

22. In the March 2015 auction of spectrum licences in the AWS-3 band, Industry Canada used a band plan that is similar to the one currently being used in the United States; however, three paired blocks of 5 + 5 MHz (G, H and I), were combined into one paired block of 15 + 15 MHz (i.e. GHI), whereas paired block J (10 + 10 MHz) was subdivided into two paired blocks of 5 + 5 MHz (i.e. J1 and J2).

23. Industry Canada proposed disaggregating block GHI into three paired blocks of 5 + 5 MHz for this residual auction, as shown in Figure 3.

Figure 3: Proposed Disaggregation of Block GHI Into Blocks G, H and I



Summary of Comments

24. SSi, MTS, Bell and TELUS generally supported the proposal to disaggregate block GHI into three separate blocks. SaskTel stated that although disaggregation could allow multiple operators to access spectrum, it expressed doubts that this will be the outcome given the market power and resources of larger national carriers.

25. Rogers noted that although it agrees with the Department's proposal to allow bidders to aggregate the blocks to create wider radio channels, it generally supports block sizes that are larger than 5 + 5 MHz wherever possible so that the full benefit of LTE technology can be exploited. Rogers also noted that smaller blocks would result in a less efficient use of radio spectrum and slower data speeds.

Discussion

26. In the United States, the GHI block is divided into three separate blocks (each 5 + 5 MHz). It is therefore likely that an ecosystem will be available for 5 + 5 MHz LTE operation in the AWS-3 band. In addition, the Federal Communications Commission (FCC) has mandated equipment interoperability in the AWS-1 and AWS-3 bands. It is expected that future LTE standards for the AWS Extension band¹ (covering both AWS-1 and AWS-3 bands) would also support 5 + 5 MHz operation.

27. In order to balance both efficiency and accessibility issues related to the spectrum in question, Industry Canada proposed that bidders have the ability to aggregate the smaller blocks using package bidding (as discussed in Section 6.2 below), should they wish to deploy wider radio channels.

¹ The 3GPP has initiated a work item for a new LTE operating band with uplink 1710-1780 MHz and downlink 2110-2200 MHz (see 3GPP RAN Plenary Meeting #67 Document RP-150428, March 2015). The new band is expected to support LTE operations with 5, 10, 15, and 20 MHz bandwidths.

28. Industry Canada is of the view that as proposed, disaggregating the blocks would allow more than one bidder to access the spectrum, while permitting the aggregation of blocks by bidders for increased efficiencies. The proposed change would also align with the U.S. band plan.

29. Consequently, block GHI will be divided into three separate licences. Hence, the number of AWS-3 licences available in this auction process will increase to 15 licences in total, as shown in Table 3.

4.3 Available Licences

30. Given the decisions related to sections 4.1 and 4.2 above, a total of 18 licences will be made available through this licensing process. Table 3 below outlines the list of available licences.

Decision

D2 — Tier sizes and block sizes will be as follows:

- a. Licences in the North in both the 700 MHz and AWS-3 licences will be licensed on a Tier 4 basis; and
- b. Block GHI will be disaggregated into three separate blocks of 5 + 5 MHz each for all of the AWS-3 spectrum licences being offered through this auction process (Saskatchewan, Manitoba and the North).

In light of the above, the following paired frequency blocks will be available for the residual auction:

Table 3 — Licences Available Through This Process

Block	Tier	Service Area Name	Population	Frequency
C1	4-170	Yukon	33,854	777-782 MHz/746-751 MHz
C1	4-171	Nunavut	31,906	777-782 MHz/746-751 MHz
C1	4-172	Northwest Territories	41,455	777-782 MHz/746-751 MHz
G	2-10	Manitoba	1,206,968	1755-1760/2155-2160 MHz
H	2-10	Manitoba	1,206,968	1760-1765/2160-2165 MHz
I	2-10	Manitoba	1,206,968	1765-1770/2165-2170 MHz
G	2-11	Saskatchewan	1,029,812	1755-1760/2155-2160 MHz
H	2-11	Saskatchewan	1,029,812	1760-1765/2160-2165 MHz
I	2-11	Saskatchewan	1,029,812	1765-1770/2165-2170 MHz
G	4-170	Yukon	33,854	1755-1760/2155-2160 MHz
H	4-170	Yukon	33,854	1760-1765/2160-2165 MHz
I	4-170	Yukon	33,854	1765-1770/2165-2170 MHz
G	4-171	Nunavut	31,906	1755-1760/2155-2160 MHz
H	4-171	Nunavut	31,906	1760-1765/2160-2165 MHz
I	4-171	Nunavut	31,906	1765-1770/2165-2170 MHz
G	4-172	Northwest Territories	41,455	1755-1760/2155-2160 MHz
H	4-172	Northwest Territories	41,455	1760-1765/2160-2165 MHz
I	4-172	Northwest Territories	41,455	1765-1770/2165-2170 MHz

4.4 Competitive Measures

31. In the initial AWS-3 auction, block GHI had been set aside for new entrants that were actively providing commercial mobile wireless services in the related Tier 2 service area. In the consultation, Industry Canada proposed to eliminate the competitive measure which set-aside block GHI from the available spectrum licences in the AWS-3 band (i.e. the “set-aside” measure), so that the remaining licences would be open to all bidders.

32. The 700 MHz auction included a spectrum cap of two paired blocks, applicable to all licensees, and a cap of one prime paired block (blocks B, C, C1, and C2) applicable to large wireless service providers. During the 700 MHz auction process, there was some bidding activity on block C1 in the licence area 2-14, although the licence remained unassigned at the conclusion of the process. In the Consultation, Industry Canada proposed that the spectrum caps that applied in the licensing process for the 700 MHz band continue to apply.

Summary of Comments

AWS-3

33. Bell, Eastlink, MTS, Rogers and TELUS supported or did not object to the elimination of the set-aside measure for the AWS-3 licences.

34. SaskTel disagreed with the elimination of the set-aside but suggested that it be implemented in a way that reserves the spectrum for small carriers that have no national market power, or that excludes large national wireless players from acquiring the spectrum.

35. Eastlink, MTS and SaskTel also recommended that a spectrum cap be implemented to ensure that no single carrier would be allowed to acquire the entire AWS-3 band within a service area. SSi supported this type of intervention, as did Rogers, but only for this particular process.

36. SSi suggested that all large wireless service providers be excluded from participation adding that smaller and regional carriers are unable to compete in a bidding war with the larger service providers.

700 MHz

37. Eastlink, Ice Wireless, MTS, SaskTel and SSi supported the proposal to maintain the spectrum cap in the 700 MHz band. Ice Wireless further suggested that going forward, all licensees be limited to one block per service area within all blocks (A, B, C, C1 and C2), with licensees already holding two blocks being grandfathered. SSi suggested that large wireless service providers be excluded from acquiring any of the residual licences and that the Department use an approach that encourages smaller and regional carriers to acquire the residual spectrum in a cost effective manner.

38. Bell, Rogers and TELUS did not support the proposal to maintain the 700 MHz cap. Bell and Rogers noted their disagreement with any measures that interfere with market forces and that

could distort final outcomes, adding that companies that value the spectrum the most should be able to bid for it and put it to its best use. However, Rogers added in its reply comments that where caps are applied, they should be designed specifically to avoid an outcome whereby a single bidder or network acquires the entire spectrum in a licence area. TELUS highlighted that recent auctions resulted in some spectrum remaining unlicensed in the northern areas and suggested that this demonstrates that spectrum caps are not needed in the northern licence areas.

Discussion

39. The 700 MHz caps that apply to the 700 MHz spectrum licensed in the 2014 auction will be in place for a period of five years from the date of license issuance, and thus remain in effect for existing licensees. Industry Canada still considers the spectrum caps to be an appropriate mechanism for managing the concentration of 700 MHz spectrum. Maintaining the caps will provide the opportunity for interested service providers to acquire licenses in the North.

40. Industry Canada also considered the arguments put forth in support of, and in opposition to the application of competitive measures for the available blocks of AWS-3 spectrum. Given current spectrum distribution in the regions in question: the North, Manitoba, and Saskatchewan, Industry Canada is not of the view that additional competitive measures for the licensing of the residual AWS-3 spectrum are required.

41. Industry Canada does not consider that additional competitive measures are warranted in either the 700 MHz or AWS-3 bands at this time.

Decision

D3 — Competitive measures will be as follows:

- a. The competitive measure which set aside block GHI for operating new entrants will not apply for the AWS-3 licences available in this process; and**
- b. The spectrum caps that applied in the initial licensing process for the 700 MHz licences will continue to apply for licences as part of this residual auction process as set out in Section 3 – Spectrum Aggregation Limits of Annex A.**

4.5 Deployment Requirements

42. For the northern licences in the AWS-3 band, the deployment requirements were set at 30% of the licence area population to be covered within eight years of licence issuance. This licence area covered all of Yukon, the Northwest Territories and Nunavut.

43. Industry Canada proposed to set the deployment requirement levels in terms of percentage population coverage for each of the AWS-3 northern licences at 20% by year 8, (as opposed to 30%), which would be consistent with other northern licences (e.g. the 2300 MHz and 2500 MHz bands).

44. For the 700 MHz band, the deployment requirements were set at 20% population coverage of the Tier 2 licence area within 10 years of the initial licence issuance for the northern licence covering all of Yukon, the Northwest Territories and Nunavut. Industry Canada proposed

to maintain the 20% population coverage requirement, but at the Tier 4 level, consistent with other northern licences.

45. Industry Canada also proposed to maintain the deployment levels for the AWS-3 licences available in Saskatchewan (varies between 30% and 60% of Tier 3 areas) and Manitoba (varies between 35% and 50% of Tier 3 areas), but to reduce the timelines to reach these deployment levels from eight years to five years. The associated Tier 3 levels are included in Table C1 of Annex C.

Summary of Comments

46. There was no opposition from the respondents regarding the proposals to apply a deployment requirement level of 20% of the population of the Tier 4 licence areas in the North for both the 700 MHz and AWS-3 bands.

47. MTS and SaskTel supported the proposal to reduce the deployment timelines from eight years to five in Saskatchewan and Manitoba. SaskTel further suggested that an additional 10-year deployment requirement be added in order to help extend deployment to a wider geographic area and rural communities.

48. Bell, Rogers and TELUS were opposed to the proposal to reduce the deployment requirement timelines from eight years to five years. They noted that the AWS-3 spectrum has yet to be standardized by the 3GPP and that commercial deployment is not expected until at least 2016. They also noted the eventual need to transition incumbents in the United States. TELUS added that licensing management would be complex for a licensee holding spectrum with varying deployment timelines. Rogers and SaskTel stated that the current AWS-3 licensees would have an unfair advantage if the deployment timelines were shortened for the residual licences.

Discussion

49. Given that there were no objections, the deployment requirement levels for the residual licences in the northern service areas will be as proposed for both the 700 MHz and AWS-3 bands.

50. In response to the concerns raised that an equipment ecosystem has not yet been developed, Industry Canada continues to be of the view that since the successful auction of the AWS-3 band conducted by the FCC in the United States, the significant investments made by the U.S carriers to acquire this spectrum, along with the deployment requirements imposed by the FCC, may expedite the development of an equipment ecosystem in this band. In addition, the 3GPP has started standardization work for a new LTE operating band covering both AWS-1 and AWS-3 bands in order to include in Release 13 LTE specifications. Release 13 specifications are scheduled to be completed in March 2016. In response to the concerns raised that potential interference from U.S. incumbents in the band will delay deployment, it should be noted that of the residual blocks affected (block G in Saskatchewan and block I in Manitoba and Saskatchewan), block G is the only block without an established timeline to transition incumbents out of the band. Only a small part of the licence area is affected by potential U.S. incumbent interference in blocks G and I in each of these licence areas. Given that Canadian licensees would

have the option to coordinate with U.S. incumbents using cross-border rules; this should not impact the ability to meet the 5-year deployment timeline. Furthermore, the Department does not consider that an additional deployment requirement at year ten is warranted at this time.

51. In response to the concern that the shorter deployment conditions would result in an unfair advantage for current AWS-3 licensees in Saskatchewan and Manitoba, the Department is of the view that as soon as an equipment ecosystem is available, licensees should deploy in a timely manner and provide services to Canadians. The shorter deployment timelines also serve as a strong disincentive to speculative entry. As bidding for these licences will be open to all, it is expected that the carriers that are interested in this spectrum will already have significant infrastructure in these licence areas, and would be capable of deploying as soon as an equipment ecosystem becomes available in this band.

Decisions

D4 — The deployment decisions will apply as follows:

- a. The deployment requirements for the AWS-3 licences in the North, offered as part of this process, will be set at 20% population coverage of the Tier 4 service areas by year eight;**
- b. The timelines to reach the deployment requirement levels in Saskatchewan and Manitoba, in terms of percentage population coverage will be set at five years for the AWS-3 licences offered as part of this process; (see Table C1 in Annex C)**
- c. The deployment requirement levels for the 700 MHz licence will be set at 20% population coverage for each of the Tier 4 licence areas by year 10.**

5. Conditions of Licence

52. Industry Canada proposed that the conditions of licence that currently apply to the licensed 700 MHz and AWS-3 bands apply to licences issued through this auction process, with the exception of the changes proposed in Section 4 above.

Summary of Comments

53. Respondents which commented on this issue had no objections to the proposed conditions of licence as set out in annexes A and B of the Consultation.

Discussion

54. Given that no objections were received on this issue, the conditions of licence will be as proposed.

55. For further information on the technical considerations that apply to the 700 MHz band, refer to SMSE-002-12, [*Policy and Technical Framework: Mobile Broadband Services \(MBS\) — 700 MHz Band, Broadband Radio Service \(BRS\) — 2500 MHz Band*](#).

56. For information on the International Coordination, Incumbent Transition Plan and Other Technical considerations related to the AWS-3 band, refer to [*Technical, Policy and Licensing Framework for Advanced Wireless Services in the Bands 1755-1780 MHz and 2155-2180 MHz \(AWS-3\)*](#), available on Industry Canada's website.

Decision

D5 — Conditions of licence that apply to the previously licensed 700 MHz and AWS-3 bands will apply to licences issued through this auction process, with the exception of the changes proposed in Section 4 above.

The conditions of licence that will apply to the 700 MHz band licences being auctioned in this licensing process are set out in Annex A. The conditions of licence that will apply to the AWS-3 band licences being auctioned in this licensing process are set out in Annex B.

6. Auction Format and Rules

6.1 Auction Format and Timing

57. As stated in the FSAC, Industry Canada's objective is to select an auction design that is optimal for the spectrum being offered and the circumstances that exist at the time. The auction format should be simple, fair and transparent for bidders and lead to an efficient assignment of spectrum. In the selection of an auction format and related rules, consideration is given to the characteristics of the spectrum being auctioned; for example, the quantity and size of the blocks, as well as the similarities and complementarities that may exist among the blocks. In past auctions, Industry Canada has used a simultaneous multiple round ascending (SMRA) auction, a combinatorial clock auction (CCA) or a sealed-bid auction format.

58. A sealed-bid auction requires applicants to submit their bids to the Department in a sealed envelope prior to the receipt deadline for bids in order to apply for each licence. Following the receipt deadline for bids, departmental officials will open the bids, rank them and provisionally award a licence or licences to the highest bidder(s). If the highest bidder for a particular licence is found eligible to be the licensee, that bidder would be awarded the licence.

59. Industry Canada sought comments on its proposal to use a sealed-bid auction format for residual licences in the 700 MHz and the AWS-3 bands. The Department also sought comments on the timeline outlined in the Proposed Table of Key Dates, specifically on the proposed auction date of August 25, 2015, and the proposed deadline for receipt of applications of August 6, 2015.

Summary of Comments

60. Bell, Eastlink, MTS, Rogers and SSI were in support of using a sealed-bid auction format and respondents were generally supportive, or had no comments of the proposed timelines. Bell and Rogers added that although they generally support the use of ascending type auctions, such as

an SMRA or CCA format due to the price discovery, the sealed-bid format is well suited for the assignment of the small number of residual licences involved. SSi added that its support was subject to its other proposals being accepted, notably excluding large wireless service providers from participation and reducing the opening bid prices for the 700 MHz band.

61. Ice Wireless suggested that a first come, first served (FCFS) approach to licensing the 700 MHz spectrum in the North would be most appropriate, given the difficult conditions for deploying in the North and the fact that the licence was not taken up in the past auction. It also suggested that, if the Department uses a sealed-bid auction format, the bidding take place in July 2016 in order to provide additional lead time for all interested parties to participate.

62. SaskTel did not agree with the proposed sealed-bid auction format, stating that the lack of price discovery makes for an inefficient mechanism. Although SaskTel supported the proposed timelines if the Department proceeds with a sealed-bid format, it recommended that additional time be taken to establish an SMRA format instead.

Discussion

63. As stated in the Consultation, Industry Canada has used sealed-bid auctions to make spectrum available when there are few blocks available in a limited number of geographic areas. A sealed-bid auction format was recently used for the AWS-3 auction which was held in March 2015.

64. In response to the suggestion that an FCFS licensing approach be used, given the indication of a potential excess demand for the available spectrum in the 700 MHz and AWS-3 bands, a competitive licensing process is considered to be appropriate.

65. When proposing an auction format, Industry Canada must consider the benefits of an auction format versus the complexity of and time required to run the auction. Although both CCA and SMRA formats provide stakeholders with the benefit of price discovery through the multiple rounds, these formats are more complex and time consuming. Given the proposal to offer a limited number of licences in this auction process, Industry Canada is of the view that the use of a sealed-bid auction format would be optimal.

Decision

D6 — Industry Canada will use a sealed-bid auction format for the auction of residual licences in the 700 MHz and AWS-3 bands. The auction will be held in accordance with the Table of Key Dates.

6.2 Package Bidding for AWS-3 Licences

66. Given that block GHI in the AWS-3 band will be divided into three separate blocks (G, H and I), Industry Canada sought comments on its proposal to allow package bidding for those blocks within each service area. This is consistent with the recently held AWS-3 auction, in which package bidding was allowed on the two open blocks of spectrum.

67. Industry Canada also sought comments on its proposal to allow bidders to have the following six bidding options in each service area where blocks G, H and I are available: G, H, I, GH, HI and GHI. GI was not proposed as an option, as it could result in a bidder winning non-contiguous spectrum, which may be considered less efficient and therefore less desirable.

Summary of Comments

68. Bell, Eastlink, MTS, Rogers, SaskTel and SSi supported or did not object to the proposal to allow package bidding for blocks G, H and I within each service area. Bell, Eastlink, MTS, Rogers and SaskTel also supported the exception of packages containing the block G and I as a combination, however Rogers and SaskTel noted their concern that one company could place a bid on all three blocks and that this could supersede a bid for only one block, thereby potentially allowing one company to purchase the entire block in a licence area.

Discussion

69. Package bidding allows bidders to express their value for a combination of the blocks in addition to their value for the individual blocks, providing bidders with the flexibility to bid for all the combinations that they would be interested in winning. If bidders were only able to bid on G, H and I individually, there would be an exposure risk for bidders trying to acquire some combination of the licences. Package bidding reduces this risk.

70. As there were no objections to the use of package bidding within a service area, or on the exception for packages containing blocks G and I as a combination, the Department will adopt the package bidding rule proposed in the Consultation.

71. The winning bid(s) in each service area will be calculated by determining the combination of bids that generates the highest sum; the bids in this combination would be the winning bids. Similar to the AWS-3 auction, bidders will only be able to win one of their bids in each service area. As a result, bidders interested in individual licences and/or some combination thereof will have to bid for all of the options, in each service area that they are interested in winning. Further information on the determination of provisional licence winners can be found in Section 8.9. Industry Canada is not, however, making package bidding available across licence areas.

72. There will be no package bidding with respect to the 700 MHz licences, as there is only one block available in each of the three licence areas.

Decision

D7 — For the AWS-3 licences, Industry Canada will allow package bidding for blocks G, H and I within each service area, with the exception of packages containing the blocks G and I as a combination.

6.3 Second-Price Rule

73. Industry Canada sought comments on the proposal to use a second-price rule to determine the price that winning bidders would be required to pay. A second-price rule requires winning bidders to pay an amount that is sufficient to ensure that no other bidder, or group of bidders, is prepared to pay more for the licence(s) in question.

Summary of Comments

74. Bell, Eastlink, Ice Wireless, MTS, Rogers, SaskTel and SSi supported the proposal to use a second-price rule, including bidder-optimal core prices and use of the ‘nearest Vickrey’ approach.

Discussion

75. A second-price rule requires each winning bidder to pay an amount that is sufficient to ensure that no other bidder, or group of bidders, is prepared to pay more than the winning bidder for the licence(s) in question.

76. As there was general support from respondents, Industry Canada will use a second-price rule since it promotes a more efficient outcome by increasing the incentive for bidders to bid in a way that is consistent with how they truly value the licences. Bidders, knowing that they will only be required to pay the amount determined by the second-price rule, will have a greater incentive to bid truthfully. This promotes an efficient auction outcome.

77. Given the decision to divide the block GHI in the AWS-3 band into three separate blocks (G, H and I) and to allow package bidding for those licences within a service area, the price(s) for those blocks could depend on package bids and/or bids for the individual licences.

78. With package bidding, in some cases, the second price may not be high enough to ensure that there is no alternative bidder or group of bidders prepared to pay more for the licences in question. To address this, Industry Canada will require an additional payment above the second price to ensure that the winning bidder(s) pay an amount that is sufficient to ensure that no other bidder or group of bidders is prepared to pay more for the licence(s) in question. More specifically, Industry Canada could apply bidder-optimal core prices and use the “nearest Vickrey” approach (see Annex E). This approach was selected as the mechanism to determine prices for the recent auctions in the 700 MHz, AWS-3, and 2500 MHz bands.

Decision

D8 — Industry Canada will implement a second-price rule, including bidder-optimal core prices and use of the “nearest Vickrey” approach, for the auction of residual licences in the 700 MHz and AWS-3 bands.

6.4 Opening Bids

79. Opening bids are the prices for the spectrum licences at the start of the auction, and the minimum amount that will be accepted for each licence.

700 MHz Licence(s)

80. In the recent 700 MHz auction (held in 2014), the determination of the opening bid prices took into account the results of past Canadian auctions and reflected the relative value of the licences in the different service areas. As a minimum accepted price, the existing Cellular and Personal Communications Services (PCS) bands' annual fees, adjusted to account for a licence term of 20 years using a 14% discount rate, were used. The opening bid prices were rounded to the nearest thousand dollars.

81. For the 700 MHz band licences available through this licensing process, Industry Canada proposed to apply the same opening bid price level of \$0.265/MHz/population that was used in the initial licensing process in 2014. However, given the decision to divide this licence into three separate tier areas, the opening bids would be adjusted to reflect the smaller licence areas. (See Table 4.)

AWS-3 Licences

82. In the recent AWS-3 auction, the opening bids were similar to those set for the 2500 MHz auction given that the AWS 3 and 2500 MHz bands are comparable. In particular, they both have similar propagation characteristics and are commercial mobile frequency bands.

83. With respect to the remaining available licences in the AWS-3 band, Industry Canada proposed that the opening bid prices remain as they were in the previous auction. However, given the proposals to break up the 30 MHz block into three separate blocks of 10 MHz each and to divide the northern licence into three separate areas, it was also proposed that the opening bids be adjusted to reflect the smaller block size and smaller licence areas.

Summary of Comments

84. MTS, Rogers and SaskTel, supported or had no objection to the proposed opening bid prices for both the 700 MHz and AWS-3 bands. SSi was not opposed to the opening bid prices for the AWS-3 band.

85. Ice Wireless and SSi did not support the proposed opening bid prices for the 700 MHz band and proposed that prices be reduced to \$0.05/MHz/population. Ice Wireless suggested not having a minimum opening bid price. Bell and Rogers objected to these proposals, with Rogers noting that these would provide an unfair and unjustified benefit to potential new licensees over those who participated and won licences in the original auction held in 2014.

Discussion

86. As there were no objections to the opening bid prices for the AWS-3 band, the prices for the AWS-3 licences will be adopted as proposed in the Consultation.

87. Some stakeholders suggested reducing or eliminating the minimum opening bid price for the 700 MHz band. Industry Canada noted in the Consultation that bids at or above the proposed opening bid prices will ensure that Canadians obtain a fair return for the use of this spectrum and that, at a minimum, the revenue received will be comparable to the returns currently being received for similar spectrum resources.

88. Industry Canada considers that the proposed opening bid prices for the 700 MHz band still represent a fair return for the use of this spectrum to Canadians.

89. Industry Canada is also of the view that the opening bids will provide a return comparable to similar spectrum resources. The 700 MHz auction resulted in the licensing of comparable spectrum in the North (the C2 block) at the proposed minimum price level of \$0.265/MHz/population, for an amount of total of \$284,000. Furthermore, the same annual fees that were used to determine these opening bid prices currently apply to licensees in the Cellular and PCS spectrum bands.

90. The Department does not consider that lowering the opening bid prices for the 700 MHz band at this time, would ensure that Canadians will obtain a fair return for the use of this spectrum.

Decision

D9 — Industry Canada will apply the following opening bids for the licences available through this licensing process.

Table 4 — Opening Bid Prices for the 700 MHz Licences

Tier	Service Area Name	Population	\$/MHz/pop	Opening Bid (\$) (20-year licence, 10 MHz)
4-170	Yukon	33,854	0.265	\$90,000
4-171	Nunavut	31,906	0.265	\$85,000
4-172	Northwest Territories	41,455	0.265	\$110,000

Table 5 — Opening Bid Prices for the AWS-3 Licences

Tier	Service Area Name	Population	\$/MHz/pop	Opening Bid (\$) (20-year licence, 10 MHz)
2-10	Manitoba	1,206,968	0.09	\$1,086,600
2-11	Saskatchewan	1,029,812	0.06	\$618,000
4-170	Yukon	33,854	0.05	\$17,000
4-171	Nunavut	31,906	0.05	\$16,000
4-172	Northwest Territories	41,455	0.05	\$21,000

7. Bidder Participation — Affiliated and Associated Entities

91. In order to maintain auction integrity, as in past auctions, Industry Canada proposed that there be rules relating to the definition and participation of affiliated and associated entities in order to ensure that each bidder is an independent bidder. As was the case in recent auctions, it was proposed that affiliated entities not be allowed to participate separately in the auction. It was also proposed that associated entities only be allowed to participate separately if following a review of their application, Industry Canada is satisfied that their participation would not have an adverse impact on auction integrity.

7.1 Affiliated Entities

92. Industry Canada sought comments on its proposed definition of affiliated entities, as well as on the proposal that affiliated entities not be allowed to participate separately in the auction.

Summary of Comments

93. Bell, Ice Wireless, MTS, SaskTel, SSI and TELUS generally agreed with or had no objections to the rules regarding affiliated entities. Rogers suggested that the Department take additional steps beyond the proposed rules regarding affiliated and associated entities, but did not propose specific actions to be taken.

Discussion

94. Given that the proposed definition of affiliated entities and the rules regarding their participation are consistent with recent auction processes and that there was general agreement with the proposals, the definition will be as proposed in the Consultation.

Decision

D10 — Industry Canada is adopting the definition of affiliated entities and the rules regarding their participation in the auction as set out in paragraphs 95 to 100 below.

95. **Definition of affiliated entities:** An entity will be deemed to be affiliated with a bidder if it controls the bidder, is controlled by the bidder, or is controlled by any other entity that controls the bidder. “Control” means the ongoing power or ability, whether exercised or not, to determine or decide the strategic decision-making activities of an entity, or to manage or run its day-to-day operations.

96. **Presumption of affiliate status:** If a person owns, directly or indirectly, at least 20% of the entity’s voting shares (or where the entity is not a corporation, at least 20% of the beneficial ownership in such entity), Industry Canada will generally presume that the person can exercise a degree of control over the entity to establish a relation of affiliation. The ability to exercise control may also be demonstrated by other evidence. Under this rule, Industry Canada may, at any time, ask a prospective bidder for information in order to satisfy any question of affiliation.

97. Applicants may provide information to Industry Canada to rebut the presumption of affiliate status. Applicants must notify the Department in writing if they are rebutting the presumption and must file material that will enable Industry Canada to review the question and make that determination. It is the responsibility of the applicant to file the appropriate material. Such material may include copies of the relevant corporate documentation relating to both entities; a description of their relationship; copies of any agreements and arrangements between the entities and affidavits or declarations, signed by officers from the two entities, dealing with the control as outlined in the definition of “affiliate” above.

98. Upon receipt of this material, Industry Canada will either make a ruling based on the materials submitted or ask the applicant for further information (and provide a timeline within which to do so).

99. Should the entities fail to provide the relevant information in a timely fashion in order to allow Industry Canada to complete its determination, the Department may make a ruling on eligibility, based on the above, that the entities in question are affiliated.

100. **Eligibility to participate in the auction:** Only one member of an affiliate relationship will be permitted to become a qualified bidder in the auction or the affiliated entities may apply to participate jointly as a single bidder. Affiliated entities must decide prior to the application deadline which entity will apply to participate in the auction. All affiliations must be disclosed at the time of the application.

7.2 Associated Entities

101. Industry Canada sought comments on its proposed definition of associated entities, as well as on the proposed rules regarding the participation of associated entities in the auction. The proposed rules included allowing carriers to form a bidding consortium and to participate in the auction as a single bidder, and allowing associated entities to participate separately if, following a review of their application and narrative description of the association, Industry Canada is satisfied that their participation would not have an adverse impact on auction integrity. The Department also proposed that associated entities participating separately, could request to have the spectrum caps applied separately.

Summary of Comments

102. Bell, MTS, SaskTel, SSi and TELUS generally agreed with or had no objections to the rules regarding associated entities.

103. Ice Wireless objected to the provision that would allow associated entities to bid separately and also objected to the possibility of having the caps applied separately. Rogers suggested that the Department take additional steps beyond the proposed rules regarding affiliated and associated entities. Bell objected to the suggestions to change the rules regarding affiliated and associated entities.

Discussion

104. Given that the proposed definition for associated entities is consistent with recent auction processes and that there were no comments proposing specific changes, the definition will be as proposed in the Consultation.

105. In addition, Industry Canada is of the view that allowing associated entities to apply to bid separately in the auction of residual licences would not have an adverse impact on the integrity of the auction, given the rules in place to maintain the integrity of the auction. Therefore, as proposed, Industry Canada will allow associated entities to apply to bid separately in the auction and to have the spectrum caps applied separately.

Decision

D11 — Industry Canada is adopting the definition of associated entities and the rules regarding their participation in the auction as set out in paragraphs 106 to 113 below.

106. **Definition of associated entities:** Any entities that enter into any partnerships, joint ventures, agreements to merge, consortia or any arrangements, agreements or understandings of any kind, either explicit or implicit, relating to the acquisition or use of any of the spectrum licences in the 700 MHz band or the AWS-3 band being auctioned in this process will be treated as Associated Entities. Typical roaming and tower sharing agreements would not cause entities to be deemed associated.

107. Depending on the nature of the association, it may not preclude the ability of the entities to participate separately in the auction or to have the 700 MHz spectrum caps applied individually.

108. **Eligibility to participate separately in the auction:** Associated entities may apply to Industry Canada to participate in the auction separately. Industry Canada is of the view that allowing associated entities that are competitors in the market to bid separately would not have an adverse impact on the integrity of the auction provided that auction participants comply with the information disclosure and anti-collusion rules discussed below. (Section 7.3 — Prohibition of Collusion and Other Communication Rules and Section 7.4 — Auction Integrity and Transparency) The submitted narrative (as proposed in Section 7.4 below) would be assessed to determine whether permitting both entities to participate separately would negatively impact the integrity of the auction process. The auction integrity would be best assured by the transparent disclosure of the relationships between bidders participating in the auction. Industry Canada may request additional documents. Any information considered by the applicant to be confidential should be properly marked as such. If Industry Canada deems it necessary to disclose any information marked as confidential, will be consulted prior to its release.

109. **Eligibility to have the 700 MHz caps applied separately to associated entities:** Associated entities may request that the spectrum caps be applied individually. To obtain this approval, entities must demonstrate that they intend to compete separately in the applicable licence area and continue to function as competitors to a level satisfactory to Industry Canada. In making this determination, Industry Canada will consider all relevant factors. Depending on the nature of the agreement, documentation may be required that sets out the details of the association, including copies of all arrangements or agreements, for example agreements related to network architecture and spectrum use and documents related to corporate decision making, marketing and customer information, sales and financing. Assessment criteria may include, but will not be limited to, consideration of the degree to which the entities would offer branded services, pricing and device selection that are unique from the other. For additional information on the application of the spectrum cap for associated entities, refer to the condition of licence entitled “Spectrum Aggregation Limits” in Annex A of this document.

110. It should be noted that agreements between associated entities may have an impact on obligations to serve rural areas (see Annex A).

111. Bidders are reminded that the provisions of the *Competition Act* apply independently of, and in addition to, the proposed policy.

112. Associated entities wishing to participate in the auction separately are required to submit their application at least 10 days in advance of the final application deadline to participate in the auction. This will provide Industry Canada the additional time required to make an assessment of the association and provide a decision on the associated entities' ability to participate in the auction separately, and have the caps applied individually, if so requested. Should the request be denied, the associated entities will be required to select which member entity will apply to participate in the auction. The pre-auction financial deposit will be due by the final application deadline.

113. Applicants should note that all entities participating in the auction will be subject to the same prohibition of collusion rules, as stated in Section 7.3 – Prohibition of Collusion and Other Communication Rules.

7.3 Prohibition of Collusion and Other Communication Rules

114. The Consultation sought comments on the proposed rules regarding the prohibition of collusion. The proposed rules were consistent with the previous auctions for the 700 MHz, 2500 MHz and AWS-3 auctions.

Summary of Comments

115. Ice Wireless, MTS, SaskTel, SSI and TELUS agreed with the proposed rules regarding the prohibition of collusion.

116. Rogers suggested that the Department integrate its policies and auction rules regarding collusion and affiliated and associated entities within a single framework to ensure that unintended consequences do not benefit one or more bidders. Bell disagreed with Rogers, stating that the current rules and policies regarding collusion and affiliated and associated entities work together to maintain auction integrity.

Discussion

117. In response to the suggestion that the Department integrate its policies and auction rules regarding collusion and affiliated and associated entities, Industry Canada is of the view that the licensing frameworks associated with a specific auction reflect an integrated set of rules for each specific licence offering, based on the conditions at the time of the licensing process.

118. Given that the proposed prohibition of collusion rules are consistent with other auction processes and that there was general agreement with the proposal, the rules will remain as proposed in the Consultation.

119. In previous auctions, in order to ensure the integrity of the bidding process, all applicants were prohibited from cooperating, collaborating, discussing or negotiating agreements with other bidders regarding the licences being auctioned or the post-auction market structure. Any such

discussions occurring at any time prior to the public announcement of provisional licence winners by Industry Canada were prohibited.

120. In order to maintain the integrity of the auction, bidders are prohibited from signalling either publicly or privately, their bidding intentions or planned post-auction market structure related to the spectrum licences being auctioned, while the auction is ongoing. This would include comments or any communication with or via the media. An example would be making a public announcement regarding which licences the company intends to bid on or its rollout intentions.

121. Given that there were no suggestions for changes, that the proposals are consistent with other auction processes and that there was general agreement with the proposal, the rules will remain as proposed in the Consultation.

Decision

D12 — Given the general support of respondents, and consistent with the rules from previous auctions, the prohibition of collusion rules will apply as stated in paragraphs 122 to 134 below.

122. **Prohibition of Collusion:** All applicants, including affiliated and associated entities, are prohibited from cooperating, collaborating, discussing or negotiating agreements with competitors, relating to the licences being auctioned or relating to the post auction market structure, including frequency selection, bidding strategy and post-auction market strategy, until after the public announcement of provisional licence winners by Industry Canada.

123. Prospective bidders will note that the auction application forms contain a declaration that the applicant will be required to sign certifying that the applicant has not entered into and will not enter into any agreements or arrangements of any kind with any competitor regarding the amount to be bid, bidding strategies or the particular licence(s) on which the applicant or competitors will or will not bid. For the purposes of this certification, “competitor” means any entity, other than the applicant or its affiliates, which could potentially be a bidder in this auction based on its qualifications, abilities or experience.

124. Prospective bidders should note that the definition of “affiliate” for the purposes of this licensing process (defined by reference to “control in fact”) differs from “affiliate” for the purposes of the *Competition Act*. The provisions of the *Competition Act* apply independently of, and in addition to, the policies contained in this Framework.

125. **Communications:** Any communications from an applicant, its affiliates, associates or beneficial owners or their representatives that discloses or comments on bidding strategies, including but not limited to the intent of bidding and post-auction market structures, shall be considered contrary to this Framework and may result in disqualification and/or forfeiture penalties. Statements that indicate national or particular licence areas of interest will generally be found to be in contravention of the rules on prohibition of collusion. This will include communications with or via the media. This prohibition of communication applies until the public announcement of provisional licence winners by Industry Canada.

126. **Business Agreements and Consortiums:** Prior to the auction, an applicant who wishes to participate separately in the licensing process may approach another potential bidder to discuss a joint infrastructure build, a joint equipment purchasing agreement or a potential spectrum sharing agreement under the circumstances outlined in the following two paragraphs:

127. Where communications that fall within the definition of associated entities have taken place, the nature of the association must be disclosed. Entities applying to participate separately are required to make a declaration that they have not entered into and will not enter into any agreements or arrangements of any kind with any competitor regarding the amount to be bid, bidding strategies or the particular licence(s) on which the applicant or competitor will or will not bid. In the case where discussions that contravene the prohibition of collusion rules have occurred, the entities would only be permitted to participate in the auction as one single bidder, or only one of the entities could participate.

128. Once a consortium has been established and if the entities within that consortium have had communications that contravene the anti-collusion rules, these entities would no longer be eligible to participate separately in the auction. The same entities would therefore no longer be deemed competitors for the purpose of the auction, and discussions regarding issues such as bidding strategies could then take place. Should the consortium be dissolved prior to the auction, only one of the entities would be eligible to participate in the auction, and all parties would continue to be subject to the prohibition of collusion rules. The same restrictions apply to entities that have had unsuccessful discussions regarding the formation of a consortium to bid as a single bidder.

129. **Discussion Regarding Beneficial Ownership:** Information regarding the beneficial ownership of each applicant will be made publicly available so that all bidders have knowledge of the identity of other bidders. Any discussions involving two bidders or any of their affiliates or associates regarding an addition or a significant change of beneficial ownership of a bidder, from the receipt deadline for applications until the public announcement of provisional licence winners by Industry Canada, would fall into the area of prohibited discussions and would be considered contrary to the auction rules.

130. However, an applicant may discuss changes in beneficial ownership with parties who are completely unrelated to other applicants, as long as:

- Any change to the beneficial ownership of the applicant that provides a new party with a beneficial interest or which significantly alters the beneficial ownership structure is effected at least 10 days before the commencement of bidding; and
- The applicant informs the Minister of Industry immediately in writing of any change in beneficial ownership, which will be reflected in its published qualified bidder information on Industry Canada's Spectrum Management and Telecommunications website.

131. Bidders must cease all such negotiations at least 10 days before the commencement of bidding until the public announcement of provisional licence winners by Industry Canada.

132. **Discussions on Tower Sharing:** The prohibition of communication includes discussions about tower and site sharing with respect to the licences that are the subject of this auction until

the receipt deadline for payment of winning bids. Discussions concerning new arrangements or the expansion of existing sharing arrangements that relate to spectrum outside of the 2500 MHz auction process are not prohibited.

133. **Communication with Local Exchange Carriers:** The prohibition of communication includes discussions regarding interconnection services with a local exchange carrier (LEC) that is a qualified bidder (or one of its affiliates/associates) in this auction, where the services relate to spectrum in the 2500 MHz band.

134. **Consulting Services, Legal and Regulatory Advice:** Separate bidders may not receive consulting advice from the same auction consulting company. Separate bidders may receive legal and regulatory advice from the same law firm provided that the law firm complies with the conflict of interest and confidential information requirements of the applicable law society and that the applicants otherwise comply with the provisions set forth in this Framework.

7.4 Auction Integrity and Transparency (Disclosure Requirements)

135. In order to ensure auction integrity and transparency, Industry Canada proposed that all entities wishing to participate in the auction process be required to disclose in writing, as part of their application, the names of affiliated and associated entities and to provide a narrative describing all key elements and the nature of the affiliation or association in relation to the acquisition of the spectrum licences being auctioned and, the post-auction relationships of the said entities. It was proposed that this include arrangements with another potential bidder that relate in any way, directly or indirectly, to the future use of the 700 MHz and AWS-3 spectrum being auctioned in this process.

Summary of Comments

136. There were no comments regarding the requirements and procedures that Industry Canada proposed to maintain the integrity and transparency of the auction.

Discussion

137. Given that there were no comments and that these requirements and procedures are consistent with previous auctions, Industry Canada will impose the measures proposed in the Consultation to maintain the integrity and transparency of the auction.

Decision

D13 - In order to protect the integrity of the auction, Industry Canada adopts the rules regarding integrity and transparency set out in paragraphs 138 to 140 below.

138. **Disclosure requirements:** Associated entities wishing to participate separately in the auction of residual licences are required to disclose the names of associated entities within their application, and to provide a narrative describing all key elements as well as the nature of the

association in relation to the acquisition of the spectrum licences being auctioned and the post-auction relationships of the said entities. The relevant entities may be asked to provide copies of related agreements. Confidential and commercially sensitive information regarding agreements between associated entities will not be disclosed by Industry Canada. However, the narrative will be made available on Industry Canada's website prior to the auction.

139. Some examples of arrangements that would require disclosure include, but are not limited to, agreements to establish a joint network using spectrum licences acquired by each of the entities and agreements with respect to a joint backhaul network. Agreements, such as significant joint equipment purchases must also be disclosed. Typical roaming and tower sharing agreements and other agreements, such as the purchase of backhaul capacity, would not cause entities to be deemed associated entities and hence need not be disclosed.

140. The submitted narrative will be made available to other bidders and to the public on Industry Canada's website prior to the auction in order to ensure transparency of the licensing process.

8. Auction Process

141. Industry Canada sought comments on its proposed general process for submitting an application to participate in the residual auction of 700 MHz and AWS-3 spectrum, as well as the general requirements and rules that apply prior to, during and after the auction.

Summary of Comments

142. There was general support for the proposed auction process from all respondents, with a few conditions.

143. Bell was joined by Rogers in requesting that a filing date be specified for the submission of clarification questions. Ice Wireless and SaskTel noted that in the case where the Department decides to adopt a sealed-bid auction format, they supported the proposed auction process. However, Ice Wireless stated its preference for an FCFS process given that the licenses were not assigned in the previous auction process, while SaskTel indicated its preference for an SMRA format for the price discovery component.

Discussion

144. The dates associated with the submission of clarification questions and responses are included in the Table of Key Dates.

145. As there was general support for the proposed auction process related to the sealed-bid second price auction format, the auction process will be adopted as proposed.

Decision

D14 – The auction process will apply as set out in sections 8.1 to 8.12 below.

8.1 Application to Participate

146. To participate in an auction, all applicants must submit a completed application form, along with a financial deposit, details of the applicant's beneficial ownership, information on any affiliations and associations as discussed in Section 7 of this Framework, and other corporate documentation as required, by the date specified in the Table of Key Dates. Industry Canada will publish the list of applicants on its website soon thereafter.

147. The application forms for participation will be available on request by sending an email to: spectrum.auctions@ic.gc.ca. Additional documentation may be required in support of the application forms.

8.2 Submissions

148. In the interest of providing Industry Canada and other bidders with adequate information on the identity of all bidders, applicants are required to fully disclose the beneficial ownership for every entity that owns, directly or indirectly, 10% or more of the applicant's voting shares, non-voting shares, partnership interests, or any other beneficial interests, as the case may be. Associated entities wishing to participate separately in the auction of residual licences are required to disclose the names of their associated entities within their application, and to provide narratives describing all key elements and the nature of the association in relation to the acquisition of the spectrum licences being auctioned and the post-auction relationships of the said entities. A list of applicants, their beneficial ownership information and the narrative on any associated entity relationships will be made available on Industry Canada's Spectrum Management and Telecommunications website, prior to the auction, so that all bidders have knowledge of the identity of the other bidders. Applicants are not permitted to change their beneficial ownership within 10 days preceding the start of the auction.

149. Entities are encouraged to approach Industry Canada at least two weeks prior to the application deadline if seeking guidance or a predetermination as to whether their arrangement or proposed arrangement would be considered to give rise to a finding of association.

8.3 Pre-auction Financial Deposits

150. In order to enhance the integrity of the auction, the Department will require that all bidders submit a pre-auction financial deposit with their application to participate in the auction.

151. Each participating bidder will be required to submit a financial deposit equal to the opening bid of the licence(s) on which it intends to bid. These amounts will be kept confidential.

152. Financial deposit(s) will be returned to any applicant not found to be a qualified bidder, any applicant that provides written notification to the Department of its withdrawal from the process prior to the auction's commencement, and any bidder that fails to win a licence during the auction.

8.4 Process to Submit Applications and Financial Deposit

153. The application forms, the associated documents (as per the instructions on the application forms) and the total pre-auction financial deposit are to be physically delivered to the Manager, Auction Operations, by the date specified in the Table of Key Dates. Industry Canada, under exceptional circumstances, may decide to accept additional documentation after the deadline, but prior to the publication of the list of applicants. Applications that are received without a deposit will be rejected.

154. Upon receipt of the application and the associated documentation, Industry Canada will send a notification to the applicant, confirming that the application materials have been received. This notification will in no way mean that the application materials or the deposit have been approved.

155. The financial deposit must be in the form of a certified cheque, bank draft, money order, wire transfer, or an irrevocable standby letter of credit, payable to the Receiver General for Canada, drawn on a financial institution that is a member of the Canadian Payments Association. The elements required in a letter of credit, as well as a sample letter of credit acceptable to Industry Canada, will be provided as part of the application forms. Multiple letters of credit (or other forms of payment) from one or more financial institutions will be permitted within reason. Industry Canada will treat the financial deposit for an applicant as being the sum of the amounts of each accepted letter of credit, certified cheque, bank draft, money order or wire transfer. Each letter of credit must comply with the conditions laid out herein concerning letters of credit. No letter of credit shall have any conditions requiring Industry Canada to draw on the letters in any particular order of priority, or requiring any letter to be drawn upon completely before drawing upon any other letter. In the event that a qualified bidder does not become a provisional licence winner, the financial deposits that were submitted in the form of a letter of credit will be returned. Refunds to deposits submitted in the form of a certified cheque, bank draft, money order or wire transfer will likely take longer (perhaps several weeks longer) than a refund submitted by way of a letter of credit, as a cheque from the Receiver General for Canada will need to be processed.

156. If, prior to the application deadline, an applicant wishes for any reason to amend any of the forms that it has submitted and/or its financial deposit, it may submit one or more amended forms and/or an amended financial deposit with an accompanying letter explaining that the enclosed form(s) and/or financial deposit are to replace the one(s) previously submitted. Any such amendments are to be physically delivered to the Manager, Auction Operations, by the receipt deadline for applications to participate in the auction.

157. Upon receipt of an amended form(s) and/or financial deposit, Industry Canada will send a notification to the applicant that the amended form(s) and/or deposit have been received. The notification will state the amount of the new deposit that has been submitted. Where the financial deposit is in the form of an irrevocable standby letter of credit, the initial irrevocable standby letter

of credit will also be returned to the applicant where applicable. Where the financial deposit is in a form other than an irrevocable standby letter of credit, any partial reimbursement of the financial deposit may take several weeks.

158. A list of all applicants will be made public on Industry Canada's [Spectrum Management and Telecommunications website](#). The publication of this list in no way means that these applicants have been approved as qualified bidders.

8.5 Bidder Qualification

159. Industry Canada will review the application forms (and any associated documents) and the accompanying financial deposit after the deadline for receipt of applications. In this initial review, the Department will identify any errors in the application forms or financial deposit. It will also determine whether additional information related to any affiliate or associated entity of the applicant is required.

160. Applications that are received without a deposit by the application deadline will be rejected.

161. Following the initial review period, Industry Canada will provide applicants with an opportunity to correct any errors or inconsistencies in their application or financial deposit, and will request any additional information related to affiliated or associated entities if required. A copy of the original applications may be returned to the applicant with a brief statement outlining any discrepancies and/or omissions, or requesting additional information. The applicant will be invited, in writing, to resubmit the corrected form and/or the additional documentation and to physically deliver this to the Manager, Auction Operations, by the date specified in the written statement.

162. Applicants that do not comply with this request will have their application to participate in the auction rejected. Applications that are rejected, including those for which an opportunity has been provided to correct errors or inconsistencies identified by Industry Canada but that are still found to be deficient, may be returned to the applicant, outlining the deficiencies, along with the applicant's deposit.

163. Applicants that have submitted acceptable application materials, including the accompanying financial deposit, will receive a confirmation letter confirming that they are considered a qualified bidder.

164. A list of all qualified bidders, along with information related to their beneficial ownership, affiliates and associated entities will be made public on Industry Canada's website. Qualified bidders will be sent all information and directions required to submit their bids, including an auction bid form.

8.6 Withdrawal of Application Forms

165. Applicants wishing to withdraw their application materials and have their financial deposits returned may do so, without prejudice, by sending a written request to the Manager, Auction Operations, on or before the business day preceding the receipt deadline for sealed bids.

8.7 Change of Information

166. Only the Auction Authorized Representative of the bidding company may notify the Manager, Auction Operations, of any material changes in the information submitted in the application documents. Written notification must be sent by the Auction Authorized Representative within five business days of such changes.

167. The Auction Authorized Representative is the individual that is nominated by the applicant to receive all documentation pertaining to the licensing process for spectrum licences in the 700 MHz and AWS-3 bands.

8.8 Submission of Auction Bids

168. A completed auction bid form, which includes the bid amount for each licence, or combination of licences for which the bidder is placing a bid, must be placed in a separate, sealed envelope, with only the bidder's name, complete mailing address, email address, and the name of this licensing process clearly identified on the front of the envelope, and must be physically delivered to the Manager, Auction Operations, by the receipt deadline for sealed bids. The amount of each bid must reflect the amount that the bidder is willing to pay for the associated licence(s). All bids must be in dollars only, not cents. No bids will be accepted after 12:00 p.m., noon, EDT, on the receipt deadline for sealed bids. Following the auction, the Department will publish, on its website, a list of all bids received.

8.9 Determination of Provisional Licence Winners

169. The sealed envelopes will be opened and examined by departmental officials following the receipt deadline for sealed bids. To be considered valid, a bid must be equal to or greater than the opening bid price; the previously submitted deposit must be equal to or greater than the amount of the opening bid price of the licence being bid upon; the bid form must be completed correctly and legibly; and the bid must be submitted by a qualified bidder. It must be noted that, in all instances where there is no second bid, the opening bid prices indicated in Section 6.4 will be considered the second highest bid. (See Annex D for bidding examples.)

170. Where a bid is placed on a licence on which the bidder is not eligible to bid, that bid will be ignored.

171. Bids for the 700 MHz blocks will be made per licence; the winning bid will be the highest for each licence.

172. For the AWS-3 blocks, bids can be made for the individual licences and/or some combination of the available licences within each service area. The winning bids for the AWS-3

blocks in each service area will be calculated by determining the combination of bids that generates the highest sum; the bids in this combination will be the winning bids. In each service area, bidders are able to win, at most, one of the bids they placed on the AWS-3 blocks. For example, a bidder that places bids for each of the individual blocks but not for any packages would only be able to win one of the blocks.

173. A reserve bid at the opening bid price will be included in the determination of provisional winning bidders and of the prices to be paid for each 700 MHz and AWS-3 block, where available, within a given service area. In this process, it is as if Industry Canada is a bidder in the auction, placing a bid on all licences at the opening bid price. For the AWS-3 blocks, including a reserve bid for all three licences ensures that the incremental value that a bidder would be prepared to pay for an additional licence is at least the opening bid price of that licence. The three reserve bids for the AWS-3 blocks within a service area will not be treated as a package, but rather as having been placed by different bidders. Therefore, in all instances where there is no second bid, the opening bid prices noted in Section 6.4 will be considered the second highest bid (See Annex D for bidding examples.)

174. To mitigate the possibility of a tie, bidders are encouraged not to bid in round figures. In the event of a tie, bidders involved in the tie will be requested to enter a second bid in an attempt to break the tie. If required, the Department will provide tied bidders the details of the procedure to submit further bids to break the tie. Should there be a second tie, bidders will be requested to enter a third bid in an attempt to break the tie. This procedure will be repeated until there is no tie.

175. At a future date following the determination of the provisional licence winners, the Department will publish, on its website, a list of all bids received, the name of the provisional licence winner(s) and the licence(s), if any, that did not receive bids. The Department will also notify the provisional winning bidder(s) and inform them of payment requirements.

176. The auction will be considered closed upon publication of the provisional winning bidder(s).

8.10 Final Payment

177. Within 10 business days following the publication of provisional licence winners, each provisional licence winner will be required to submit 20% of its final payment. The remaining portion, 80% of the final payment, will be due within 30 business days of the announcement of provisional licence winners. Failure by the winning bidder to make these final payments in a timely fashion will result in the licence not being issued, and the bidder will be subject to the applicable forfeiture penalty. (See Section 8.11 — Forfeiture Penalties.) These final payments will be non-refundable. If the licence winner fails to make these payments within the specified period, then the provisional winner's irrevocable standby letter of credit will be drawn upon.

178. All payments must be made by certified cheque, bank draft, or wire transfer, payable to the Receiver General for Canada, drawn on a financial institution that is a member of the Canadian Payments Association.

179. These bid payments for the initial 20-year term are in lieu of any fees fixed for the radio authorization under the [Radiocommunication Act](#) or any other Act.

8.11 Forfeiture Penalties

180. Following the conclusion of the auction, winning bidders that fail to comply with the specified payment schedule or fail to come into compliance with the eligibility requirements of the *Radiocommunication Regulations*, will be considered disqualified and will forfeit their ability to obtain licences through this process. Furthermore, non-compliant bidders will be subject to a forfeiture penalty in the amount of the difference between the forfeited bid and the ultimate price of the licence – to be determined by a subsequent licensing process.

181. In the event of licence forfeiture, the bidder's irrevocable standby letter of credit will be drawn upon for the full amount of the interim proxy forfeiture penalty, which will be the full amount bid for the licence(s) forfeited. If the interim proxy forfeiture penalty is greater than the full amount of the bidder's irrevocable standby letter of credit, combined with any partial payment, or if the letter of credit has been returned or has expired, then the difference will be owing and payable to the Receiver General for Canada.

182. A winning bidder that forfeits on a licence (or any of that bidder's affiliated and associated entities) will not be eligible to bid on any subsequent licensing process for this band.

183. In addition to the forfeiture penalties set out in this Framework, the Applicant and/or its representatives may be subject to prosecution, administrative monetary penalties, or other enforcement procedures under the *Radiocommunication Act* if the auction rules set out in the Framework are breached.

8.12 Issuance of Licences

184. Industry Canada will issue spectrum licences to provisional winners upon receiving of payment of the sum of their bids and the sum of their penalties, if any.

9. Post-auction Licensing Process for Unassigned Licences

185. Industry Canada will consider making unassigned licences available for licensing through an alternative process, which could include a subsequent auction at a later date following the close of the initial auction. The timing and form of such a process will depend on the demand for the available licences. Industry Canada may conduct a public consultation should it consider it necessary.

10. Licence Renewal Process

186. Industry Canada sought comments on the proposed renewal process for the licences being offered as part of this licensing process.

187. All respondents that commented on this issue supported or did not object to the proposed renewal process. As there were no objections, the renewal process will be implemented as proposed.

Decision

D15 – The licence renewal process will apply as set out in paragraphs 188 to 190 below.

188. Following the end of the initial licence term, the licensee will have a high expectation that a new licence will be issued for a subsequent term through a renewal process unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises.

189. As part of the licence renewal process, the Minister of Industry retains the power to fix and amend the terms and conditions of spectrum licences during the term of the licence and at the end of the term in accordance with subsection 5(1) of the *Radiocommunication Act*. As noted in the FSAC, licence fees that reflect some measure of market value will apply to licences issued through a renewal process. Accordingly, the renewal process will serve to determine whether new licences will be issued, the terms and conditions that will apply to the new licences and the applicable licence fees.

190. Generally, approximately two years prior to the end of the licence term, Industry Canada will review whether there is a need for a fundamental reallocation of the spectrum to a new service, or whether an overriding policy need has arisen. A review of the licensee's continued compliance with the conditions of licence will also begin. Industry Canada will launch a public consultation to discuss whether, in light of the above-noted issues, new licences should be issued for a subsequent term. The consultation paper will also propose, and invite comments on, licence conditions and fees that would apply during the subsequent licence term.

11. Clarification Questions Process

191. As done in previous auctions, Industry Canada will accept written questions soliciting clarification of the rules and policies set out in this Framework from the date of publication of the Framework up to the deadline as specified in the Table of Key Dates. Written questions and Industry Canada's responses will be made public on Industry Canada's website. Every effort will be made to post the questions received, along with Industry Canada's written responses, in the shortest time frame possible. Questions that are of a similar nature and subject matter may be grouped and summarized. Questions regarding bidding procedures will be addressed in mail-out packages intended for qualified bidders, and will not be included in this clarification process unless they are deemed to be critical information for potential bidders requiring an immediate response. These answers will be considered as clarification of the policies set out in this Framework. Applicants are encouraged to submit questions as soon as possible.

192. Industry Canada may also amend or supplement the auction rules and procedures contained in this Framework. Any such amendment or supplement will be published on Industry Canada's website and will be sent to all qualified bidders.

193. Questions regarding this auction may be sent to: Senior Director, Spectrum Licensing and Auction Operations at spectrum.auctions@ic.gc.ca.

12. Obtaining Copies

194. All spectrum-related documents referred to in this paper are available on Industry Canada's Spectrum Management and Telecommunications website at <http://www.ic.gc.ca/spectrum>.

195. For further information concerning the process outlined in this Framework or related matters, contact:

Industry Canada
c/o Senior Director, Spectrum Licensing and Auction Operations
235 Queen Street (6th floor, East Tower)
Ottawa, Ontario K1A 0H5
Telephone: 613-862-0492
TTY: 1-866-694-8389
Email: spectrum.auctions@ic.gc.ca

Annex A — Conditions of Licence — 700 MHz

The following conditions of licence apply to the 700 MHz licences being auctioned through this process. The only change from the previously auctioned licences is in relation to the deployment conditions of licence.

It should be noted that the licences are subject to the relevant provisions in the *Radiocommunication Act* and the *Radiocommunication Regulations*, as amended from time to time. For example, the Minister continues to have the power to amend the terms and conditions of spectrum licences (paragraph 5(1)(b) of the *Radiocommunication Act*). The Minister may do so for reasons including furtherance of the policy objectives set out in section 7 of the *Telecommunications Act* and the policy objectives related to this band as set out in SMSE-002-12. Such action would normally only be undertaken after consultation.

1. Licence Term

The term of this licence is 20 years. At the end of this term, the licensee will have a high expectation that a new licence will be issued for a subsequent term through a renewal process unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises.

The process for issuing licences after this term and any issues relating to renewal, including the terms and conditions of the new licence, will be determined by the Minister of Industry following a public consultation.

2. Eligibility

The licensee must comply on an ongoing basis with the applicable eligibility criteria in subsection 9(1) of the [Radiocommunication Regulations](#). The licensee must notify the Minister of Industry of any change that would have a material effect on its eligibility. Such notification must be made in advance for any proposed transactions within its knowledge.

3. Spectrum Aggregation Limits

The licensee must comply with the spectrum aggregation limits as follows:

- A limit of two paired spectrum blocks in the 700 MHz band within blocks A, B, C, C1 and C2 is applicable to all licensees.

- A limit of one paired spectrum block within blocks B, C, C1 and C2 is applicable to all licensees which are large wireless service providers. Large wireless service providers are defined as companies with 10% or more of the national wireless subscriber market share, or 20% or more of the wireless subscriber market share in the province of the relevant licence area.² The determination of subscriber market share will be based on the 2012 *CRTC Communications Monitoring Report*.

These spectrum aggregation limits will continue for five years from the date of licence issuance. No transfer of licences or issuance of new licences will be authorized if it would result in a licensee exceeding the spectrum aggregation limits during this period. Any change in ownership or control of a licensee or any other agreement that has the effect of granting a right or interest in a 700 MHz licence to another licensee in this band may be considered as a licence transfer for the purpose of this condition of licence whether or not the licensee name is changed as a result. The licensee must request approval by the Minister of Industry for any change that would have a material effect on its compliance with these spectrum aggregation limits. Such a request must be made in advance for any proposed transactions within its knowledge. At any time, at the request of Industry Canada, the licensee will be required to provide updated information demonstrating ongoing compliance with this condition of licence.

4. Licence Transferability, Divisibility and Subordinate Licensing

This licence is transferable in whole or in part (divisibility), in both bandwidth and geographic dimensions, subject to Industry Canada's approval.

A Subordinate Licence may also be issued in regard to this licence. Industry Canada's approval is required for each proposed Subordinate Licence. Subordinate Licences will not count towards the subordinate licensee's spectrum aggregation limit if the primary licensee and the subordinate licensee demonstrate to the satisfaction of Industry Canada that they will be separately and actively providing services to customers in the applicable licence area. Where such approval is granted and for at least the duration of the aggregation limits that are in place, licensees must implement their plans to the satisfaction of Industry Canada. Any modifications to these plans must be submitted to Industry Canada for approval.

The licensee must make the Transfer Request in writing to Industry Canada. The Transfer Request will be treated as set out in Client Procedures Circular CPC-2-1-23, *Licensing Procedure for Spectrum Licences for Terrestrial Services*, as amended from time to time.

The licensee must apply in writing to Industry Canada for approval prior to implementing any Deemed Transfer, which will be treated as set out in CPC-2-1-23. The implementation of a Deemed Transfer without the prior approval of Industry Canada will be considered a breach of this condition of licence.

² The subscriber market share for Ontario will apply for the licence area 2-06, Eastern Ontario and Outaouais. For the Tier 2-14 licence area (Yukon, the Northwest Territories and Nunavut), only the national market share criteria will apply.

Should the licensee enter into any Agreement that provides for a Prospective Transfer with another holder of a Licence for commercial mobile spectrum (including any Affiliate, agent or representative of the other licence holder), it must apply in writing to Industry Canada for review of the Prospective Transfer within 15 days of entering into the Agreement, which will be treated as set out in CPC-2-1-23. Should Industry Canada issue a decision indicating that the Prospective Transfer is not approved; it will be a breach of this condition of licence for a licensee to remain in an Agreement that provides for the Prospective Transfer for a period of more than 90 days from the date of the decision.

In all cases, the licensee must follow the procedures as outlined in CPC-2-1-23.

All capitalized terms have the meaning ascribed to them in CPC-2-1-23.

5. Treatment of Existing Spectrum Users

The licensee must comply with the displacement policies set out in SMSE-002-12, *Policy and Technical Framework: Mobile Broadband Services (MBS) – 700 MHz Band, Broadband Radio Service (BRS) – 2500 MHz Band*.

6. Radio Station Installations

The licensee must comply with Client Procedures Circular CPC-2-0-03, *Radiocommunication and Broadcasting Antenna Systems*, as amended from time to time.

7. Provision of Technical Information

When Industry Canada requests technical information on a particular station or network, the licensee must provide the information in accordance with the definitions, criteria, frequency and timelines specified in the request. For further information, refer to Client Procedures Circular CPC-2-1-23, *Licensing Procedure for Spectrum Licences for Terrestrial Services*, as amended from time to time.

8. Compliance with Legislation, Regulation and Other Obligations

The licensee is subject to, and must comply with, the *Radiocommunication Act* and the *Radiocommunication Regulations*, as amended from time to time. The licensee must use the assigned spectrum in accordance with the *Canadian Table of Frequency Allocations* and the spectrum policies applicable to this band, as amended from time to time. The licence is issued on condition that all representations made in relation to obtaining this licence are all true and complete in every respect.

9. Technical Considerations, and International and Domestic Coordination

The licensee must comply on an ongoing basis with the technical aspects of the appropriate *Radio Standards Specifications* (RSS) and *Standard Radio System Plans* (SRSP), as amended from time to time. Where applicable, the licensee must use its best efforts to enter into mutually acceptable agreements with other parties for facilitating the reasonable and timely development of their

respective systems, and to coordinate with other licensed users in Canada and internationally.

The licensee must comply with the obligations arising from current and future frequency coordination agreements established between Canada and other countries and shall be required to provide information or take actions to implement these obligations as indicated in the applicable SRSP. Although frequency assignments are not subject to site licensing, the licensee may be required through the appropriate SRSP to furnish all necessary technical data for each relevant site.

10. Lawful Interception

The licensee operating as telecommunication common carrier using the spectrum for voice telephony systems must, from the inception of service, provide for and maintain lawful interception capabilities as authorized by law. The requirements for lawful interception capabilities are provided in the *Solicitor General's Enforcement Standards for Lawful Interception of Telecommunications* (Rev. Nov. 95). These standards may be amended from time to time.

The licensee may request the Minister of Industry to forbear from enforcing certain assistance capability requirements for a limited period of time. The Minister, following consultation with Public Safety Canada, may exercise the power to forbear from enforcing a requirement or requirements where, in the opinion of the Minister, the requirement is not reasonably achievable. Requests for forbearance must include specific details and dates indicating when compliance to the requirement can be expected.

11. Research and Development

The licensee must invest, as a minimum, two percent of its adjusted gross revenues resulting from the use of this licence, averaged over the term of the licence, in eligible research and development (R&D) activities related to telecommunications. Eligible R&D activities are those which meet the definition of scientific research and experimental development adopted in the [Income Tax Act](#), as amended from time to time. Adjusted gross revenues are defined as total service revenues, less inter-carrier payments, bad debts, third party commissions, and provincial goods and services taxes collected. The licensee is exempt from R&D expenditure requirements if it, together with all affiliated licensees that are subject to the R&D condition of licence, has less than \$1 billion in annual gross operating revenues from the provision of wireless services in Canada, averaged over the term of the licence. For this condition of licence, an affiliate is defined as a person who controls the carrier, or who is controlled by the carrier or by any person who controls the carrier, as per subsection 35(3) of the [Telecommunications Act](#).

12. Rural Deployment Requirements

Where the licensee holds licences for two or more paired blocks of 700 MHz spectrum in a licence area, or has access to two or more paired blocks of 700 MHz spectrum in a licence area either directly or indirectly, the licensee must deploy 700 MHz spectrum:

- a) to cover 90% of the population of its HSPA network footprint as of March 2012, within five

- years of the issuance of the initial 700 MHz licence; and
- b) to cover 97% of the population of its HSPA network footprint as of March 2012, within seven years of the issuance of the initial 700 MHz licence.

For the purpose of this condition, “access” includes situations where a licensee enters into an agreement with another 700 MHz licensee in the same licence area that provides the ability to carry the other licensee’s subscriber traffic (other than via a typical roaming agreement) regardless of whether the frequencies of both licensees are in use. In determining whether a party has access, Industry Canada may review documentation that sets out the details of any agreement to use the spectrum, agreements related to network architecture or any other technical or commercial information or agreements between the parties.

The licensee must notify the Minister of Industry of any new agreement that would provide the licensee with access to spectrum in any licence area where this condition has not yet been satisfied. In addition, the licensee must provide the Minister with any documentation or information related to spectrum access or HSPA network footprints at the Minister’s request.

13. General Deployment Requirement

Licensees will be required to demonstrate to the Minister of Industry that this spectrum has been put to use, as specified in Annex C of SLPB-003-15, *Licensing Framework For Residual Spectrum Licences in the 700 MHz and AWS-3 Bands*, within 10 years of the initial issuance of the licence. When the spectrum is put to use, it shall be used to provide services predominantly to Canadians within the service area.

Where the licence is transferred during the initial 10 years, the requirement for the new licensee to deploy will continue to be based on the initial licence issuance date. Deployment by a subordinate licensee will count towards the requirement of the primary licensee.

14. Mandatory Antenna Tower and Site Sharing

The licensee must comply with the mandatory antenna tower and site sharing requirements set out in Client Procedures Circular CPC-2-0-17, *Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements*, as amended from time to time.

15. Mandatory Roaming

The licensee must comply with the mandatory roaming requirements set out in Client Procedures Circular CPC-2-0-17, *Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements*, as amended from time to time.

16. Annual Report

The licensee must submit an annual report for each year of the licence term, which includes the following information:

- a statement indicating continued compliance with all conditions of licence;
- an update on the implementation and spectrum usage within the area covered by the licence;
- existing audited financial statements with an accompanying auditor's report;
- a statement indicating the annual gross operating revenues from the provision of wireless services in Canada and, where applicable, the annual adjusted gross revenues resulting from the use of this licence, as defined in these conditions of licence.
- a report of the R&D expenditures as set out in these conditions of licence. Industry Canada may request an audited statement of R&D expenditures with an accompanying auditor's report at its discretion;
- supporting financial statements where a licensee is claiming an exemption based on, together with all affiliated licensees that are subject to the R&D condition of licence, it having less than \$1 billion in annual gross operating revenues from the provision of wireless services in Canada, averaged over the term of the licence;
- a copy of any existing corporate annual report for the licensee's fiscal year with respect to the authorization; and
- other information related to the licence as specified in any notice updating the reporting requirements as issued by Industry Canada.

All reports and statements are to be certified by an officer of the company and submitted, in writing, within 120 days of the licensee's fiscal year-end. Confidential information provided will be treated in accordance with subsection 20(1) of the *Access to Information Act*.

Reports are to be submitted to Industry Canada at the following address:

Industry Canada
Spectrum Management Operations Branch
Manager, Emerging Networks
235 Queen Street (6th floor, East Tower)
Ottawa, Ontario K1A 0H5

17. Amendments

The Minister of Industry retains the discretion to amend these terms and conditions of licence at any time.

Annex B — Conditions of Licence — AWS-3 Licences

The following conditions of licence apply to the AWS-3 licences being auctioned through this process. The only change from the previously auctioned licences is in relation to the deployment conditions of licence.

1. Licence Term

The term of this licence is 20 years. At the end of this term, the licensee will have a high expectation that a new licence will be issued for a subsequent term through a renewal process unless a breach of licence condition has occurred, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises.

The process for issuing licences after this term and any issues relating to renewal, including the terms and conditions of the new licence, will be determined by the Minister of Industry following a public consultation.

2. Eligibility

The licensee must comply on an ongoing basis with the applicable eligibility criteria in subsection 9(1) of the *Radiocommunication Regulations*. The licensee must notify the Minister of Industry of any change that would have a material effect on its eligibility. Such notification must be made in advance for any proposed transactions within its knowledge.

3. Licence Transferability, Divisibility and Subordinate Licensing

This licence is transferable in whole or in part (divisibility), in both bandwidth and geographic dimensions, subject to Industry Canada's approval. A subordinate licence may also be issued in regard to this licence. Industry Canada's approval is required for each proposed subordinate licence.

The licensee must make the Transfer Request in writing to Industry Canada. The Transfer Request will be treated as set out in Client Procedures Circular CPC-2-1-23, [Licensing Procedure for Spectrum Licences for Terrestrial Services](#), as amended from time to time.

The licensee must apply in writing to Industry Canada for approval prior to implementing any Deemed Transfer, which will be treated as set out in CPC-2-1-23. The implementation of a Deemed Transfer without the prior approval of Industry Canada will be considered a breach of this condition of licence.

Should the licensee enter into any Agreement that provides for a Prospective Transfer with another holder of a Licence for commercial mobile spectrum (including any Affiliate, agent or representative of the other licence holder), it must apply in writing to Industry Canada for review of the Prospective Transfer within 15 days of entering into the Agreement, which will be treated as set out in CPC-2-1-23. Should Industry Canada issue a decision indicating that the Prospective Transfer is not approved; it will be a breach of this condition of licence for a licensee to remain in

an Agreement that provides for the Prospective Transfer for a period of more than 90 days from the date of the decision.

In all cases, the licensee must follow the procedures as outlined in CPC-2-1-23. All capitalized terms have the meaning ascribed to them in CPC-2-1-23.

4. Treatment of Existing Spectrum Users

The licensee must comply with transition policies set out in SLPB-007-14, *Technical, Policy and Licensing Framework for Advanced Wireless Services in the Bands 1755-1780 MHz and 2155-2180 MHz (AWS-3)*.

5. Radio Station Installations

The licensee must comply with Client Procedures Circular CPC-2-0-03, [Radiocommunication and Broadcasting Antenna Systems](#), as amended from time to time.

6. Provision of Technical Information

The licensee must provide, and maintain, up-to-date technical information on a particular station or network in accordance with the definitions, criteria, frequency and timelines specified in Client Procedures Circular CPC-2-1-23, [Licensing Procedure for Spectrum Licences for Terrestrial Services](#), as amended from time to time.

7. Compliance with Legislation, Regulation and Other Obligations

The licensee is subject to, and must comply with, the [Radiocommunication Act](#) and the [Radiocommunication Regulations](#), as amended from time to time. The licensee must use the assigned spectrum in accordance with the [Canadian Table of Frequency Allocations](#) and the spectrum policies applicable to this band, as amended from time to time. The licence is issued on condition that all representations made in relation to obtaining this licence are all true and complete in every respect.

8. Technical Considerations, and International and Domestic Coordination

The licensee must comply on an ongoing basis with the technical aspects of the appropriate Radio Standards Specifications (RSS) and Standard Radio System Plans (SRSP), as amended from time to time. Where applicable, the licensee must use its best efforts to enter into mutually acceptable agreements with other parties for facilitating the reasonable and timely development of their respective systems, and to coordinate with other licensed users in Canada and internationally.

The licensee must comply with the obligations arising from current and future frequency coordination agreements established between Canada and other countries and shall be required to provide information or take actions to implement these obligations as indicated in the applicable SRSP. Although frequency assignments are not subject to site licensing, the licensee may be required through the appropriate SRSP to furnish all necessary technical data for each relevant site.

9. Lawful Interception

The licensee operating as a telecommunication common carrier using the spectrum for voice telephony systems must, from the inception of service, provide for and maintain lawful interception capabilities as authorized by law. The requirements for lawful interception capabilities are provided in the *Solicitor General's Enforcement Standards for Lawful Interception of Telecommunications* (Rev. Nov. 95). These standards may be amended from time to time.

The licensee may request the Minister of Industry to forbear from enforcing certain assistance capability requirements for a limited period of time. The Minister, following consultation with Public Safety Canada, may exercise the power to forbear from enforcing a requirement or requirements where, in the opinion of the Minister, the requirement is not reasonably achievable. Requests for forbearance must include specific details and dates indicating when compliance to the requirement can be expected.

10. Research and Development

The licensee must invest, as a minimum, two percent of its adjusted gross revenues resulting from the use of this licence, averaged over the term of the licence, in eligible research and development (R&D) activities related to telecommunications. Eligible R&D activities are those which meet the definition of scientific research and experimental development adopted in the *Income Tax Act*, as amended from time to time. Adjusted gross revenues are defined as total service revenues, less inter-carrier payments, bad debts, third party commissions, and provincial goods and services taxes collected. The licensee is exempt from R&D expenditure requirements if it, together with all affiliated licensees that are subject to the R&D condition of licence, has less than \$1 billion in annual gross operating revenues from the provision of wireless services in Canada, averaged over the term of the licence. For this condition of licence, an affiliate is defined as a person who controls the carrier, or who is controlled by the carrier or by any person who controls the carrier, as per subsection 35(3) of the *Telecommunications Act*.

11. Deployment Requirements

For licences in the North

Licensees will be required to demonstrate to the Minister of Industry that this spectrum has been put to use as specified in Annex C of SLPB-003-15, *Licensing Framework For Residual Spectrum Licences in the 700 MHz and AWS-3 Bands* within eight years of the initial issuance of the licence. When the spectrum is put to use, it shall be used to provide services predominantly to Canadians within the service area.

Where a licence is transferred during the initial eight years, the requirement for the new licensee to deploy will continue to be based on the initial licence issuance date.

For licences in Manitoba and Saskatchewan

Licensees will be required to demonstrate to the Minister of Industry that this spectrum has been put to use as specified in Annex C of SLPB-003-15, *Licensing Framework for Residual Spectrum Licences in the 700 MHz and AWS-3 Bands*, within five years of the initial issuance of the licence. When the spectrum is put to use, it shall be used to provide services predominantly to Canadians within the service area.

Where a licence is transferred during the initial five years, the requirement for the new licensee to deploy will continue to be based on the initial licence issuance date.

12. Mandatory Antenna Tower and Site Sharing

The licensee must comply with the mandatory antenna tower and site sharing requirements set out in Client Procedures Circular CPC-2-0-17, [*Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements*](#), as amended from time to time.

13. Mandatory Roaming

The licensee must comply with the roaming requirements set out in Client Procedures Circular CPC-2-0-17, [*Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements*](#),³ as amended from time to time.

14. Annual Report

The licensee must submit an annual report for each year of the licence term, which includes the following information:

- a statement indicating continued compliance with all conditions of licence;
- an update on the implementation and spectrum usage within the area covered by the licence;
- existing audited financial statements with an accompanying auditor's report;
- a statement indicating the annual gross operating revenues from the provision of wireless services in Canada and, where applicable, the annual adjusted gross revenues resulting from the use of this licence, as defined in these conditions of licence;
- a report of the R&D expenditures as set out in these conditions of licence (Industry Canada may request an audited statement of R&D expenditures with an accompanying auditor's report, at its discretion);
- supporting financial statements where a licensee is claiming an exemption based on, together with all affiliated licensees that are subject to the R&D condition of licence, it having less than \$1 billion in annual gross operating revenues from the provision of wireless services in Canada, averaged over the term of the licence;

³ CPC-2-0-17 will be amended accordingly to include the AWS-3 band.

- a copy of any existing corporate annual report for the licensee's fiscal year with respect to the authorization; and
- other information related to the licence as specified in any notice updating the reporting requirements as issued by Industry Canada.

All reports and statements are to be certified by an officer of the company and submitted, in writing, within 120 days of the licensee's fiscal year-end. Confidential information provided will be treated in accordance with subsection 20(1) of the [Access to Information Act](#).

Reports are to be submitted to Industry Canada at the following address:

Industry Canada
Spectrum Management Operations Branch
Manager, Emerging Networks
235 Queen Street (6th floor, East Tower)
Ottawa, Ontario K1A 0H5

Where a licensee holds multiple licences, spectrum implementation reports should be broken down by service area. This information, including the extent of implementation and spectrum usage, is important for analyzing each licensee's individual performance against its conditions of licence. In addition, it allows Industry Canada to monitor the effectiveness of these conditions in meeting the policy objectives regarding the band and the Department's intent that the spectrum be deployed in a timely manner for the benefit of Canadians.

15. Amendments

The Minister of Industry retains the discretion to amend these terms and conditions of licence at any time.

Annex C — Deployment Requirements for Residual Licences

AWS-3 Licences

Table C1 — Five-Year Deployment Requirements for Tier 3 Service Areas Within Each Tier 2 Service Area in Manitoba and Saskatchewan

Tier 2	Tier 3	Service Area Name	Population*	Minimum Population Coverage**
2-10 Manitoba	3-39	Winnipeg	1,032,187	60%
	3-40	Brandon	174,781	30%
2-11 Saskatchewan	3-41	Regina	366,413	50%
	3-42	Moose Jaw	100,292	35%
	3-43	Saskatoon	563,107	50%

* Population figures based on Statistics Canada 2011 Census information.

** Based on most recent census information available at the time of assessment.

Table C2 — Eight-Year Deployment Requirements for Licences in Yukon, the Northwest Territories and Nunavut

Tier 4	Service Area Name	Population*	Minimum Population Coverage**
4-170	Yukon	33,854	20%
4-171	Nunavut	31,906	20%
4-172	Northwest Territories	41,455	20%

* Population figures based on Statistics Canada 2011 Census information.

** Based on most recent census information available at the time of assessment.

700 MHz Licences

Table C3 — Ten-Year Deployment Requirements for Licences in Yukon, the Northwest Territories and Nunavut

Tier 4	Service Area Name	Population*	Minimum Population Coverage**
4-170	Yukon	33,854	20%
4-171	Nunavut	31,906	20%
4-172	Northwest Territories	41,455	20%

* Population figures based on Statistics Canada 2011 Census information.

** Based on most recent census information available at the time of assessment.

Annex D — Bidding Examples

Bidding Examples:

The following examples illustrate different bidding scenarios, the provisional winning bid(s), as well as the price calculations for each.

Example 1:

Tier	Block (Size)	Opening Bid (\$)	Bidder 1's Bid (\$)	Bidder 2's Bid (\$)	Bidder 3's Bid (\$)
4-170	C1 (10 MHz)	90,000	92,000	90,600	94,500

Let us assume that there are three bidders interested in the 700 MHz block (10 MHz) in Tier 4-170. Bidder 1 places a bid of \$92,000, Bidder 2 places a bid of \$90,600 and Bidder 3 places a bid of \$94,500. Bidder 3 would be declared the provisional winner and would be required to pay the second highest bid value of \$92,000.

Example 2:

Tier	Block (Size)	Opening Bid (\$)	Bidder 1's Bid (\$)	Bidder 2's Bid(\$)	Bidder 3's Bid (\$)
4-171	C1 (10 MHz)	85,000	85,500	88,000	88,000

Let us assume that there are three bidders interested in the 700 MHz block (10 MHz) in Tier 4-171. Bidder 1 places a bid of \$85,500, Bidder 2 places a bid of \$88,000 and Bidder 3 places a bid of \$88,000. Bidders 2 and 3 have tied with a bid of \$88,000 and are asked to re-bid.

Example 3:

Tier	Block (Size)	Opening Bid (\$)	Bidder 1's Bid (\$)
4-172	C1 (10 MHz)	110,000	115,700

Let us assume that there is only one bidder interested in the 700 MHz block (10 MHz) in Tier 4-172. Bidder 1 places a bid of \$115,700. Bidder 1 would be declared the provisional winner. Since there no other bids on the licence, Bidder 1 would pay the opening bid price of \$110,000.

Example 4:

Tier	Block (Size)	Opening Bid (\$)	Bidder 1's Bid (\$)	Bidder 2's Bid (\$)	Bidder 3's Bid (\$)
2-10	G (10 MHz)	1,086,000		1,200,000	1,300,000
	H (10 MHz)	1,086,000		1,200,000	1,100,000
	I (10 MHz)	1,086,000		1,200,000	1,300,000
	GH (20 MHz)	2,172,000		2,500,000	2,700,000
	HI (20 MHz)	2,172,000		2,500,000	2,700,000
	GHI (30 MHz)	3,258,000	5,700,000	4,000,000	5,600,000

Note: GI is not a proposed bidding option.

Let us assume that there are three bidders interested in the AWS-3 blocks, G, H and I, in Tier 2-10. Bidder 1 submits one bid of \$5,700,000 for a package of all three licences. Bidder 2 submits six bids: \$1,200,000 for G, \$1,200,000 for H, \$1,200,000 for I, \$2,500,000 for GH, \$2,500,000 for HI and \$4,000,000 for a package of all three licences. Bidder 3 also submits six bids: \$1,300,000 for G, \$1,100,000 for H, \$1,300,000 for I, \$2,700,000 for GH, \$2,700,000 for HI and \$5,600,000 for a package of all three licences. Bidder 1 would be declared the provisional winner, as its package bid is higher than any combination of the bids of bidders 2 and 3.

To calculate the Vickrey price for Bidder 1, its winning bid (\$5,700,000) is subtracted from the value of the winning combination (\$5,700,000) resulting in \$0. Next, the winning combination is recalculated for the hypothetical situation in which Bidder 1's bids are excluded. The best assignment, excluding Bidder 1, assigns all three licences to Bidder 3 at \$5,600,000. The Vickrey price for Bidder 1 is the value of the winning combination with all of Bidder 1's bids excluded (\$5,600,000) less the sum of the winning bids for all bidders other than Bidder 1 (\$0); that is, its Vickrey price is \$5,600,000 (\$5,600,000 – \$0).

Example 5:

Tier	Block (Size)	Opening Bid (\$)	Bidder 1's Bid (\$)	Bidder 2's Bid (\$)	Bidder 3's Bid (\$)
2-11	G (10 MHz)	618,000	700,000	850,000	
	H (10 MHz)	618,000	700,000	850,000	
	I (10 MHz)	618,000	700,000	900,000	
	GH (20 MHz)	1,236,000	1,400,000		1,600,000
	HI (20 MHz)	1,236,000	1,400,000		1,500,000
	GHI (30 MHz)	1,854,000	2,220,000		

Note: GI is not a proposed bidding option.

Let us assume that there are three bidders interested in the AWS-3 blocks, G, H and I, in Tier 2-11. Bidder 1 submits six bids: \$700,000 for G, \$700,000 for H, \$700,000 for I, \$1,400,000 for GH, \$1,400,000 for HI and \$2,220,000 for GHI. Bidder 2 submits three bids: \$850,000 for G, \$850,000 for H and \$900,000 for I. Bidder 3 submits two bids: \$1,600,000 for GH and \$1,500,000 for HI. In this case, the sum of Bidder 2's bid for I and Bidder 3's bid for GH, with total bids of \$2,500,000, would be the highest and Bidders 2 and 3 would be declared the provisional winners.

To calculate the Vickrey price for Bidder 2, its winning bid (\$900,000) is subtracted from the value of the winning combination (\$2,500,000), resulting in \$1,600,000. Next, the winning combination is recalculated for the hypothetical situation in which Bidder 2's bids are excluded. The best assignment, excluding Bidder 2, assigns licence I to Bidder 1 at \$700,000 and licences G and H to Bidder 3 at \$1,600,000, resulting in \$2,300,000. The Vickrey price for Bidder 2 is the value of the winning combination with all of Bidder 2's bids excluded (\$2,300,000) less the sum of the winning bids for all bidders other than Bidder 2 (\$1,600,000) that is, its Vickrey price is \$700,000 (\$2,300,000 – \$1,600,000).

To calculate the Vickrey price for Bidder 3, its winning bid (\$1,600,000) is subtracted from the value of the winning combination (\$2,500,000), resulting in \$900,000. Next, the winning combination is recalculated for the hypothetical situation in which Bidder 3's bids are excluded. The best assignment, excluding Bidder 3, assigns licence I to Bidder 2 at \$900,000 and licences G and H to Bidder 1 at \$1,400,000, resulting in \$2,300,000. The Vickrey price for Bidder 3 is the value of the winning combination with all of Bidder 3's bids excluded (\$2,300,000), less the sum of the winning bids for all bidders other than Bidder 3 (\$900,000), that is, its Vickrey price is \$1,400,000 (\$2,300,000 – \$900,000).

Hence, the Vickrey outcome is for Bidder 2 to pay \$700,000 for licence I and Bidder 3 to pay \$1,400,000 for licences G and H. However, these prices sum to \$2,100,000 which is less than Bidder 1's package bid of \$2,220,000 for all three licences. Therefore, Bidder 2 and Bidder 3 must

split an additional payment of \$120,000 ($\$2,200,000 - \$2,100,000$), satisfying the condition that no other bidder or group of bidders was prepared to pay more for the licences in question. Therefore, Bidder 2 and Bidder 3 must pay, collectively, at least \$2,220,000. The additional payment would be split proportionately between the two bidders, in reference the opening bids amounts of the licences won. The opening bid price of Bidder 3's package (\$1,236,000) is twice as high as the opening bid price of Bidder 2's package (\$618,000). Therefore, Bidder 3 would pay twice as much as Bidder 2 of the extra payment, with Bidder 3 paying an additional \$80,000, for a total payment of \$1,480,000 ($\$1,400,000 + \$80,000$) and Bidder 2 paying an additional \$40,000 for a total payment of \$740,000 ($\$700,000 + \$40,000$).

Annex E — Pricing Rule

Industry Canada is proposing to use a second-price rule to determine the prices to be paid such that the price for a winning bidder will be at least the opening bid price, but no higher than the actual amount bid. Second prices are often referred to as Vickrey prices and represent the opportunity cost of the bidder winning the licence or package. More specifically, Industry Canada is proposing to apply bidder-optimal core prices and use the “nearest Vickrey” approach in determining the prices.

Bids for the 700 MHz block can be made per licence; the winning bid will be the highest bid for each licence. For the AWS-3 licences, bids can be made for individual licences and/or a combination of the available licences. The winning bids in each service area will be calculated by determining the combination of bids that generates the greatest sum; the bids in this combination would be the winning bids.

To mitigate the possibility of a tie, bidders are encouraged not to bid in round figures. In the event of a tie, tied bidders will be requested to enter a second sealed bid in an attempt to break the tie. Should there be a second tie, bidders will be requested to submit a third sealed bid in an attempt to break the tie. This procedure will be repeated until there is no tie.

The second or Vickrey price for each winning bidder (known as “Bidder J” in this explanation) is calculated as follows. First, from the value of the winning combination, subtract Bidder J’s winning bid (value A). Next, recalculate the winning combination for the hypothetical situation in which all Bidder J’s bids are excluded, as if Bidder J had not participated (value B). The Vickrey price for Bidder J is calculated as the value of the winning combination with all Bidder J’s bids excluded (value B) minus the sum of the winning bids for all bidders other than Bidder J (value A); that is, value B minus value A. This is the minimum amount that the winning bidder could have bid in order to still have won, given the bids of all other bidders.

For the 700 MHz block, the Vickrey price for winning bidders will be the second highest bid on the licence or, should there only be one bidder for a particular licence, the opening bid amount. For the AWS-3 blocks, the Vickrey price(s) could depend on package bids and/or bids for the individual licences as well as the opening bid prices for the licences. In addition, with package bidding, an extra payment beyond the Vickrey prices is sometimes required as a result of interaction between overlapping bids. In the event that an extra payment is required, the payment to be made will be adjusted so that it is proportionate to the size of the bidder’s package as measured by the bidder’s winning package evaluated at the opening bid prices.

The prices to be paid by winning bidders for the 700 MHz and AWS-3 blocks in each service area, where available, must satisfy the following conditions:

- a. **First condition:** The price for a winning bid must be greater than or equal to the opening bid price(s) for the licence(s) included in the bid, but not more than the dollar amount of the winning bid.
- b. **Second condition:** The set of prices must be sufficiently high that there is no alternative bidder, or group of bidders, prepared to pay more than any winning bidder or group of winning

bidders. If there is only one set of prices that meets the first and second conditions, this determines the prices to be paid.

- c. **Third condition:** If there is more than one set of prices that fulfils the first and second conditions, the set (or sets) of prices minimizing the sum of prices across winning bidders is (are) selected. If there is only one set of prices satisfying these three conditions, this set determines the prices.
- d. **Fourth condition:** If there is more than one set of prices that satisfies the first three conditions, the set of prices that minimizes the weighted sum of squares of differences between the prices and the Vickrey prices will be selected. The weighting is relative to the price of the bidder's package evaluated at the opening bid prices. This approach for selecting among sets of prices that minimize the sum of prices across winning bidders is referred to as the "nearest Vickrey" approach.

These conditions characterize a unique set of prices such that each winning bidder pays no more than the dollar amount of its winning bid and pays at least the opening bid price(s). Industry Canada staff will calculate the set of prices for the 700 MHz block and AWS-3 blocks in each service area, where available, that meet the conditions outlined above.

The following is an example of how prices are calculated. This example is based on the [Spectrum Auction Design](http://www.cramton.umd.edu/papers2005-2009/cramton-spectrum-auction-design.pdf) paper by P. Cramton (<http://www.cramton.umd.edu/papers2005-2009/cramton-spectrum-auction-design.pdf>).

Suppose that there are five bidders, 1, 2, 3, 4 and 5, bidding for two licences, A and B. The following bids are submitted ("b" designates the bidder):

- $b_1\{A\} = \$28$
- $b_2\{B\} = \$20$
- $b_3\{AB\} = \$32$
- $b_4\{A\} = \$14$
- $b_5\{B\} = \$12$

The bids of the five bidders are represented in Figure E1.

In this example, the highest value combination of bids would assign licence A to Bidder 1 and licence B to Bidder 2, generating \$48 in value. There is no other assignment of the licences that yields a higher value.

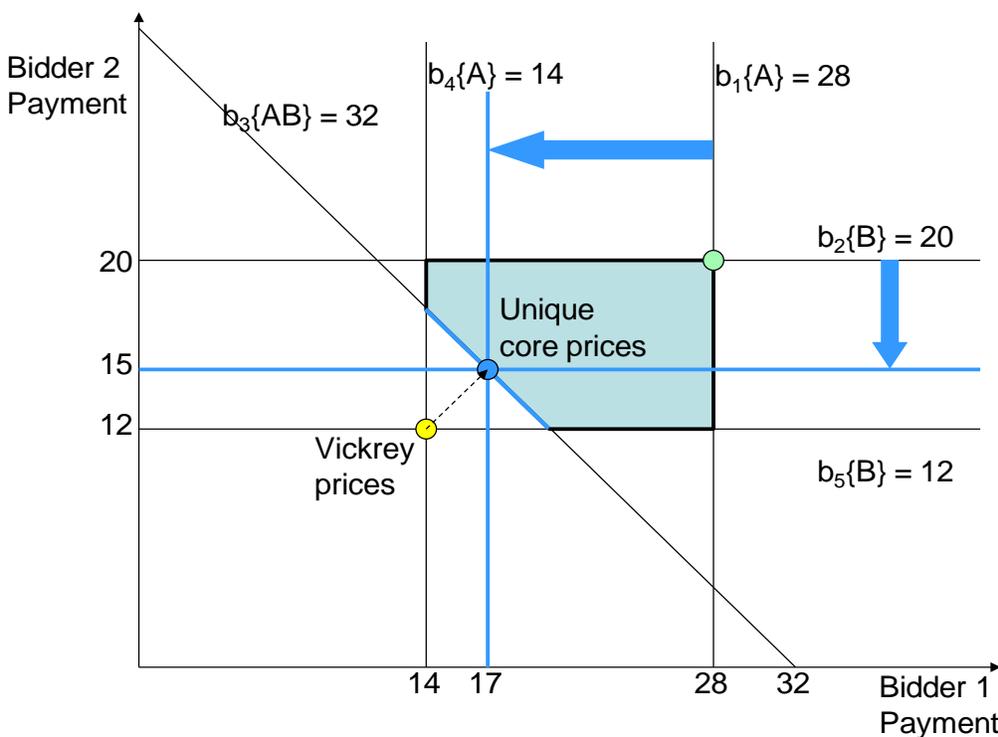
To calculate the Vickrey price for Bidder 1, its winning bid (\$28) is subtracted from the value of the winning combination (\$48), resulting in \$20. Next, the winning combination of packages is recalculated for the hypothetical situation in which Bidder 1's bids are excluded. The best assignment, excluding Bidder 1, assigns licence A to Bidder 4 at \$14 and licence B to Bidder 2 at \$20, resulting in \$34. The Vickrey price for Bidder 1 is the value of the winning combination of packages with all Bidder 1's bids excluded (\$34) less the sum of the winning allocation stage bids

for all bidders other than Bidder 1 (\$20); that is, its Vickrey price is \$14 (\$34 – \$20).

Similarly, to calculate the Vickrey price for Bidder 2, its winning bid (\$20) is subtracted from the value of the winning combination (\$48), resulting in \$28. Next, the winning combination of packages is recalculated for the hypothetical situation in which Bidder 2's bids are excluded. The best assignment, excluding Bidder 2, assigns licence A to Bidder 1 and licence B to Bidder 5, resulting in a value of \$40. The Vickrey price for Bidder 2 is the value of the winning combination of packages with all Bidder 2's bids excluded (\$40) less the sum of the winning allocation stage bids for all bidders other than Bidder 2 (\$28); that is, its Vickrey price is \$12 (\$40 - \$28).

Hence, the Vickrey outcome is for Bidder 1 to pay \$14 for licence A and for Bidder 2 to pay \$12 for licence B. Total revenues with these payments are \$14 + \$12 = \$26. As shown in Figure E1, this means that Bidder 1 can reduce its bid to \$14 before being displaced by Bidder 4. Similarly, Bidder 2 can reduce its bid to \$12 before being displaced by Bidder 5.

Figure E1: Example of Calculating Prices (in Dollars)



However, these payments sum to \$26, which is less than Bidder 3's bid of \$32 for both licences A and B. Therefore, Bidder 1 and Bidder 2 must split an additional payment of \$6 (\$32 – \$26), to ensure that their combined payment is greater than that of Bidder 3, satisfying the condition that no other bidder or group of bidders was prepared to pay more for the licences in question. That is, Bidder 1 and Bidder 2 must pay, collectively, at least \$32. The additional payment of \$6 is split equally between the two bidders. Each bidder is therefore paying an additional \$3 above its Vickrey price, with Bidder 1 paying \$17 (\$14 + \$3) and Bidder 2 paying \$15 (\$12 + \$3), as shown in Figure E1.

If the opening bid prices for licence A and licence B are the same amount, the additional payment of \$6 is split equally between the two bidders. Each bidder is therefore paying an additional \$3 above its Vickrey price, with Bidder 1 paying \$17 ($\$14 + \3) and Bidder 2 paying \$15 ($\$12 + \3), as shown in Figure E1.

However, if the opening bid prices for the two licences are different amounts, the two bidders must split the extra payment proportionately, in reference to the opening bid amounts (the fourth condition). For example, if the opening bid price for licence A is \$8 and the opening bid price for licence B is \$4, then the opening bid price of Bidder 1's package is twice as large as that of Bidder 2. Therefore, Bidder 1 would pay twice as much as Bidder 2 of the extra payment, with Bidder 1 paying an additional \$4, for a total payment of \$18 and Bidder 2 paying an additional \$2, for a final payment of \$14.

In the event of a tie during the second price calculation, a pseudo random generator will be used to decide between tied outcomes.