December 17 2012

Manager, Emerging Networks
DGSO
Industry Canada
300 Slater Street
Ottawa, Ontario
K1A 0C8

RE: Canada Gazette Notice No. DGSO-006-12, Consultation on Renewal Process for 2300MHz and 3500MHz Licenses

Silo Wireless appreciates the opportunity to provide comments on the Renewal Process for 2300MHz and 3500MHz Licenses.

We are pleased to be able to offer our opinions regarding the renewal of spectrum licenses and work with Industry Canada to assist in developing the wireless service provider industry in Canada.

Sincerely,

[Signature]

Andreas J. Wiatowski
Director/CEO
Silo Wireless Inc.
About Silo Wireless

Silo Wireless was created over 5 years ago, specifically to bring broadband Internet service to underserved rural communities. Silo Wireless was one of the first Wireless Internet Service Providers (WISP) to deliver 4G WiMAX services utilizing the 3.65Ghz band in South Western Ontario.

"Our mission is to provide affordable, reliable, wireless high speed Internet for home and businesses in our rural communities."

Background


- Figure 6.2.1 shows the number of subscriptions on FWA below 6GHz growing from 520,000 at the start of 2010 to more than 960,000 by 2015.
- Figure 6.2.2 shows traffic projected to grow from 15GB/month/subscription to 45GB/month/subscription during the period from 2010 to 2015
- Figure 6.2.3 shows demand for spectrum growing from 80MHz in 2010 to over 200MHz by 2015.

In the 2009 CRTC Annual Report, it was indicated that 100% of the urban households have access to broadband wireline-based facilities. In contrast, just 82% of the rural households had access to broadband facilities. The remaining 18% in the latter group is the most natural market for FWA broadband services.

In USA, the FCC is working to free up spectrum by promoting spectrum sharing and enabling innovative licensing techniques. The FCC has recently adopted a Notice of Proposed Rulemaking for “citizens broadband service” in the 3550-3650 MHz band.

In Canada, the 3500Mhz spectrum has been auctioned off for a ten year term, but these frequencies could be used in a different way. These considerations are the center of this response.
Challenges

One of the challenges in the wireless business is keeping up with the new technology and the speed demands that our customers are asking for. Most Wireless ISP’s use unlicensed spectrum to deliver service, this spectrum is becoming crowded and lower power levels restrict coverage range. Current unlicensed spectrum – (900MHz) 25MHz, (2400MHz) 80MHz, (5800MHz) 125MHz for a total of 230MHz of space. There is also the 3650MHz lightly licensed band which gives an additional 50MHz of spectrum.

Industry Canada Mandate

It is clear that Industry Canada has a mandate to provide broadband coverage to the majority of Canadians.

Spectrum Policy Framework, Section 3.5
Facilitating Communications in Rural and Remote Areas There was general support for the provisions of the Framework that seek to facilitate access to communications in rural areas.

Broadband Canada
As part of Canada’s Economic Action Plan, funding was provided to Industry Canada to develop and implement a strategy to extend broadband coverage. By far the biggest component of this strategy was the Broadband Canada: Connecting Rural Canadians program. Broadband internet access is viewed as essential infrastructure for participating in today's economy, as it enables citizens, businesses and institutions to access information, services and opportunities that could otherwise be out of reach.

Spectrum Policy 2300-3500
4.1.1 WCS Spectrum at 2300 MHz
WCS will be licensed under the frequency allocations for fixed and mobile services. Industry Canada envisages the spectrum designated for WCS services will be used predominantly for the provision of one-way and/or two-way, local broadband access services in digital, fixed, point-to-multipoint configurations.

4.1.2 FWA Spectrum at 3500 MHz
FWA systems will be licensed under the fixed service. Licensees may deploy a full range of fixed applications (i.e. point-to-multipoint or point-to-point) in support of FWA applications, including ancillary portable terminals.
Silo Wireless Responses to Industry Canada Questions

Question (1): Industry Canada seeks comments of the proposed wording of the condition of license related to deployment. Comments are also sought on the following proposals that:

A. Deployment of fixed links not servicing an end user directly should be considered as an alternative method to meet WCS and FWA spectrum deployment license conditions;

We do not believe that using fixed Point to Point links as a condition of appropriate spectrum use is acceptable. The spectrum was auctioned off with a condition that it would be used at an acceptable level within 5 years. There was a First Extension to year 8 of the license, and a second extension to the end of the license term. We believe that there is sufficient choice of equipment available to provide Point to Multipoint services, and that 10 years is sufficient time to deploy.

B. When a requirement is considered for fixed links not servicing an end user directly, it should be set at 15 links per million population, per the Tier 4 area at the end of the license term.

15 links per million population equates to 1 link per 66,666 population. Of the 172 Tier 4 areas, 127 could meet this requirement by deploying a single Point to Point link, an additional 31 areas would meet the requirement by deploying 5 or less links. This policy could effectively tie up 92% of the Tier 4 areas with no benefit to Canadian End Users.

There are existing spectrum bands available for Pont to Point Microwave systems with plenty of bandwidth to support this use. While a license holder should be able to deploy Point to Point systems that complement their Point to Multi-Point network, Point to Multi-Point should always be the primary use of this band and the basis of deployment license conditions.

We believe that the obligation to the license holder should be that the spectrum be used as it was originally intended – i.e. for Broadband Wireless Access. If a license holder is not able to deploy services in a reasonable amount of time (10 years has been more than reasonable), then that spectrum should be made available to providers who will.
Question (2): For the 2300MHz band, which of the two options is preferred?

For the 2300MHz band, we support Option 2 for licenses that have met the original deployment conditions. We think that 10 year terms are acceptable as long as timely reviews of deployment conditions are met. We support the ability to modify current licenses to reflect the portion of the service area that has coverage. All unassigned subdivided licenses to be returned to Industry Canada.

Question (3): For the 3500MHz band, which of the two options is preferred?

For the 3500MHz band, we support Option 2 for licenses that have met the original deployment conditions. We think that 10 year terms are acceptable as long as timely reviews of deployment conditions are met. We support the ability to modify current licenses to reflect the portion of the service area that has coverage. All unassigned subdivided licenses to be returned to Industry Canada.

In the USA, the Federal Communications Commission (FCC) and National Telecommunications & Information Administration (NTIA) have an initiative to make available 500MHz of spectrum over the next 10 years. Part of this initiative is freeing 100MHz of spectrum between 3550-3650MHz. Comments to the FCC from Commercial Mobile Carriers indicate no or little interest in the 3Ghz band for commercial mobile use. The Satellite Industry Association opposed high power mobile broadband deployment but would accept fixed deployments with protections that mirror those used for the existing 3650MHz band.

Motorola Solutions Inc. (MSI) and the Wireless Internet Service Providers Association (WISPA) propose an extension of the existing 3650MHz rules and licensing arrangement to 3550-3650MHz.

- Non-exclusive Licensing / Fixed Station Registration / Incumbent exclusion zones
- Licensees required to coordinate and cooperate to resolve interference issues
- EIRP limited to 1W/MHz occupied bandwidth
- Standard Out of Band Emissions limits – No Tx Channel Mask or Receiver Performance requirements.

December 12th 2012: Washington, D.C.—The Federal Communications Commission (FCC) today proposed to make available 100 megahertz of shared spectrum in the 3.5 GHz Band (3550-3650 MHz) using small cell and database technologies. The Notice of Proposed Rulemaking (NPRM) broadly reflects the innovative thinking of the President’s Council of Advisors on Science and Technology (PCAST), which issued a report this summer recommending spectrum sharing and small cell use in the 3.5 GHz Band. It also builds upon the FCC’s previous work to free up spectrum by promoting spectrum sharing and enabling innovative licensing techniques.
Question (4): For Option 1 – (detailed in section 7.1 of the consultation):

A. **Should license terms be extended by the same length for all licensees?**
   The 2300MHz band is designated WCS and may have mobility uses. Recognizing lack of LTE equipment in this band, we support the extension of the license term to allow licensees to meet the deployment requirements.

   The 3500MHz band is designated BWA and is probably not going to support mobile applications. There is equipment available today for this band, therefore we feel that waiting for LTE equipment is not a valid reason for not meeting deployment requirements. We do not support extending the terms of current licensees that have not met deployment requirements, licenses should be returned to Industry Canada at the end of the current term.

   a. **If so, should they be extended by the same length for all licenses?**
      No, current licenses have different expiry dates that should be harmonized.

   b. **Or, should the license terms be extended to a fixed date for all licensees?**
      Yes, for the 2300MHz band, all licenses could be extended to December 2017 allowing time to meet deployment requirements. For the 3500MHz band, only licenses that meet deployment requirements be extended to Dec 2017.

B. **Should the deployment requirement also be extended to the end of the proposed term?**
   For the 2300MHz band, deployment requirements should be reviewed annually to determine if global harmonization will make this a viable band.

   For the 3500MHz band, we do not support extending the license term or deployment requirements. All licenses that do not meet requirements by the end of their current term should be returned to Industry Canada.

C. **In considering an extension of the license term, do you expect equipment in the 2300 MHz band to become available soon enough to achieve the deployment requirements by December 2017?**
   It is possible; however there are a couple of important attributes to this frequency band. First, relatively poor propagation characteristics will impact indoor coverage, an issue already quite visible in the 3G HSPA networks deployed in the 2.1GHz band. Second, poor propagation characteristics also translate into smaller cell radius – hence the need for more cells, which adds expense and complexity. Lastly and most importantly, frequency has a direct impact on network costs, as both OpEx and CapEx increase significantly with higher frequency.
D. In considering an extension of the license term, do you expect LTE equipment in the 3500 MHz band to become available soon enough to achieve the deployment requirements by December 2017?

No, poor propagation characteristics make the 3500MHz band virtually useless for mobile applications. We do not see LTE equipment manufacturers dedicating any resources to spectrum higher than 2400MHz.

E. Are there and additional considerations that should be taken into account by Industry Canada?

A search if the Industry Canada Radio Equipment List (REL) for the band 3450-3650Mhz yields results of 146 models of certified radio equipment. There is no reason for deployment conditions not to be met.

Question (5): For Option 2 (detailed in section 7.2 of the Consultation):

A. Given the potential upcoming changes, is 10 years an appropriate term for new licenses issued through the renewal process?

Yes, however there should be timely reviews of the deployment conditions to ensure that spectrum is being utilized at all times. If a license holder removes the equipment, then the license should be returned to Industry Canada.

B. Should deployment requirements apply to new licenses under the renewal process? If so, what should the deployment requirements be?

Deployment requirements should remain as issued in the original license auction. Licenses can be divided geographically to allow license holders to meet requirements, unused licenses should be returned to Industry Canada.

C. Are there any additional matters that should be considered by Industry Canada when issuing a new license for a new term?

Spectrum harmonization with the US should always be considered when issuing new licenses. The FCC decision to make 100MHz of spectrum available from 3550 – 3650MHz has a great impact on what manufacturers of radio equipment will make. This also has an impact on the current Industry Canada FDD channel plan in the 3500MHz Spectrum Utilization Policy.
Question (6): Are there any other options for the license renewal process that Industry Canada should consider?

Silo Wireless is committed to the delivery of broadband services to rural and remote areas of Canada and supports making spectrum available to companies who are willing to provide these services. We are not in support of spectrum being held by a few entities for the purpose of keeping competition out of the market place. Radio Spectrum is a resource that belongs to Canadians and needs to be used in an efficient manner. For these reasons, we would like to propose the following licensing scenarios:

1. Move the complete 3475 to 3650MHz band into the same licensing structure as the 3650 to 3700MHz band, shared spectrum lightly regulated licensing. This approach provides 225MHz of spectrum space for the delivery of broadband services.

2. Reallocate the current 3500MHz band in the following manner. Blocks G,H,I,J (3550 to 3650MHz) be aligned with the FCC decision to make this shared spectrum. Blocks D,E,F (3475 to 3550MHz) be converted to TDD exclusive license blocks.

3. A hybrid system where Tier-4 blocks with a population over 150,000 people retain the current licensing policy, and all other Tier-4 blocks use one of the two above options. This allows the 31 Tier-4 Urban areas to benefit from exclusive licenses without restricting the delivery of broadband services in rural areas which will benefit the most from the additional spectrum.

Question (7) Industry Canada invites comments on the proposed wording of the condition of license related to the license term (detailed in section 8 of the consultation):

We have no comments on the wording of the condition of license term.
Conclusion

Industry Canada has a mandate to facilitate the provision of Broadband Services to Canadian Residents, there is licensed spectrum available to meet this mandate, and there are companies ready to utilize the spectrum to deliver the services. Over the last eight years, it has been apparent that many licensees are reluctant to provide wireless broadband infrastructure to the rural areas. At the same time, many Wireless Internet Service Providers have made investments in serving those areas. The full benefits of Rural Broadband can only be realized if the key players also make a change in working cultures and embrace spectrum sharing. We believe that your decisions have to be based on the ability to deliver Broadband Services in a timely manner, and on par with services available in urban areas. In the near term, this may be one of the most efficient and impactful actions that Industry Canada can take to foster expansion of access to Rural Broadband.