Industry Canada Industrie Canada

DGSO-003-14
August 2014

Spectrum Management and Telecommunications

# Consultation on Policy Changes in the 3500 MHz Band (3475-3650 MHz) and a New Licensing Process in Rural Areas

Canada

Aussi disponible en français

## Contents

## 1. Intent

1. In November 2013, Industry Canada published DGSO-004-13, *Decisions Concerning the Renewal of 2300 MHz and 3500 MHz Licences* (hereafter referred to as the Renewal Decision). The Renewal Decision indicated that the Department would launch a further consultation regarding certain aspects of the 3475-3650 MHz portion of the band (3500 MHz band). [1] To address the demands for this spectrum by both fixed and mobile services, the Department is seeking comments on a number of proposals to enable both services to operate in the 3500 MHz band: (a) a new classification of Tier 4 areas[2] to differentiate between urban and rural areas; (b) a new licensing process to be used for fixed wireless access (FWA) licences; (c) a fundamental reallocation of the 3500 MHz band to introduce mobile services; and (d) a transition policy that could take effect pending decisions made following this consultation.

2. All fixed service licensees in the 3500 MHz band will be affected by decisions made following this consultation.[3]

## 2. Mandate

3. 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 *Telecommunications Act*, is responsible for spectrum management in Canada. As such, the Minister is responsible for developing goals and national policies for spectrum resources use and for ensuring effective management of the radio frequency spectrum resource.

## 3. Legislation

4. The Minister of Industry is provided the general powers for spectrum management in Canada pursuant to section 5 of the *Radiocommunication Act* and sections 4 and 5 of the *Department of Industry Act*. The Governor in Council may make regulations with respect to spectrum management pursuant to section 6 of the *Radiocommunication Act*; these regulations have been prescribed under the *Radiocommunication Regulations*.

---

1 The band 3475-3650 MHz is allocated to various radiocommunication services, including the fixed service, the radiolocation service, the fixed-satellite service and the amateur service. The primary use of this band is for fixed wireless access (FWA) applications.

2 See *Service Areas for Competitive Licensing* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf01627.html).

3 Includes fixed point-to-point, first-come, first-served FWA, and auctioned FWA licences.

## 4. Policy Objectives

5. In developing a policy and licensing framework, Industry Canada takes into consideration the need to provide spectrum access for services and technologies; the impacts of the framework on all stakeholders; and the *Spectrum Policy Framework for Canada* (SPFC). The SPFC's objective is to maximize the economic and social benefits that Canadians derive from the use of the radio frequency spectrum. Its enabling guidelines state that spectrum management practices, including licensing methods, should respond to changing technology and marketplace demands. In addition, it states that spectrum policy and management should support the efficient functioning of markets by permitting the flexible use of spectrum to the extent possible and by making spectrum available for use in a timely fashion.

6. The Government of Canada is committed to ensuring that Canadians benefit from the availability of advanced, competitively priced telecommunications services in all regions of the country. In its *Economic Action Plan 2014*, the Government reaffirmed its commitment to extend and enhance broadband Internet services in rural and northern communities in order to meet the continued demand for fixed services in rural areas.

## 5. Background

### 5.1 Existing Fixed Service Systems in the 3500 MHz band

7. The 3500 MHz band has the following incumbent licensees:

(i) Amateur stations;
(ii) Radiolocation systems;[4]
(iii) Fixed satellite service (FSS) earth stations;[5]
(iv) Fixed point-to-point systems;[6]
(v) FWA first-come, first-served licences (1998 licensing process); and

---

4 FWA licensees may affect and/or be affected by radiolocation services (radars) operating in parts of the band 3400-3650 MHz in Canada, along the Canada-United States border and in Canadian coastal waters. These radiolocation systems include terrestrial, airborne and ship-based systems. In Canada, government radiolocation systems use the band 3400-3500 MHz. Government of Canada radiolocation facilities consist primarily of ship-based radar systems operating near Canada's East and West coasts.

5 Some authorizations of earth stations that use foreign satellites to provide international overseas traffic have included the range 3500-3700 MHz. These earth stations are limited in number and are located in isolated areas, away from urban centres. Furthermore, according to Canadian Footnote C20: "In the band 3500-3650 MHz, the fixed-satellite earth-stations will be located in areas so as not to constrain the implementation of fixed wireless access systems."

6 To accommodate FWA, the Department imposed a moratorium on the licensing of point-to-point systems in the band 3500-3650 MHz. Existing point-to-point systems were subject to the transition policy defined in Appendix 3 of *Policy and Licensing Procedures for the Auction of Spectrum Licences in the 2300 MHz and 3500 MHz Bands* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf06013.html).

(vi) FWA auctioned spectrum licences (three auctions 2004-2009).

8. Prior to 1998, fixed point-to-point licences were issued through a first-come, first-served (FCFS) process. In July 1998, the Department released its spectrum policy for the band 3400-3700 MHz,[7] which first opened spectrum for FWA. The fixed point-to-point licences were grandfathered at that time. In December 1999, a licensing procedure was released, which provided details regarding the licensing of six blocks of 25 MHz in the 3400-3550 MHz portion of the band for FWA systems in rural areas.[8] Spectrum licences were defined based on grid-cells and allocated on an FCFS basis.

9. In 2003, the Department realigned the spectrum in the band 3400-3650 MHz to better accommodate FWA systems and radiolocation operations.[9] To reduce the potential interference from high-power radiolocation systems operating in the lower part of the band, 3475-3650 MHz was designated as the core spectrum for FWA systems. All FWA systems authorized in the band 3400-3475 MHz were grandfathered.

10. Subsequent to the Department's September 2003 release of policy and licensing procedures for the 2300 MHz and 3500 MHz bands, in July 2004, it released a revised licensing framework for the 3500 MHz band.[10] Several auctions were then held between 2004 and 2009 to issue FWA licences in the 3500 MHz band.[11] These licences were issued for a 10-year term. Licensed FCFS FWA systems in rural areas and existing fixed-satellite receive earth stations were protected and not subject to transition policy provisions. Fixed point-to-point systems operating in the 3500 MHz band were subject to transition as defined in the policy.[12] The provisions advocated a "where necessary displacement" approach that linked the displacement of fixed assignments to the FWA systems implementation and spectrum requirements.

---

7 SP 3400-3700 MHz — *Spectrum Policy and Licensing Provisions for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3700 MHz* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf01625.html).

8 CPC-2-1-19, *Licensing Procedure for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3550 MHz*, issued on December 1, 1999. This Client Procedure Circular was rescinded on August 2, 2005.

9 See DGTP-002-03 — *Restructuring the Spectrum in the Band 3400-3650 MHz to More Effectively Accommodate Fixed and Radiolocation Services* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08016.html) and DGTP-006-03 — *Expansion of Spectrum for Fixed Wireless Access in the 3500 MHz Range* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf07026.html).

10 *Policy and Licensing Procedures for the Auction of Spectrum Licences in the 2300 MHz and 3500 MHz Bands,* published in September 2003, revised in July 2004.

11 Three auctions were held to award licences in this band, and these licences expire between March 2014 and December 2019.

12 The *Policy and Licensing Procedures for the Auction of Spectrum Licences in the 2300 MHz and 3500 MHz Bands* specifically stated that: "Following the issuance of FWA licences, existing point-to-point, fixed stations affected by the implementation of FWA systems will be afforded a minimum notification period of three years for those systems operating in rural areas and one year for those operating in urban areas which have a population of 25,000 or more." (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf06013.html).

11. There are currently five fixed point-to-point sites operating in the 3500 MHz band that are subject to the aforementioned transition policy and 36 first-come, first-served FWA licences.[13] In addition, there are 694 auctioned FWA licences with 10-year terms that expire between March 2014 and December 2019.

12. In 2013, the Department released the Renewal Decision for the auctioned FWA licences. As per the Renewal Decision, only licences that meet all conditions of licence, including deployment, will be eligible for a new licence through the renewal process. Those that do not meet the conditions of licence must be returned to the Department. Although the Renewal Decision had indicated that there was limited deployment, since then, many licensees have put their spectrum to use or plan to do so by the end of their licence term.[14] These licences are being assessed as the end of the licence term approaches to determine whether they are eligible for renewal under the renewal process.

### 5.2 Consideration of Mobile Services in the 3500 MHz Band

13. Comments received from stakeholders for the *Consultation on Renewal Process for 2300 MHz and 3500 MHz Licences* indicated that there is a strong demand for both fixed wireless broadband services in rural areas, and mobile broadband services in urban areas.[15]

14. Currently, only fixed services are permitted in the 3500 MHz band. In the Renewal Decision, the Department indicated that it would launch a further consultation regarding a possible mobile allocation to the 3500 MHz band. It also indicated that comments would be sought on topics, including a possible new band plan and corresponding transition policy, as well as the establishment of a different classification for existing tier areas to support the deployment of different types of services.

15. There is a continued demand for FWA in rural areas, much of which is being driven by local Internet service providers that are deploying high-speed broadband Internet services to rural Canadians.

16. On the other hand, consumers have increasingly demanded extended coverage, faster data transmission rates and more advanced, data-intensive mobile applications, such as video-on-demand. With the adoption of more sophisticated mobile devices and data traffic on mobile networks that is expected to continue to grow into the foreseeable future, additional spectrum is required to meet the demand for mobile services.

17. Industry Canada's March 2013 *Commercial Mobile Spectrum Outlook* document (the Outlook) noted that there have been developments internationally to allow mobile broadband services into the

---

13 Thirty-six first-come, first-served FWA licences are currently issued to 13 licensees (for example, Xplornet, Cranbrook Internet, Amtelecom) and are continuing to operate in accordance with DGTP-002-03 — *Restructuring the Spectrum in the Band 3400-3650 MHz to More Effectively Accommodate Fixed and Radiolocation Services* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08016.html).

14 Industry Canada receives reports from licensees as part of its assessment for renewal.

15 See Summary of Comments in Section 5 of the Renewal Decision.

3500 MHz band. Section 4.2.6 of the Outlook also indicated that Industry Canada had identified 3500 MHz as one of the potential bands to be used for commercial mobile spectrum.

18. Although Long Term Evolution (LTE) equipment exists for fixed services, it is not currently readily available for mobile devices, such as handsets. However, as network operators worldwide look to this band in the medium term, equipment is expected to be developed for mobile services, including LTE. Once the equipment ecosystem becomes evident, the Department plans to make changes to the band (e.g. band plan, technical rules) as quickly as possible to permit mobile services. However, the Department does not want to delay responding to requests to extend, expand or deploy new fixed broadband Internet deployments in rural areas while the band plan is being developed.

## 6. Proposed New Classification of Tier 4 Service Areas — Rural vs. Urban

19. The auctioned FWA licences were licensed on a Tier 4 basis, which comprises 172 localized service areas.[16] Some Tier 4 areas are densely populated (e.g. Tier 4-077 Toronto and Tier 4-136 Calgary), whereas others are less densely populated (e.g. Tier 4-157 Powell River and Tier 4-098 Parry Sound).

20. The 172 Tier 4 service area boundaries were developed using contiguous groupings of Statistics Canada's 1996 census subdivisions. Service area border lines were placed through lesser populated and more remote areas wherever possible, in order to minimize potential interference problems. An effort was also made to keep economic areas intact.

21. The propagation characteristics of the 3500 MHz spectrum are such that mobile services cannot cover a large area without significant infrastructure. Therefore, although the 3500 MHz spectrum is well suited to meet the increasing demand for mobile spectrum in urban communities to address congestion, it is less economical to use the spectrum for mobile services in rural areas. In contrast, the 3500 MHz band is well suited to meet the needs for FWA services in rural areas, as it is currently used today.

22. In the Renewal Decision, the Department indicated that it anticipated that the demand for mobile services would be very high in large urban areas. In addition, there may be limited demand for mobile services in rural areas and, therefore, these licensees would likely continue to provide fixed services. In order to accommodate both fixed and mobile services in the 3500 MHz band, the Renewal Decision noted that a future consultation would seek comments on classifying the Tier 4 service area as urban or rural such that fixed services could continue in rural areas, and existing fixed licences in urban areas could then be subject to a transition out of the band (see Section 8 for further discussion and proposals).

16 *Service Areas for Competitive Licensing*, December 2006 — Tier 1 is a single national service area; Tier 2 consists of 14 provincial and large regional service areas; Tier 3 has 59 smaller regional service areas; and Tier 4 comprises 172 localized service areas.

23. Originally, three classifications were described in the Renewal Decision: large urban, medium urban or rural.[17] The Department is now of the view that medium urban, as well as large urban tiers, will see demand for mobile services.

24. The Department is therefore proposing to classify existing Tier 4 service areas into either rural or urban as follows: Tier 4 service areas which contain a population centre of 30,000 or more would be classified as urban; all others would be rural. This approach uses Statistics Canada's definitions for population centres to classify each tier.[18]

25. The Department recognizes that in using this approach, some rural communities fall within urban tiers. There may also be some sizeable towns in rural tiers in which there is a high demand for additional commercial mobile spectrum. However, the granularity at which rural and urban areas can be distinguished such that different wireless services can be offered in the same frequency range is limited due to the ability for two services to coexist. Furthermore, as discussed above, the existing tier areas placed service area border lines through lesser populated and more remote areas wherever possible, in order to minimize potential interference problems and keep economic areas intact.

26. Annex A provides a complete listing of the proposed classifications for all Tier 4 areas.

**1. Industry Canada invites comments on its proposal to classify Tier 4 service areas as either urban or rural for the band 3475-3650 MHz, using Statistics Canada's 2011 definition for population centres, as outlined in Annex A.**

## 7. FWA in Rural Areas

### 7.1 Proposed Licensing Process for FWA in Rural Tiers

27. Auctioned FWA licences in the 3500 MHz band had a 10-year term and included conditions of licence, such as deployment. These licences began expiring in March 2014 and continue to expire until December 2019. As stated in the Renewal Decision, licensees that are in compliance with all conditions of licence (including deployment), are eligible to be issued a new one-year licence. Licences which are not eligible for renewal will be returned to the Department and would be made available through a new licensing process.

---

17 See paragraphs 37-39 of the *Decisions Concerning the Renewal of 2300 MHz and 3500 MHz Licences* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10705.html).

18 See Statistics Canada Census Dictionary definitions (http://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo049a-eng.cfm).

28. As noted in the *Framework for Spectrum Auctions in Canada*, where the demand for spectrum is not expected to exceed the supply, Industry Canada generally uses an FCFS licensing process to award spectrum licences. In instances where the demand for spectrum is expected to exceed supply, a competitive licensing process, such as an auction, is generally used.

29. Based on deployment data submitted by licensees, as well as the amount of spectrum available in rural areas, the demand for spectrum on a localized basis in rural tiers is not expected to exceed supply. As much of the interest in FWA is in deploying fixed broadband Internet services in smaller communities, making spectrum available for licensing in small, localized user-defined areas on an FCFS basis is likely to meet FWA demands in the rural tiers.

30. Moreover, issuing spectrum licences on a more granular level, such as using grid-cells[19] rather than for an entire Tier 4 service area, means that licences can be obtained for the desired operating area rather than having to seek a single licence for an entire Tier 4 area. It is anticipated that this approach would permit services to be delivered to a greater number of communities. This approach also allows for more efficient use of the spectrum and helps to manage the demand, depending on the amount of spectrum available following the renewal process, more than one licence can be issued in a given spectrum block in a given tier area.

31. As such, the Department is proposing that for FWA applications in rural tiers, spectrum licences be defined as the coverage of the proposed station(s) using grid-cells and be allocated on an FCFS basis. Expansion of the coverage would be permitted upon approval of an application and such approval may be limited by other deployments in the area.

32. This new FWA licensing process would only be permitted for spectrum available in rural tiers (as described in the previous section). Urban tiers are addressed in Section 8.

**2. Industry Canada invites comments on its proposal to make available spectrum licences in tier areas classified as rural, through a first-come, first-served process.**

**3. Industry Canada invites comments on these licences being issued as annual spectrum licences, defined on a per grid-cell basis and authorized only for the amount of spectrum required to operate (refer to Section 7.3).**

### 7.2 Treatment of Incumbents in Rural Tier Areas

33. As discussed in Section 5.1, the 3500 MHz band has the following incumbent licensees:

(i) Amateur stations;

[19] Spectrum grid-cells are six-sided figures with an area of 25 $km^2$ that fit together in an interlocking pattern over the territory of Canada.

(ii) Radiolocation systems;[20]
(iii) Fixed-satellite service (FSS) earth stations;[21]
(iv) Fixed point-to-point systems;[22]
(v) FWA first-come, first-served licences (1998 licensing process); and
(vi) FWA auctioned spectrum licences (three auctions 2004-2009).

34. Operators of amateur stations would continue to have access to the 3475-3500 MHz range, on a secondary basis, and would be required to protect FWA systems and other stations of primary services from interference.

35. Existing radiolocation systems and FSS earth stations operating within rural tiers would continue to be protected as per the existing policy and technical rules and are not subject to displacement. Existing policies and rules will also continue to apply to new authorizations for FSS earth stations subject to decisions made following this consultation.

36. In September 2003, in order to accommodate FWA, the Department imposed a moratorium on the licensing of point-to-point systems in the band 3500-3650 MHz. It also established a transition policy[23] to deal with fixed point-to-point systems, whereby the implementation of FWA systems could trigger the displacement of point-to-point, fixed stations after a minimum notification period of three years for those systems operating in rural areas and one year for those operating in urban areas which have a population of 25,000 or more.

37. Given that existing point-to-point licensees were notified of a potential displacement more than 10 years ago and that several point-to-point systems have since been decommissioned, it is proposed that provision 3 of the above-noted transition policy be modified as follows: "Following the issuance of FWA licences, existing point-to-point, fixed stations affecting the implementation of FWA systems in rural Tier 4 areas will be afforded a minimum notification period of six months." All other provisions of the transition policy for displacement continue to apply.

38. Existing FCFS and auctioned FWA systems licensed and installed within rural tiers have standard licences and may continue to operate. However, while these FWA incumbents are protected from future FWA systems, they may be subject to future band plan changes discussed in Section 7.3.

**4. Industry Canada invites comments on its proposal to modify the current notification period for existing point-to-point, fixed stations such that those affecting the implementation of new FWA systems in rural Tier 4 areas would now be afforded a notification period of six months.**

20 See footnote 6.

21 See footnote 7.

22 See footnote 8.

23 Refer to Appendix 3 of the *Policy and Licensing Procedures for the Auction of Spectrum Licences in the 2300 MHz and 3500 MHz Bands* (http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf06013.html).

**5. Industry Canada invites comments on its proposal to have the transition policy described in section 4 of Annex B apply to all FWA systems (i.e. existing FCFS and auctioned FWA systems as listed in (v) and (vi)) within rural tiers.**

### 7.3 FWA Band Plan in Rural Areas

39. The existing 3500 MHz band plan is based on 25 MHz wide paired blocks and one unpaired block as shown below.

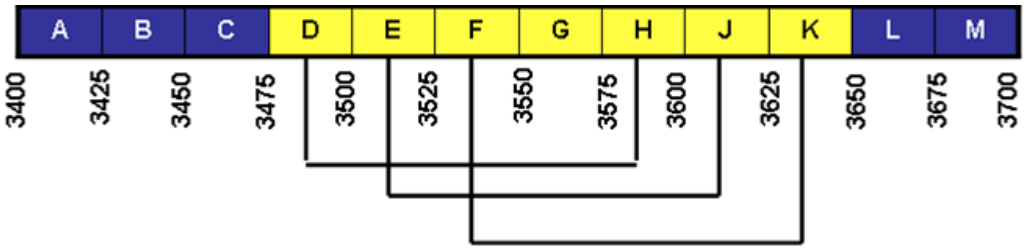


**Figure 1 – 3500 MHz band plan**

40. Although changes are being considered internationally to the configuration of this band in order to support mobile services, there is no clear direction at this time. Such changes will impact current deployments and will also affect how fixed and mobile services can coexist in the future. In this context, Industry Canada is closely monitoring potential changes to the band plan.

41. As such, the existing 3500 MHz band plan would remain unchanged as part of the proposed licensing process for rural areas. However, given that future band plan changes may be considered, it is proposed that the new grid-cell spectrum licences be authorized only for the amount of spectrum required for the intended operations (with a minimum of 5+5 MHz paired and 5 MHz unpaired). Assignment of additional spectrum may be authorized at the Department's discretion based on an analysis of the licensee's stated requirements. It is also noted that all FWA spectrum licences within the 3500 MHz band may be subject to a transition to a new band plan and other relevant technical rules, if and when they are established, to facilitate the introduction of commercial mobile services in urban tiers.

### 7.4 Proposed Conditions of Licence for Existing and New FCFS FWA Licences

42. The Department is proposing that the conditions of licence described in Annex B apply to all existing and new FCFS FWA licences.

43. To ensure that the FCFS process meets the current demands of licensees in rural areas, the proposed Implementation of Spectrum Usage condition of licence will require that the licensee deploy the system(s) described in its FCFS application within six months of licence issuance and maintain ongoing service delivery. The licensee must demonstrate that it is providing service by submitting a report, with coverage map(s), to the Department as requested.

44. Annual licences fees will apply to these licences. The current fee order for the 3500 MHz band is defined in DGRB-008-99 — *Radio Authorization Fees for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3550 MHz*. Changes to the applicable fees may be considered in the future, following a public consultation.

45. Licensees are reminded that they must comply on an ongoing basis with the technical aspects of the appropriate Radio Standards Specifications (RSSs) and Standard Radio System Plans (SRSPs).

46. It is also noted that all existing and new FCFS FWA spectrum licences within the 3500 MHz band may be subject to a transition to a new band plan and other relevant technical rules, if and when they are established, to facilitate the introduction of commercial mobile services in urban tiers, as discussed in Section 9.1 below. This requirement is included in Annex B, Section 4 of the proposed conditions of licence.

**6. Industry Canada invites comments on the conditions of licence in Annex B.**

## 8. Proposed Fundamental Reallocation of the 3500 MHz Band

47. Auctioned FWA licences were initially issued with a high expectation of renewal, unless a breach of licence condition occurs, a fundamental reallocation of spectrum to a new service is required, or an overriding policy need arises.

48. Subsequently, in the Renewal Decision, due to the potential allocation of mobile services in this band and the uncertainty of the timing of this change, the Department decided not to issue new long-term licences. Instead, it announced that licensees would be eligible to be issued a new one-year spectrum licence where all conditions of licence had been met. In addition, the conditions of licence for the new one-year licences state that: "Licensees are hereby given advance notification that changes to the existing allocation and band plan may be considered as discussed in DGSO-004-13, *Decisions Concerning the Renewal of 2300 MHz and 3500 MHz Licences*, which may result in a fundamental reallocation."

49. The Department recognizes that sufficient and appropriate spectrum resources must be available to commercial mobile service providers to ensure that Canadians continue to benefit from advanced wireless services. Internationally, it is recognized that additional spectrum is needed to meet the exponentially increasing demand for mobile services. Many countries have been looking at 3500 MHz spectrum as an option for commercial mobile broadband services.

50. Frequency allocations are an important first step in developing spectrum utilization policies that foster the implementation of new radiocommunication services. Modifications to the *Canadian Table of Frequency Allocations* are intended to reflect the public interest in introducing new wireless services that benefit Canadians and respond to marketplace demands. In order to establish the necessary spectrum management environment to meet the growing demand for commercial mobile broadband

services, the Department proposes to fundamentally reallocate the 3500 MHz band to include the Mobile Service in the *Canadian Table of Frequency Allocations* (see page 40).

51. In Canada, the 3500 MHz band is allocated to various radiocommunication services, including the fixed service, the radiolocation service and the fixed-satellite service.[24] Canadian Footnote C15 gives priority to the radiolocation service over the fixed service in the band 3450-3500 MHz. It is proposed that this priority also apply over mobile services. Canadian Footnote C20 also notes that fixed-satellite earth-stations will be located in areas so as not to constrain the implementation of FWA systems. It is proposed that this also apply for mobile systems.

52. As the proposed changes to the *Canadian Table of Frequency Allocations* constitute a fundamental reallocation, current licensees in the urban tiers would no longer have an expectation of renewal and would be subject to displacement, as discussed in Section 9.2.

53. If the Department implements the proposed fundamental reallocation and tier classification, it will initiate a further consultation on a 3500 MHz band technical and licensing framework to authorize commercial mobile services in urban tiers. As discussed in the Outlook, based on international considerations and when it is expected that the equipment ecosystem will develop, the possible timeline for the release and availability of this spectrum to support commercial wireless services is 2016-2017.

54. The Department anticipates that the demand for mobile services will be very high in urban areas, but limited in rural areas. Therefore, the Department proposes to establish a geographically differentiated spectrum utilization policy, using its proposed Tier 4 classification as discussed in Section 6:

- in urban tiers, the use of the spectrum is for mobile services with the implementation of mobile services being subject to a future consultation as discussed above in paragraph 53;
- in rural tiers, the use of the spectrum will remain for fixed services only.

55. The Department notes that in urban tiers, systems in the fixed service (i.e. fixed point-to-point systems, FWA systems licensed on an FCFS basis as part of the 1998 licensing process and FWA systems licensed through the 2004-2009 auctions)[25] may continue to operate subject to the displacement provision discussed in Section 9.2.

56. The proposed fundamental reallocation and proposed spectrum utilization policy balance the demand for mobile spectrum in urban areas with the demand for fixed spectrum for FWA in rural areas by setting a geographically differentiated policy.

---

[24] In Canada, government radiolocation systems use the band 3400-3500 MHz, whereas the fixed service and FSS use 3500-4200 MHz. As per the *Policy and Licensing Procedures for the Auction of Spectrum Licences in the 2300 MHz and 3500 MHz Bands*, the Department will limit the authorization of new FSS earth stations in the band 3500-3650 MHz. These policies will continue to apply. See https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/policy-2300-3500e-july2004.pdf/$FILE/policy-2300-3500e-july2004.pdf.

[25] Fixed service incumbent licensees are listed in (iv) to (vi) of paragraph 58.

57. Therefore, proposed changes to the Canadian Table include: (i) the addition of a primary allocation to the mobile service; (ii) a new Canadian Footnote to recognize the new geographically differentiated spectrum utilization policy for mobile and fixed services; (iii) modification to existing Canadian Footnote C15 indicating the radiolocation service priority over both the fixed and mobile services; (iv) modification to existing Canadian Footnote C20 indicating that fixed-satellite service (FSS) earth station locations do not constrain the implementation of both fixed and mobile systems. See Annex C for the proposed changes to the *Canadian Table of Frequency Allocations*.

**7. Industry Canada invites comments on its proposal to fundamentally reallocate the 3500 MHz band (3475-3650 MHz) to include mobile services and its proposed changes to the *Canadian Table of Frequency Allocations* as found in Annex C.**

**8. Industry Canada invites comments on its geographically differentiated policy where mobile services will be allowed in urban tiers, and fixed services will be allowed in rural tiers (refer to Section 6 for the definition of urban and rural tiers).**

## 9. Treatment of Incumbent Licensees in Urban Tier 4 Areas Following a Proposed Fundamental Reallocation of the 3500 MHz Band

58. As discussed in Section 5.1, the 3500 MHz band has the following incumbent licensees:

(i) Amateur stations;
(ii) Radiolocation systems;
(iii) Fixed satellite service (FSS) earth stations;
(iv) Fixed point-to point systems;
(v) FWA first-come, first-served licences (1998 licensing process); and
(vi) FWA auctioned spectrum licences (three auctions 2004-2009).

### 9.1 Need for Displacement

59. The Renewal Decision stated that "licensees [in the 3500 MHz band] are hereby given notice that, in the event of a fundamental reallocation, Industry Canada would require that spectrum be returned (i.e. not renewed)." Based on the proposed fundamental reallocation to the mobile service, as described in Section 8, all existing fixed service licensees in urban tiers would no longer have a high expectation of renewal and would therefore be subject to displacement. This would apply to all fixed service incumbents noted above (iv–vi), in urban tiers, including those that would have been grandfathered through previous decisions related to this band.

60. Incumbent licensees described above (i-iii) in urban tier areas would be subject to the same displacement criteria as in rural tier areas (see Section 7.2).

### 9.2 Options for Displacement

61. Given that the proposed decision on reallocation would require current fixed service licensees in urban tiers to be displaced, the Department is consulting on the appropriate displacement provision to be included in the transition policy.

62. The Department is putting forth two options for displacement:

**Option 1 – Displacement of existing licensees in urban tiers within a minimum of one year of the release of a future new licensing framework and 3500 MHz band plan.**

**Option 2 – Displacement of existing licensees in urban tiers only if, and as required, after commercial mobile licences are issued. Licensees would have one year to transition once notified by the Department.**

63. The Department considers that Option 1 would provide greater certainty for prospective and future mobile spectrum licensees prior to a future licensing process. These new mobile licensees would have greater certainty as to when they could deploy services without encumbrance in the licence area. Consequently, new mobile licensees would have the ability to immediately deploy services throughout their entire licence area. Given that there would be a further consultation on a licensing framework, affected fixed licensees would be able to continue to provide services to their subscribers for at least another two years before any displacement under this proposal. This period provides ample time for the incumbents to implement their transition strategy, particularly given that they were provided notice of a potential reallocation and transition in 2012.

64. Under Option 2, fixed systems could remain in operation in urban tiers and be displaced only if, and as required, should they impede the deployment of commercial mobile systems. This option allows for the continued provision of fixed services in rural communities that are within urban tiers, where they do not impede the deployment of mobile services. This may provide long-term operation for many fixed licensees, depending on the deployment of new mobile services.

65. All costs associated with displacement of frequency assignments will remain the responsibility of the current licensees. The Government of Canada bears no responsibility for costs or expenses incurred by the displacement of frequency assignments. Accordingly, the Government of Canada does not have a responsibility or intent to financially compensate licensees that are displaced. As new services are introduced, arrangements may be made between new licensees and incumbents on a voluntary basis. The Department does not generally review these private arrangements.

**9. Industry Canada invites comments on its two proposed options for displacement.**

## 10. Submitting Comments

66. Respondents are requested to provide their comments in electronic format (Microsoft Word or Adobe PDF) to the following email address: spectrum.operations@ic.gc.ca.

67. In addition, respondents are asked to specify question numbers for ease of referencing and provide supporting rationale for their comments.

68. Written submissions should be addressed to the Senior Director, Spectrum Development and Operations, Industry Canada, 300 Slater Street (JETN, 15th), Ottawa, Ontario K1A 0H5. All submissions should cite the *Canada Gazette*, Part I, the publication date, the title and the notice reference number (DGSO-003-14). Parties should submit their comments no later than October 8, 2014, to ensure consideration. Soon after the close of the comment period, all comments received will be posted on Industry Canada's Spectrum Management and Telecommunications website at http://www.ic.gc.ca/spectrum.

69. Industry Canada will also provide interested parties with the opportunity to reply to comments from other parties. Reply comments will be accepted until November 5, 2014.

70. All comments and reply comments will be published, so those making submissions are asked not to provide confidential or private information in their submissions.

71. After the initial comment period, Industry Canada may, at its discretion, request additional information if needed to clarify significant positions or new proposals. Should additional information be requested, the reply comment deadline may be extended.

## 11. Obtaining Copies

72. 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.

## Annex A – Proposed Tier 4 Classifications for 3500 MHz Licences

Note that the classification of *urban* is proposed for Tier 4 service areas **which contain a population centre of 30,000 or more**; all others would be rural. For example, although Tier 4-056 (Pembroke) shows a total population of 77,757, given that it does NOT contain a population centre of 30,000 or more, it is deemed rural. [26]

| Tier | Service Area Name | Proposed Tier 4 Classification | Total Population |
|---|---|---|---|
| 4-001 | St. John's | Urban | 223,381 |
| 4-002 | Placentia | Rural | 19,464 |
| 4-003 | Gander/Grand Falls/Windsor | Rural | 159,526 |
| 4-004 | Corner Brook/Stephenville | Rural | 82,694 |
| 4-005 | Labrador | Rural | 28,217 |
| 4-006 | Charlottetown | Urban | 86,793 |
| 4-007 | Summerside | Rural | 48,501 |
| 4-008 | Yarmouth | Rural | 62,591 |
| 4-009 | Bridgewater/Kentville | Rural | 140,124 |
| 4-010 | Halifax | Urban | 389,094 |
| 4-011 | Truro | Rural | 56,095 |
| 4-012 | Amherst | Rural | 36,091 |
| 4-013 | Antigonish/New Glasgow | Rural | 76,898 |
| 4-014 | Sydney | Urban | 147,044 |
| 4-015 | Saint John | Urban | 140,331 |
| 4-016 | St. Stephen | Rural | 27,012 |
| 4-017 | Fredericton | Urban | 152,323 |
| 4-018 | Moncton | Urban | 151,240 |
| 4-019 | Miramichi/Bathurst | Rural | 169,181 |
| 4-020 | Grand Falls | Rural | 28,528 |
| 4-021 | Edmundston | Rural | 28,374 |
| 4-022 | Campbellton | Rural | 32,006 |
| 4-023 | Matane | Rural | 118,114 |
| 4-024 | Mont-Joli | Rural | 41,770 |
| 4-025 | Rimouski | Urban | 52,049 |
| 4-026 | Rivière-du-Loup | Rural | 86,340 |
| 4-027 | La Malbaie | Rural | 29,403 |
| 4-028 | Chicoutimi-Jonquière | Urban | 217,187 |

[26] Based on Statistics Canada's definitions for population centres (see Statistics Canada, 2011 Census Dictionary, http://www12.statcan.gc.ca/census-recensement/2011/ref/dict/geo049a-eng.cfm).

| | | | |
|---|---|---|---|
| 4-029 | Montmagny | Rural | 59,520 |
| 4-030 | Québec | Urban | 780,745 |
| 4-031 | Sainte-Marie | Rural | 48,205 |
| 4-032 | Saint-Georges | Rural | 67,337 |
| 4-033 | Lac-Mégantic | Rural | 24,923 |
| 4-034 | Thetford Mines | Rural | 42,871 |
| 4-035 | Plessisville | Rural | 21,894 |
| 4-036 | La Tuque | Rural | 16,300 |
| 4-037 | Trois-Rivières | Urban | 252,368 |
| 4-038 | Louiseville | Rural | 22,226 |
| 4-039 | Asbestos | Rural | 30,204 |
| 4-040 | Victoriaville | Urban | 49,457 |
| 4-041 | Coaticook | Rural | 13,362 |
| 4-042 | Sherbrooke | Urban | 216,182 |
| 4-043 | Windsor | Rural | 16,443 |
| 4-044 | Drummondville | Urban | 96,533 |
| 4-045 | Cowansville | Rural | 27,044 |
| 4-046 | Farnham | Rural | 27,861 |
| 4-047 | Granby | Urban | 86,541 |
| 4-048 | St-Hyacinthe | Urban | 83,957 |
| 4-049 | Sorel | Urban | 55,994 |
| 4-050 | Joliette | Urban | 135,893 |
| 4-051 | Montréal | Urban | 3,756,709 |
| 4-052 | Sainte-Agathe-des-Monts | Rural | 61,197 |
| 4-053 | Hawkesbury | Rural | 62,398 |
| 4-054 | Mont-Laurier/Maniwaki | Rural | 45,928 |
| 4-055 | Ottawa | Urban | 1,202,839 |
| 4-056 | Pembroke | Rural | 77,757 |
| 4-057 | Arnprior/Renfrew | Rural | 30,397 |
| 4-058 | Rouyn-Noranda | Rural | 40,512 |
| 4-059 | Notre-Dame-du-Nord | Rural | 17,427 |
| 4-060 | La Sarre | Rural | 20,272 |
| 4-061 | Amos | Rural | 24,982 |
| 4-062 | Val-d'Or | Rural | 43,487 |
| 4-063 | Roberval/Saint-Félicien | Rural | 61,573 |
| 4-064 | Baie-Comeau | Rural | 48,423 |
| 4-065 | Port-Cartier/Sept-Îles | Rural | 47,407 |
| 4-066 | Chibougamau | Rural | 40,400 |
| 4-067 | Cornwall | Urban | 65,921 |
| 4-068 | Brockville | Rural | 69,968 |
| 4-069 | Gananoque | Rural | 12,901 |
| 4-070 | Kingston | Urban | 162,711 |

| | | | |
|---|---|---|---|
| 4-071 | Napanee | Rural | 39,509 |
| 4-072 | Belleville | Urban | 145,085 |
| 4-073 | Cobourg | Rural | 59,699 |
| 4-074 | Peterborough | Urban | 151,081 |
| 4-075 | Lindsay | Rural | 41,911 |
| 4-076 | Minden | Rural | 17,819 |
| 4-077 | Toronto | Urban | 5,635,828 |
| 4-078 | Alliston | Urban | 99,207 |
| 4-079 | Guelph/Kitchener | Urban | 580,963 |
| 4-080 | Fergus | Rural | 26,072 |
| 4-081 | Kincardine | Rural | 173,663 |
| 4-082 | Listowel/Goderich | Rural | 84,491 |
| 4-083 | Fort Erie | Rural | 28,451 |
| 4-084 | Niagara-St. Catharines | Urban | 326,520 |
| 4-085 | Haldimand/Dunnville | Rural | 35,936 |
| 4-086 | London/Woodstock/St. Thomas | Urban | 607,564 |
| 4-087 | Brantford | Urban | 122,156 |
| 4-088 | Stratford | Urban | 49,496 |
| 4-089 | Chatham | Urban | 74,209 |
| 4-090 | Windsor/Leamington | Urban | 376,213 |
| 4-091 | Wallaceburg | Rural | 32,820 |
| 4-092 | Sarnia | Urban | 124,825 |
| 4-093 | Strathroy | Rural | 41,914 |
| 4-094 | Barrie | Urban | 274,354 |
| 4-095 | Midland | Urban | 44,114 |
| 4-096 | Gravenhurst/Bracebridge | Rural | 54,503 |
| 4-097 | North Bay | Urban | 102,831 |
| 4-098 | Parry Sound | Rural | 19,422 |
| 4-099 | Elliot Lake | Rural | 31,261 |
| 4-100 | Sudbury | Urban | 172,605 |
| 4-101 | Kirkland Lake | Rural | 34,740 |
| 4-102 | Timmins | Urban | 43,906 |
| 4-103 | Kapuskasing | Rural | 41,662 |
| 4-104 | Kenora/Sioux Lookout | Rural | 61,920 |
| 4-105 | Iron Bridge | Rural | 22,567 |
| 4-106 | Sault Ste. Marie | Urban | 81,654 |
| 4-107 | Marathon | Rural | 29,468 |
| 4-108 | Thunder Bay | Urban | 121,372 |
| 4-109 | Fort Frances | Rural | 22,072 |
| 4-110 | Steinbach | Rural | 45,879 |
| 4-111 | Winnipeg | Urban | 722,206 |
| 4-112 | Lac du Bonnet | Rural | 53,537 |

| | | | |
|---|---|---|---|
| 4-113 | Morden/Winkler | Rural | 38,697 |
| 4-114 | Brandon | Urban | 92,736 |
| 4-115 | Portage la Prairie | Rural | 20,073 |
| 4-116 | Dauphin | Rural | 79,729 |
| 4-117 | Creighton/Flin Flon | Rural | 21,360 |
| 4-118 | Thompson | Rural | 44,066 |
| 4-119 | Estevan | Rural | 44,562 |
| 4-120 | Weyburn | Rural | 21,658 |
| 4-121 | Moose Jaw | Urban | 56,844 |
| 4-122 | Swift Current | Rural | 47,453 |
| 4-123 | Yorkton | Rural | 66,760 |
| 4-124 | Regina | Urban | 216,558 |
| 4-125 | Saskatoon | Urban | 237,314 |
| 4-126 | Watrous | Rural | 29,426 |
| 4-127 | Battleford | Rural | 91,099 |
| 4-128 | Prince Albert | Urban | 130,757 |
| 4-129 | Lloydminster | Rural | 30,719 |
| 4-130 | Northern Saskatchewan | Rural | 33,286 |
| 4-131 | Medicine Hat/Brooks | Urban | 89,056 |
| 4-132 | Lethbridge | Urban | 156,171 |
| 4-133 | Stettler/Oyen/Wainwright | Rural | 52,089 |
| 4-134 | High River | Rural | 58,713 |
| 4-135 | Strathmore | Rural | 38,332 |
| 4-136 | Calgary | Urban | 994,628 |
| 4-137 | Red Deer | Urban | 151,548 |
| 4-138 | Wetaskiwin/Ponoka | Rural | 46,931 |
| 4-139 | Camrose | Rural | 34,573 |
| 4-140 | Vegreville | Rural | 14,407 |
| 4-141 | Edmonton | Urban | 943,011 |
| 4-142 | Edson/Hinton | Rural | 45,052 |
| 4-143 | Bonnyville | Rural | 73,729 |
| 4-144 | Whitecourt | Rural | 27,135 |
| 4-145 | Barrhead | Rural | 22,025 |
| 4-146 | Fort McMurray | Urban | 43,046 |
| 4-147 | Peace River | Rural | 82,673 |
| 4-148 | Grande Prairie | Urban | 75,598 |
| 4-149 | East Kootenay | Rural | 56,284 |
| 4-150 | West Kootenay | Rural | 76,630 |
| 4-151 | Kelowna | Urban | 299,947 |
| 4-152 | Vancouver | Urban | 2,201,446 |
| 4-153 | Hope | Rural | 21,930 |
| 4-154 | Victoria | Urban | 389,247 |

| | | | |
|---|---|---|---|
| 4-155 | Nanaimo | Urban | 165,741 |
| 4-156 | Courtenay | Urban | 106,015 |
| 4-157 | Powell River | Rural | 26,889 |
| 4-158 | Squamish/Whistler | Rural | 59,781 |
| 4-159 | Merritt | Rural | 15,362 |
| 4-160 | Kamloops | Urban | 92,024 |
| 4-161 | Ashcroft | Rural | 16,503 |
| 4-162 | Salmon Arm | Rural | 46,184 |
| 4-163 | Golden | Rural | 7,154 |
| 4-164 | Williams Lake | Rural | 41,149 |
| 4-165 | Quesnel/Red Bluff | Rural | 24,613 |
| 4-166 | Skeena | Rural | 63,902 |
| 4-167 | Prince George | Urban | 95,334 |
| 4-168 | Smithers | Rural | 40,770 |
| 4-169 | Dawson Creek | Rural | 60,717 |
| 4-170 | Yukon | Rural | 28,674 |
| 4-171 | Nunavut | Rural | 26,745 |
| 4-172 | Northwest Territories | Rural | 37,288 |

# Annex B – Proposed Conditions of Licence

The following conditions will apply to all new and existing FCFS FWA licences, in the band 3475-3650 MHz, in Tier 4 areas.

It should be noted that all 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*).

It should also be noted that, under this proposal, each time a licensee applies for a licence it will be required to submit an application to the Department indicating the services that it intends to provide along with a coverage map outlining the grid-cells required for their implementation. Once approved, the appropriate fee will be calculated according to grid-cell usage based on DGRB-008-99 — *Radio Authorization Fees for Fixed Wireless Access Systems in Rural Areas in the Frequency Range 3400-3550 MHz* and must be paid prior to issuance of the licence.

## 1. Licence Term

The term of this licence is 1 year.

## 2. Licence Fees

The licensee must pay the applicable annual licence fee on or before March 31 of each year for the subsequent year (April 1 to March 31).

## 3. Eligibility Criteria

The licensee must conform to eligibility criteria as set out in subsection 9(1) of the *Radiocommunication Regulations.*

## 4. Displacement

Licences may be subject to a transition to a new band plan and other relevant technical rules, if and when they are established to facilitate the introduction of commercial mobile services in urban tiers.

## 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 Industry Canada with, and maintain, up-to-date technical information on a particular station or network information 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, Regulations 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 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. Implementation of Spectrum Usage**

The licensee must deploy the system(s) and provide the services described in its application within six months of the issuance of this licence and maintain such coverage and service delivery throughout the licence term.

Industry Canada may require the licensee to provide additional information regarding its deployment and service delivery.

Failure to maintain deployment or provide reports is a breach of these conditions and may result in suspension or revocation of this licence or other enforcement under the *Radiocommunication Act*.

**11. Mandatory Antenna Tower and Site Sharing**

The licensee operating as telecommunication common carrier 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.

**12. Amendments**

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

## Annex C – Proposed Changes to Canadian Table of Frequency Allocations for the 3500 MHz Band

| | |
|---|---|
| 3 450 - 3 500 | FIXED C18<br>MOBILE<br>RADIOLOCATION 5.433<br>Amateur<br><br>**MOD** C15 **ADD** C18B |
| 3 500 - 3 650 | FIXED C18<br>FIXED-SATELLITE (space-to-Earth)<br>MOBILE<br><br>**MOD** C20 **ADD** C18B |

**MOD C15 (CAN-03)** In the band 3 450-3 500 MHz, in certain locations in Canada the radiolocation service has priority over the fixed and mobile services. The Department will identify through spectrum policy the general area of radiolocation system operation.

**C18 (CAN-03)** The band 3 450-3 650 MHz is designated for fixed wireless access applications under the fixed service allocation.

**ADD C18B** In the band 3 450-3 650 MHz, the use of spectrum in certain areas by the mobile and fixed services will be subject to spectrum utilization policies and/or decisions.

**MOD C20 (CAN-03)** In the band 3 500-3 650 MHz, the fixed-satellite earth-stations will be located in areas so as not to constrain the implementation of fixed wireless access and mobile systems.