

**BEFORE THE CANADIAN RADIO-TELEVISION  
AND TELECOMMUNICATIONS COMMISSION  
IN THE MATTER OF  
AN APPLICATION BY TNW WIRELESS INC.**

**(APPLICANT)**

**PURSUANT TO THE PART 1 OF THE *CANADIAN RADIO-TELEVISION AND  
TELECOMMUNICATIONS COMMISSION* RULES OF PRACTICE AND PROCEDURE  
AND SECTIONS 24, 25, 32, 47, 55, AND 61 OF THE *TELECOMMUNICATIONS ACT***

**DIRECTED TO  
BELL MOBILITY INC.**

**AND**

**TELUS COMMUNICATIONS COMPANY**

**(RESPONDENTS)**

**RELATING TO BELL MOBILITY INC. AND TELUS COMMUNICATIONS  
COMPANY REFUSAL TO PROVIDE TNW WIRELESS INC. WITH MANDATORY  
WHOLESALE ROAMING AGREEMENTS REQUIRED UNDER TELECOM  
REGULATORY POLICY CRTC 2015-177 AND AS SPECIFIED IN THEIR CARRIER  
ACCESS TARIFFS, CRTC 15011 ITEM 100 AND CRTC 21642, ITEM 233  
RESPECTIVELY**

**RESPONSE TO INTERVENORS**

**OCTOBER 9, 2018**

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## **1.0 Introduction and Summary**

1. This document was prepared in response to submissions to the Canadian Radio-television and Telecommunications Commission (the “CRTC” or the “Commission”) on October 1, 2018 by Bell Mobility Inc. (“Bell”), Telus Communications Inc. (Telus), and Rogers Communications Canada Inc. (“Rogers”) (collectively the “Intervenors”) in their response to information submitted to the Commission by TNW Wireless Inc. (“TNW Wireless”) on August 27, 2018, related to questions posed to TNW Wireless by the Commission on July 13, 2018 in connection with the TNW Wireless Part 1 Application originally filed with the Commission on July 3, 2017 (the “Application”) (CRTC file 8620-R63-20105675).
2. While the current document contains certain information already provided to the Commission by TNW Wireless in previous submissions, in their most recent submissions the Intervenors for the most part have simply re-stated the same position and information they provided in previous submissions on this file.
3. While it is not our intent to provide redundant information to the Commission, due to the voracity of the Intervenors’ opposition to the TNW Wireless Application in their most recent submissions coupled with continued misinterpretation of the proposed technology and what we believe to be incorrect and self-serving interpretations of the Commission’s policies and decisions, we are compelled in this response, to provide certain information again with additional context where relevant.
4. TNW Wireless has not changed its request for final relief in its Application except to the extent that some aspects may need to be updated based on subsequent decisions, rulings etc. by the Commission.
5. TNW Wireless has demonstrated clearly that it meets all conditions to obtain mandated roaming agreements including the legal ability to utilize its licensed spectrum.

## **2.0 Regulatory Issues**

### **2.1 GSM Services and Territoriality**

6. The Intervenors in their current submissions, again place heavy emphasis on the concept of territoriality as a justification for why TNW Wireless should be denied its request for mandatory roaming.
7. Innovation Science and Economic Development (“ISED” and formerly Industry Canada) issues licensed spectrum in a 2-way intrinsic factor element license. One factor is a specific Radio Frequencies Band and the other is a defined Service Area. One component cannot be dissociated from the other. As such, ISED-issued licenses are divided in service areas and at the same time on

multiple layers of spectrum. In Canada certain bands are considered unlicensed spectrum for public use by an operator and its users, and some are licensed bands for Mobile Operators such as Cellular, PCS, AWS, MBS, BRS bands, all of which are used in 2-factor licensed elements.

8. Therefore the use of GSM-based services using licensed spectrum **without the physical presence within the Service Area** or the **physical presence without the use of said licensed spectrum** is simply not a derivative license to neither include nor exclude other operators from offering the same type of GSM-based service within other carrier service areas.
9. To our knowledge there are currently only two possible ways to offer GSM-based services by a licensed mobile service provider to its users wherever they are located.
  - a. They use traditional MSC/EPC (UMTS and LTE) core networks from manufacturers such as Ericsson, Huawei, Nokia, ZTE, etc. with the IP Multimedia Subsystem (“IMS”) functionality already integrated to their core network for automatic **Attachment** and **Registration** to those cores (and HLR and HSS database) while using Wi-Fi-Calling, and this similar as of when they are directly on their PMN Radio Access Network, or;
  - b. They use an iPCS technology with Wi-Nodes and cloud spectrum

TNW Wireless is not aware of any other method.

10. The first method provides the advantage of having been developed and packaged in turnkey solutions but with the significant disadvantage for the small operators of being very expensive (>\$50 million) and not being versatile or open sourced as it only uses proprietary technologies. Also the use of those core networks from Chinese vendors is currently being reviewed and may be restricted or banned in Canada<sup>1</sup> (as well as and in other Western countries<sup>2</sup>) and the condition to deploy them if possible may turn out to be extremely expensive.
11. Furthermore, in conjunction with the use of proprietary technologies only a specific set of mobile devices are compatible with the required IMS functionality and therefore only specific devices work with such technology. Mobile users are therefore limited in their choice of available compatible devices.
12. The second method is with iPCS which operates and uses much less expensive MSC and EPC core networks such as those provided by vendors such as Aricent and Adax - although, there is the disadvantage of not have been originally packaged as a turnkey solution. However the iPCS

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<sup>1</sup> Globe and Mail July 30, 2018, <https://www.theglobeandmail.com/politics/article-ottawa-sees-chinese-owned-huawei-as-major-security-threat-senior/>

<sup>2</sup> Reuters July 11, 2018 <https://www.reuters.com/article/us-australia-china-huawei-tech/australia-prepares-to-ban-huawei-from-5g-project-over-security-fears-idUSKBN1K111O>

technology provides the important advantage of being able to work transparently over any type of MSC and EPC and will work with the upcoming 5G core networks and on any type of iOS and Android-based smartphone operating systems.

13. With the use of the second method, the other significant advantage is, that by using inexpensive core network technology infrastructure, combined with an open source Wi-Node network element which is compatible with most, if not all, smartphones currently being used without the need of specific IMS functionality in smartphone operating system, the service can be offered at a more reasonable rate to Canadians.
14. The Intervenor would have us believe that providing GSM-based services to end users in Canada is a matter of “exclusion” versus “inclusion”. In order to provide GSM-based services, an operator needs to have licensed spectrum, be a member of the GSM Association and operate a Radio Access Network (“RAN”). However, an operator does not need to have licensed spectrum coverage everywhere they operate.
15. The Intervenor would further have us believe that the “territory” of Canada works on the basis of exclusion of licensed spectrum, meaning that if an operator **does not** hold a specific type of licensed spectrum in an area, then GSM-based services cannot be offered in the same area by other means. This is simply incorrect.
16. In its October 1, 2018 submission Rogers, attempts to ridicule the situation where an iPCS subscriber might be located thousands of kilometers away from its core network infrastructure:

*...[iPCS] is the artificial use of TNW’s licensed spectrum on its small mobile wireless network in Northern Canada, while its customers are wirelessly connected using Wi-Fi access thousands of kilometers away. As Rogers explained in its prior interventions to this proceeding, there is no technical need for the iPCS service to utilize any part of TNW’s radio access network (RAN) and its licensed spectrum while a customer is using a Wi-Fi hotspot in another part of the country<sup>3</sup>*

17. Rogers does not just err in its explanation and understanding of how wireless networks actually works and can work, but furthermore, Rogers’ subscribers while attached to their core networks through a Rogers base transceiver station (“BTS”) or through a public Wi-Fi Internet connection are also sometimes located thousands of kilometers away from Rogers’ own core network and licensed spectrum service area.

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<sup>3</sup> Rogers Communications Canada Inc. – supplementary comments in TNW Wireless Inc.’s Part 1 Application – Wholesale Roaming Agreements required under Telecom Regulatory Policy CRTC 2015-177, para 18.

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18. The use of multiple frequencies (licensed and unlicensed) to deliver GSM-based service is also nothing new. As an example, several operators around the world, use 1,700 MHz bands for one leg of the transmission path and 2,100 MHz bands for another leg. Some will use 1,700 MHz for both legs. In Canada the combination of the use of 1,700 and 2,100 MHz spectrum has been grouped under the Advance Wireless Services (AWS), which is not necessarily the case in other countries.
19. Similarly, iPCS uses a combination of unlicensed 2.4, and 5.8 GHz unlicensed bands for a portion of its transmission path and 850 MHz for the other segment of the path to our core network in order to deliver end-to-end GSM-based services the vast majority of the time its users are online.
20. Spectrum licenses granted by ISED are for the use of a specific band and bandwidth within a specific geographical area/footprint. It is important to note that this does in no way preclude other GSM-based service providers, even if they do not own licensed spectrum in that footprint, from providing GSM-based services if such services are provided without the use of licensed spectrum.
21. Essentially, an ISED license provides its licensee with 2-way factor elements with intertwined specifications; within a specific area generally defined by longitude and latitude (although often not in straight lines) and the exact frequency band(s) and bandwidth that can be used. The Intervenor's are asserting that if an operator does not have such a type of license then they cannot offer by their own means of providing GSM-based services in the same territory and therefore cannot make use of incidental network roaming service on a different spectrum layer within the area. Again, we believe this incorrect.
22. GSM-based services can be offered on a permanent basis by using or not using licensed spectrum. One is not mandatory for the use of the other. The Intervenor's seem to contend that as long as they hold a specific license in a specific territory (Cellular, PCS, AWS or other) and another operator does not but uses a different unlicensed mode to provide GSM-based services on a permanent basis, that this is not permitted. Yet again we believe this is incorrect.
23. What the Intervenor's are asking the Commission to declare, is that licenses granted by ISED are beyond the scope of granting specific spectrum use, and instead that the licenses are a "permit" to exclude an operator to provide GSM-based services in any territory in Canada using primarily licensed and unlicensed spectrum and secondarily to access third party networks only when required. Essentially this would be a declaration that ISED spectrum licenses are also territorial marketing licenses which we do not believe to be the case.
24. If the Commission were to follow this logic however, it would question the legitimacy of a wireless operator such as Shaw Freedom Mobile, which has a considerably smaller licensed spectrum footprint and smaller network infrastructure than the national providers but market nationally within their "home network" and what they refer to as "Away Canada Network".

25. While TNW Wireless makes use of its licensed spectrum within its network footprint and provides GSM-based services to its users elsewhere in Canada by not using any radio frequency licensed to 3<sup>rd</sup> parties at the same time, TNW does not have its users outside its “territory”. It is therefore a false and misleading interpretation by the Intervenors as to what rights are actually granted under the terms of the ISED spectrum licenses. An ISED license does not grant exclusive rights to provide GSM-based services within a defined territory.
26. When TNW Wireless provides GSM-based services on an iPCS device using a combination of its own licensed spectrum and simultaneously using unlicensed spectrum and does not make use of any spectrum licensed to any other operator, and so users cannot be deemed to be outside its territory nor within the territory of another operator.
27. The Telecommunications Act and Canadian Telecommunications Policy and/or the Client Procedures Circular (CPC) 2-0-17 for Conditions of License for Mandatory Roaming does not have any provision or direct correlation for the type of spectrum licensed and the provision of GSM-based services.

## 2.2 TNW Subscribers using iPCS while on Wi-Fi Bands are not Roaming

28. In their most recent submissions, the Intervenors have again failed to provide any technical or regulatory rationale for why a TNW Wireless subscriber, *while* on Wi-Fi bands, *while* connected remotely to the TNW Wireless home network through a Wi-Node using TNW Wireless’ RAN with licensed spectrum, *while* the 3GPP radio on their device is turned off, *while* detached to any VPMN and most importantly, *while* not using licensed spectrum or any network resources of any other VPMN, can be considered roaming on any visited network. It is a technical impossibility.
29. The Intervenors rely solely on the abstract concept of physical location of the subscriber’s device even in a circumstance where they would have no way of knowing where it was located at a specific point in time. Roaming is a technical concept and therefore the location of the device cannot be a determinate of roaming and there is no regulatory concept which would support this notion.
30. The Intervenors have in their current submissions further failed to provide any answer to the question of: *which visited network would a TNW Wireless subscriber be roaming on under such circumstances*.

For clarity, if a subscriber would be physically located in an area that the Intervenors considered to be within their “territory” but is not attached to a VPMN nor even making use of any licensed spectrum, being therefore completely invisible to a visited core network, which of the Tariffed Wholesale Roaming Agreement would TNW be breaching under allegations of being in a permanent/resell roaming situation:

- (a) Bell’s ?
- (b) Telus’ ?

- (c) Rogers' ?
- (d) Or all three at the same time?

31. Instead the Intervenor rely on dubious terms such as “artificial”, “unnatural”, “inefficient”, “regulatory gaming” etc. which are neither technical nor regulatory terms but rather used for the specific purpose of denigrating the technology and eliciting a negative and emotional response by the reader. Whether or not the Intervenor approve of the technical choices TNW Wireless has made is irrelevant and beyond the scope of a proper intervention as it would be beyond the scope for us to comment on any of the Intervenor’s or any other wireless operators’ technical approaches.

There is an often-repeated pop culture “fact” that bumblebees violate the laws of physics and aerodynamics when they fly. The real fact is that they do fly and their approach works for them within established technical rules of flight - period. Far be it from us to accuse their evolutionary choice as being “artificial”, “unnatural” or even “inefficient”

### **2.3 Incidental versus Permanent Roaming**

32. In their most recent submissions, the Intervenor have also failed to provide any support for their position that TNW Wireless subscribers using iPCS will be in a permanent roaming situation. TNW Wireless has clearly established that while its subscribers are on Wi-Fi, they cannot be deemed to be roaming and that they are making use solely of the company’s HPMN. The argument is again based on physical location of the device and distance between the device and the TNW Wireless HPMN rather than relative use of home versus visited network resources which is the intent of the policy.
33. We remind the Commission that by Bell’s own statistics as cited in CRTC 2018-97, state that Canadians already use Wi-Fi between 76 and 84% for mobile data. The notion that a TNW Wireless subscriber would be in a permanent roaming situation as iPCS-enabled phones automatically detach themselves from any VPMN when on Wi-Fi is contrary to Bell’s own statistics and makes no sense.
34. It is the relative use of visited versus home network resources rather than the physical location of the subscriber or device that is at the heart of the Commission’s policy on incidental roaming. As such under Telecom Order CRTC 2017-433 directed Bell and Rogers for example, to remove from their proposed tariffs;

*. . . the clauses prohibiting customers from gaining access to roaming services if their mobile phone numbers are associated with exchanges situated outside their home carrier's network footprint.*<sup>4</sup>

And for Rogers to remove from its proposed tariffs;

- *the condition that the wholesale roaming customer and its resellers are not to sell or market their services, other than prepaid top-up cards, at physical retail locations situated outside the home carrier's network footprint;*
- *the condition prohibiting the wholesale roaming customer and resellers from marketing or promoting services in a manner that would result in their end-users permanently roaming; and*
- *the condition that the wholesale roaming customer is not to provide, and ensure that its resellers do not provide, a technological device to their end-users that has as its sole or predominant purpose permitting them to engage in excessive roaming.*<sup>5</sup>

And regarding permanent roaming restrictions, the Commission's analysis and determinations are:

- *Accordingly, the Commission determines that permanent roaming restrictions are not required in the incumbents' tariffs. The Commission therefore directs*
- *the incumbents to remove the proposed restrictions related to permanent roaming from their tariffs; and*
- *Bell Mobility and TCC to remove from their tariffs the proposed clauses requesting that wholesale roaming customers provide a corporate certificate attesting that they have complied with permanent roaming conditions.*<sup>6</sup>

The Commission further drew the following Conclusion;

*If disputes arise between the incumbents and their wholesale roaming customers with respect to whether roaming is **surpassing an acceptable level** [emphasis added], these parties may request that the Commission determine whether a wholesale roaming customer is making improper use of the service, or has permitted an MVNO to do so.*

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<sup>4</sup> CRTC 2017-433 para 46.

<sup>5</sup> CRTC 2017-56 para 55.

<sup>6</sup> CRTC 2017-56 para 77.

35. Therefore, in our opinion the Commission's directives and conclusions regarding incidental versus permanent roaming is a question of reasonableness based on relative use of home versus visited network resources, and the determination of reasonableness is at the prerogative of the Commission.
36. The need for a mandatory roaming policy is self-evident as recognized in the Commission's Telecom Regulatory Policy CRTC 2015-177. Simply stated the policy recognizes that only the major carriers have the resources to build out national networks and in order to be economically feasible, smaller companies need to have access to the national networks. We have argued in previous submissions and continue to believe that a small number of robust, profitable national networks within a regulated environment is good for the industry. However, as we will outline later in this document, the significant benefits that have accrued to this oligopoly through regulatory protection must be balanced by their obligation to other industry players and the Canadian public.

#### **2.4 TNW Wireless' Use of Wi-Fi does not Constitute a Means of Extending its Home Network**

37. Very much at the heart of the Intervenor's continued objection to TNW Wireless' application is its use of Wi-Fi to remotely access its home network. On the other hand, conspicuously absent is the justification for their own extensive, increasing use of and heavily promoted use of public Wi-Fi to access their own networks and deliver services.
38. TNW Wireless has provided extensive technical information regarding how iPCS works in conjunction with the Wi-Node including 150 plus pages of patent file application information. We fail to see why the Intervenor still find this difficult to understand.
39. Key to their arguments remains the Commission's determinations in CRTC 2017-56, 2017-57 and most recently 2018-97 regarding the use of Wi-Fi (again notwithstanding their own use). They are however very selective in their interpretation of the Commission's determination including selective context and intent.
40. First and foremost, the Commission's determinations regarding Wi-Fi relate to MVNO's and "Wi-Fi-first" operations and the Intervenor are still attempting to lump TNW Wireless into one or both of these categories. TNW Wireless has reaffirmed in previous submissions that it is a "facilities-based" operator with licensed spectrum and is not an MVNO or Wi-Fi First service provider neither of which has licensed spectrum or a true home network. There is no minimum threshold for what constitutes a facilities-based operator, only that it needs own licensed spectrum and operate its own network.
41. For example, in the Bell October 1, 2018 submission, it cites CRTC 2017-56 paragraphs 31, 32, and 78, all of which refer to MVNOs.
42. The distinction is not lost in for example, Telecom Decision CRTC 2017-57 whereby under the Commission's analysis and determinations, it states:

*In light of the above, to the extent that Ice Wireless permits Sugar Mobile end-users to access RCCI's network **without also using the Ice Wireless home network at least some of the time**, [emphasis added] RCCI [Rogers] is not mandated, pursuant to the interim tariff or the framework underpinning the final tariff, to continue to provide mandated wholesale roaming service to Ice Wireless, consistent with the terms set out in paragraph 47 below.*

Sugar Mobile in the delivery of its services, was connected to the Rogers network at all times – even when delivering services on Wi-Fi and was a true Wi-Fi First service provider. Sugar Mobile clients were deemed to be in a permanent roaming situation and Wi-Fi was used to extend the home network of Ice Wireless via a Voice-over-IP application. Notwithstanding this situation, the Commission's wording "**at least some of the time**" would indicate that the use of Wi-Fi in itself is not the issue but rather the use of Rogers' network resources on a permanent basis, and the **non-facilities** based nature of Sugar Mobile's operation.

43. Shaw/Freedom Mobile uses Wi-Fi including public Wi-Fi to provide GSM-based services to its clients while their clients are outside its licensed spectrum footprint and supplements this through roaming agreements with roaming partners (their "away network"). However there is nothing precluding a subscriber residing in the "away network" from purchasing a Shaw/Freedom Mobile service and being in a true "permanently roaming" situation even when on Wi-Fi as the device would be connected to the roaming partner's network at all times when in the "away network" for the use of voice and text services.
44. With the Release of CRTC 2018-97, we believe that the distinction between facilities-based providers and MVNO/Wi-Fi-first service operators and the use of Wi-Fi is even clearer.
45. The following is a review of the Commission's analysis and determinations under CRTC 2018-97;

*53. Under current Commission rules, only wireless carriers (i.e. **wireless companies that own and invest in network facilities such as spectrum and towers**) are eligible to **use mandated wholesale roaming**. Wholesale roaming has always been understood to be incidental, and not intended for permanent use. This distinction encourages ongoing investment in facilities-based networks by wireless competitors, **while supporting their competitive mobile service offerings** [emphases added]*

Under criteria and stated deployment, TNW Wireless is eligible to use mandated wholesale roaming.

*54. The purpose of defining "home network" for wholesale roaming is to identify when an end-user is within a wholesale roaming customer's own network footprint versus when the end-user is incidentally roaming on another carrier's network [emphasis added]*

TNW Wireless has clearly outlined its position of when a customer is on its home network versus when it is incidentally roaming on another carrier's network. This cannot be based on location of the device alone but rather the actual connection to an HPMN or VPMN.

*55 If public Wi-Fi facilities, which are not owned or operated by wireless service providers and require no infrastructure investment, were to be included in the definition of "home network," there would be no reliable or practical way of distinguishing between a service provider's home network and all other network equipment connected to the Internet.*

Since iPCS technology under Wi-Fi detaches from any VPMN and connects directly to the TNW Wireless HPMN, it is solely on its home network and using its own licensed spectrum **and can be clearly distinguished as such.**

*56 As such, if wholesale roaming were made available to a company that did not own or operate its own network (i.e. a Wi-Fi-first service provider), [emphasis added] that company's customers would not be roaming, as that term has always been understood within the industry and the Commission's framework up to this point. Instead, the company would have wholesale access to a national wireless carrier's network on a permanent basis.*

The Commission makes it abundantly clear as to what is "a Wi-Fi-first service provider" being:

*. . . a company that did not own or operate its own network<sup>7</sup>.*

TNW Wireless does operate its own network and is not a "Wi-Fi-first" service provider as per the Commission's definition of such. Furthermore we believe we have demonstrated unequivocally that iPCS service while on Wi-Fi does not use or have access in any way to or user the resources of a national wireless carrier's network.

*57 The Commission has held multiple public proceedings, in which significant time and energy have been invested, with a view to establishing the rates, terms, and conditions associated with mandated wholesale roaming. Providing certainty to wireless carriers is essential to their investment decisions and, in the case of competitors, solidifying their competitive positions. If the Commission were to alter the meaning of roaming in Canada by broadening the definition of "home network" to include Wi-Fi access, doing so would introduce regulatory uncertainty into the market.*

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<sup>7</sup> Telecom Decision CRTC 2018-97 para 56.

TNW Wireless concurs that the wireless or any other regulated industry should not be in an environment of regulatory uncertainty and we are not proposing to introduce this. However reduction of regulatory uncertainty should not be used by the national carriers as a means to stifle innovation and competition. The Commission's focus in its determination on this point we believe, is for non-facilities-based service providers such as MVNOs and Wi-Fi-first service providers and non-facilities-based operators. We again emphasize that our use of Wi-Fi does not constitute an extension of our home network

In its Telecom Decision CRTC 2018-97 the Commission further stated:

*58 From a regulatory perspective, there should be a clear line drawn between incidental access to the national wireless carriers' networks (wholesale roaming) and permanent access to the national wireless carriers' networks (resale, or MVNO access). These two types of network access serve different purposes. Wholesale roaming facilitates wireless carriers' entry into and competition in the market, while wholesale MVNO access facilitates service-based competition. The Commission intentionally made this distinction in the wholesale wireless framework and expressly chose not to mandate the latter service, given its concerns that it could negatively impact investment, particularly from wireless competitors and outside urban core areas.*

TNW Wireless intends to sell its own service and deliver services primarily through its own facilities-based network and is not designed to resell national network services. We believe we have demonstrated unequivocally that the service is not that of an MVNO and will not be permanently roaming. As to the question of investment, we address this in more detail later in the next section.

## **2.5 Granting TNW Wireless' Requested Relief will not create a Disincentive for Investment**

46. The Intervenors again suggest in a fairly abstract way, that granting TNW Wireless' relief will somehow create a disincentive for investment in the national networks and a further disincentive for TNW Wireless to invest in its own network. This is an absurdity on several levels. The notion that allowing TNW Wireless to roam incidentally on their networks will in any way cause them to reduce their infrastructure spending is too ridiculous to even contemplate. If a small company like TNW Wireless would in any way cause Bell, Telus or Rogers to decrease its investment in its network then these companies cannot be in very good shape. None of the Intervenors nor any other intervenor in these proceedings has stated to the Commission that granting TNW Wireless' requested relief will result in a decrease in their company's investment in infrastructure.
47. If the implication is that by granting TNW Wireless it relief, that the floodgates will open for other companies, this is again a very weak argument. TNW Wireless has proposed a very specific technical approach as a facilities-based operator holding licensed spectrum which it believes to be

compliant with the current regulatory framework and which utilizes roaming network resources only incidentally. This option is not available to MVNO's, Wi-Fi first service providers or any company "off the street" and therefore has very limited applicability beyond TNW Wireless.

48. TNW Wireless resents the assertion that granting its requested relief would create a disincentive to invest in its own network. There is no basis for this assertion and the only reason can be to try to cast doubt on TNW Wireless' plan. TNW Wireless has provided evidence of its intent to develop its network in geographical areas that the Intervenor have as yet to show any interest in.
49. Nor is TNW Wireless requesting anything that would lead to "regulatory uncertainty". We are making a **very specific request under very specific circumstances** which we believe is simply to access services that are already mandated – and services the company will pay for under established tariffs. This cannot be considered regulatory uncertainty.
50. Notwithstanding the concept of regulatory certainty should not be an excuse by the Incumbent National Carriers to reduce competition.
51. In fact, the real incentive for companies to invest in their networks is profit, and the Incumbent Wireless Carriers do very well in that category as noted in previous submissions. Updating this information, the data provided in the 2017 Communications Monitoring Report<sup>8</sup> shows that Bell, Telus and Rogers consistently hold approximately 90% of the market and that their relative market share has changed very little in the last few years. Furthermore their respective public filings show that wireless service is their single most profitable product line.
52. There can be no more powerful incentive for investment than the profit accrued from that investment. The 2017 Communications Monitoring Report reported that investment in wireless infrastructure is quite significant, typically over \$2 billion per year. However the return on this investment is not only good, it is staggering by standards in any industry. The chart below is based on the 2017 Communications Monitoring Report and shows that the wireless industry EBITDA (earnings before interest, taxes, depreciation and amortization) is consistently over 40% and **rending upward**.

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<sup>8</sup> <https://crtc.gc.ca/eng/publications/reports/policymonitoring/2017/cmr5.htm#s55>

	Year		
	2014	2015	2016
Wireless Revenue (\$ billions)	22	23.6	24.4
EBITDA (\$ billions)	8.9	10.5	10.6
EBITDA (% Revenue)	40.6%	44.6%	43.4%
Investment (\$ billions)	2.3	2.1	2.3
EBITDA vs Investment	<b>387%</b>	<b>500%</b>	<b>461%</b>

The 2017 results for the industry may prove to be even better. The 2017 BCE Inc. (Bell Mobility Inc. parent company) annual report for example, shows an increase in wireless revenue of 10.1% and an increase in EBITDA of 9.1% from 2016. More importantly, the actual percent EBITDA related to wireless revenue grew from 42% in 2016 to **47.9% in 2017**<sup>9</sup>. This means for every dollar Bell charges its customer for wireless services, it makes a profit of nearly 48 cents.

Furthermore the 2017 Communications Monitoring Report shows clearly that the larger the company, the higher the EBITDA, with small companies in the telecommunications sector typically accruing less than a third of EBITDA relative to large companies.

53. Therefore Bell, Telus and Rogers will continue to invest in wireless infrastructure because it is very profitable to do so. The incentive to invest is enhanced by the current industry structure of three dominant national wireless operators whereby investment in national infrastructure is necessary to maintain their respective competitive positions.
54. TNW Wireless has the same incentive to invest in its network as with any other wireless operator albeit to a much smaller scale. Investment in its network and innovation fuels growth and profit. The Intervenors have no basis to suggest otherwise.
55. In fact, TNW Wireless still believes that if there exists any disincentive for the dominant wireless carriers to invest in infrastructure, **it is their own ever-increasing use of public Wi-Fi to deliver wireless services**. As TNW Wireless clearly demonstrated in its submissions of April 13, 2018 and May 14, 2018, virtually all wireless operators offer and promote the use of public Wi-Fi for wireless calling – whether it be from home, work, Starbucks, Tim Hortons, etc. Use of Wi-Fi by the subscriber is treated by the wireless plans in the same way as calls over their wireless network without any guarantee of quality of service and hence represents a significant decrease in the wireless carrier’s network operating cost and decrease in licensed spectrum use for the calls and ultimately higher profit with little benefit accruing to the subscriber. At the same time, this reduces the demand on their respective wireless networks – and so a powerful disincentive to invest.

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<sup>9</sup> BCE Inc. 2017 Annual Report, pages 49-51

56. In all the submissions by wireless operators related to this Application, there has been very little defense or even mention of this reality. The hypocrisy of the Intervenors' overall position on the matter is self-evident and clearly self-serving no matter how they try to argue around it.

## **2.6 Granting TNW Wireless' Requested Relief would benefit the Canadian Consumer in General and Certain Segments in Particular**

57. In Bell's current submission, it notes that virtually every wireless carrier has opposed the TNW Wireless Application<sup>10</sup>. Given the levels of profit in the industry and level of market dominance from few players, this should not come as any surprise to the Commission and one would never expect a company to support its competitor or potential competitor's position.
58. What Bell conveniently fails to point out is the other side of the equation. While wireless carriers oppose the TNW Wireless Application, the Application has the support of the Public Interest Advocacy Centre ("PIAC"). PIAC is a Canadian not-for-profit which advocates for the fair and balanced interpretation and application of Canadian Law in order to preserve the public interest and hence advocates for the overall Canadian good. We note that conspicuously absent in opposing interventions and reason for their opposition, is any mention of public good.
59. TNW Wireless has been arguing from the beginning that it recognizes the difficulty the Commission faces in balancing the promotion of a healthy and robust wireless industry with the desire to reduce the cost of wireless services to Canadian consumers, all within a regulated environment.
60. As we demonstrated in the previous section, the wireless industry is in high growth, particularly with respect to profitability. The projections of the dominant national carriers based on their annual reports are that this trend is expected to continue. However there has been no sharing of their good fortunes with the Canadian consumer. According to the 2017 Communications Monitoring Report, the average revenue per user ("APRU") has been increasing since 2012 and in 2016 was \$64 per month, and as we have shown, profit on that revenue has also been going up over time. Also as pointed out earlier, wireless subscribers accrue no monetary benefit from the increasing use of Wi-Fi-Calling as such calls are treated in the same way as calls on the operator's wireless network.
61. This means that the network operations cost of wireless services is slowly shifting away from wireless operators to the wireless subscribers to the extent that subscribers pay for the Internet bandwidth (or their employers, neighbors, etc. pay for this) as well as to third party Wi-Fi providers

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<sup>10</sup> Bell Submission October 1, 2018, Part 1 Application by TNW Wireless Inc. relating to wholesale roaming agreements required under Telecom Regulatory Policy CRTC 2015-177, *Regulatory framework for wholesale mobile wireless services* (TRP 2015-177) – Supplementary Comments, para 15

through public access. By encouraging its subscribers to turn on the Wi-Fi-Calling feature for voice and text communication (and data indirectly), wireless operators are releasing important use of their licensed spectrum when their users are within their service areas and are only using voice and text network resources over IP connectivity at very minimal marginal cost to the operator, therefore freeing up licensed spectrum bandwidth for the continued and steady growth of data consumption for the other subscribers that are not on Wi-Fi at the same time— customers that are paying high cost for data consumption over LTE for example.

62. In other words, the Intervenor continue to charge the exact same amount for the monthly recurring charges for a user to have a wireless GSM-based phone number for Voice and SMS capability with a certain amount data consumption plan over public wireless networks and which data is not made available the following month if not fully consumed the previous month. By doing so, with little or no new wireless competition, Canadians will continue to pay the same amount per month with no real financial benefit as they continue to be use more and more Internet Wi-Fi Calling application over third party Internet access at the great benefit of the Intervenor.
63. Nevertheless TNW Wireless does not believe that iPCS is a universal wireless offering and will not appeal to all consumers. We believe it will be attractive to the Canadian consumer who is looking for a low cost option for basic wireless services. As such we believe that iPCS would only serve to expand the wireless market to underserved consumers which supports many of the Commission's underlying policy objectives.

## 2.7 License issues

64. Both Bell and Telus in their October 1, 2018 submissions attempt to cast doubt on TNW Wireless' spectrum licenses questioning both the compliance approval given by ISED and ownership of the licenses. In fact Telus devotes much of its opposition in its current submission to this point. The Commission should see this for what it is - an attempt to hedge their position to deny roaming on other grounds in the event that the Commission rules to grant TNW Wireless' relief.
65. With respect to the ISED letter of compliance, Bell suggests ISED based its decision from information provided by TNW Wireless. This is completely incorrect and Bell is well aware that ISED would not issue a compliance letter on this basis. ISED compliance was obtained only after ISED conducted its own extensive field tests using its own staff and only after such results were remitted to the Spectrum Management Operations Branch.
66. TNW Wireless has provided the Commission with full support to show that TNW Wireless **is simply the new name of RuralCom Corporation** and is therefore the same corporate entity. The spectrum licenses were never transferred to any other corporate entity. While they remain with ISED under the name of RuralCom due to bureaucratic reasons is irrelevant – it is the same company. Nothing has change, other than in December 8, 2016 the shareholder of RuralCom Corporation sold its shares to Investel Capital Corporation Canada

67. With respect to the deemed transfer, we find Telus' accusation that TNW Wireless omitted material facts to the Commission, incorrect and offensive. TNW Wireless has been at all times forthright as to the status of the deemed transfer requested following the change of control of the company as well as our discussions with ISED to that effect. ISED by its part was well aware of the transfer status when it issued its compliance letter and at no time indicated to the company that it was not permitted to operate or that there was any issue regarding the transfer. Furthermore, at no time was TNW prohibited from requesting and obtaining mandated roaming services from the Intervenors. The correspondence submitted to the Commission is a confirmation of this fact as ISED issued to TNW Wireless the 2018 annual license renewal, and payment was made by TNW Wireless and accepted by ISED.
68. TNW Wireless is not perhaps as well versed with the transfer process as Telus and we can only accept what information we receive from ISED as to status and timelines.
69. We did find it peculiar however when we read the October 1, 2018 submission by Telus, that it suddenly made the issue of transfer its first and most prominent point, shifting the emphasis of their arguments to this topic. Mr. Matthew Mulvihill, was the ISED Manager, Operational Policy who was responsible for the TNW Wireless request for a deemed transfer process following the December 2017 change of control of TNW Wireless (formerly known as RuralCom Corporation), since its original submission in early 2017 as show by the following email to our former VP Regulatory Affairs as follow :

*On Wed, Apr 19, 2017 at 9:25 AM, Mulvihill, Matthew (IC)*

*<[matthew.mulvihill@canada.ca](mailto:matthew.mulvihill@canada.ca)> wrote:*

*Hi Eric,*

*I'll check with my staff as to where we are with the application and let you know.*

*Regards,*

*Matthew Mulvihill*

*Manager, Operational Policy , Spectrum Management Operations Branch*

*Innovation, Science and Economic Development Canada / Government of Canada*

*[Matthew.Mulvihill@canada.ca](mailto:Matthew.Mulvihill@canada.ca) / Tel: [613-614-8710](tel:613-614-8710) / TTY: [1-866-694-8389](tel:1-866-694-8389)*

*Gestionnaire, Politiques opérationnelles , Direction générale des opérations de la gestion du spectre Innovation, Sciences et Développement économique Canada / Gouvernement du Canada*

*[Matthew.Mulvihill@canada.ca](mailto:Matthew.Mulvihill@canada.ca) / Tél: [613-614-8710](tel:613-614-8710) / ATS: [1-866-694-8389](tel:1-866-694-8389)*

70. While some 15 months later after one year of repeated calls, messages, emails and more importantly, coincidentally, on the eve of what we recently learned was his departure from ISED, Mr. Mulvihill wrote:

**From:** *Mulvihill, Matthew (IC) [mailto:[matthew.mulvihill@canada.ca](mailto:matthew.mulvihill@canada.ca)]*

**Sent:** *July 11, 2018 9:58 AM*

**To:** Benoit Laliberte; Souliere, James (IC)  
**Cc:** Lawry Trevor-Deutsch  
**Subject:** RE: Report Acknowledgement

*Good morning Benoit,*

*Happy to give you a quick update.*

*Your application has been evaluated and we've completed all the necessary documentation. At this stage we require approval to move forward with the decision and publication of the same. Typically for commercial mobile transfers, this stage in the process takes three to four weeks as we need to get on the schedule of senior management. If senior management has questions, we will come back to you for additional details if not already provided.*

*Hope this helps,  
Matthew*

71. TNW Wireless has since learned that sometime in August 2018 Mr. Mulvihill, left his position at ISED to become **Managing Consultant for Government and Regulatory Affairs at Telus** (see LinkedIn page below) – i.e. by the same group that would have prepared Telus' recent submission, during **the same time** the Telus submission would have been prepared.

**Matthew Mulvihill** • 2nd

Managing Consultant, Government and Regulatory Affairs  
Orleans, Ontario, Canada

TELUS  
See contact info  
159 connections

Connect Message More...

Results driven professional with a wide breadth of knowledge and skills in the telecommunications industry gained over 17 years of experience in regulatory environments Skilled in the development and implementation of spectrum management strategies, programs, and policies □ Ability to communicate ef...

Show more

Activity  
159 followers

Matthew shared this

See all

Experience

Managing Consultant  
TELUS  
Aug 2018 – Present · 3 mos  
Ottawa, Ontario, Canada

Manager, Operational Policy  
Innovation, Science and Economic Development / Innovation, Sciences et Développement économique  
2014 – Present · 4 yrs  
Ottawa, Canada Area

Telecommunications conformity assessment officer  
Industry Canada

72. We find this quite disconcerting that Telus Government and Regulatory Affairs would hire the individual responsible for the TNW Wireless deemed transfer file, **and presumably responsible for the timing of the deemed transfer** while at the same time using the bureaucratic delay in the transfer as a key argument to deny roaming services. Despite the obvious current conflict of interest situation that has been created and potential violation of the Government of Canada’s post-employment rules, we do not know how long Mr. Mulvihill had been in discussion with Telus regarding potential employment prior to actually being hired. Telus would have to had known that Mr. Mulvihill was overseeing the TNW Wireless file, and Mr. Mulvihill as a person

with considerable knowledge of current regulatory issues, would have to had known that Telus was opposing TNW Wireless' Application, at least in part based on the "transfer issue" he was responsible for - which casts a serious shadow on the process and undermines Telus' credibility. As members of Telus Regulatory staff in Ottawa, there is a presumption that staff who work together share each other's confidences. At the very least, this is a material disclosure that Telus should have made to the Commission and TNW Wireless in light of their new emphasis on the transfer process.

73. Notwithstanding any of the above, TNW Wireless is deeply concerned that Telus, a company that has made no secret that it does not want to see TNW Wireless in business, now potentially has access to privileged TNW Wireless information.
74. This material omission shows that it is Telus that has been actively misleading the Commission, and this, along with its behavior throughout this proceeding and related proceedings, should lead the Commission to question the true motives of Telus' arguments in these proceeding which we believe to be for anti-competitive purposes.

## 2.8 Corporate Issues

75. In its current submission, Telus cites certain corporate issues primarily related to commercial disputes between Telus and what they refer to as "Other TNW Group Companies". It is beyond the scope of this document to litigate these commercial disputes other than to state that there are two sides to the disputes and Telus is well aware of its own dubious business practices against "Other TNW Group Companies", including serious breaches and abuses of confidentiality and efforts to keep them out of the wireless market that go back a number of years.
76. Nevertheless this argument is irrelevant as the Bell, Telus and Rogers tariffs contain ample mechanisms to deal with commercial risk. We are not asking Telus for what they refer to as "limitless credit". Furthermore, given the wholesale roaming tariff rate of on average \$0.014 per megabyte and that we are not asking for any voice services, we are not dealing with material amounts of services from Telus.
77. In any case, nothing in the Commission's regulatory framework for wholesale wireless roaming, or the terms of Telus' general tariff terms of service ("TOS"), permits Telus to refuse to provide mandated services in these circumstances. Indeed, quite the opposite is true: They are mandated services and if there is any concern regarding financial aspects, everything has been addressed in the tariff as well as in the Telus General Terms of Service ITEM 112.

### *General Terms of Service*

*ITEM           The Company's Rights*

*112.0           Deposits and Deposit Alternatives from Customers*

*112.1           The Company may require a deposit from a customer only in the following circumstances:*

*(a) before service is provided, if the customer has no credit history with the Company and does not provide proof of creditworthiness satisfactory to the Company,*

*(b) if the customer has an unsatisfactory credit rating with the Company resulting from payment practices in the previous two years for the Company services, and does not provide current proof of creditworthiness satisfactory to the Company, or*

**(c) if the customer clearly presents an abnormal risk of loss.**

112.2 *The Company must not require a customer to pay a deposit or provide a deposit alternative in an amount which is greater than all anticipated charges, including long distance charges, for three months of service.*

112.3 *If the Company requires a deposit, it must tell the customer why the deposit is required and also tell the customer of the possibility of providing an alternative to a deposit, such as:*

*(a) a written guarantee from another person whose creditworthiness has been established to the Company's satisfaction,*

**(b) a bank letter of credit.**

*(c) an arrangement for payment of the customer's account by another person whose creditworthiness has been established to the Company's satisfaction, or*

*(d) any other alternative proposed by the customer that is reasonable in the circumstances.*

112.4 *The amount of any deposit required by the Company may be reduced if the customer requests that the Company block all long distance calls originating through the Service Provider Demarcation Point.*

112.5 *Deposits earn interest during the six month period following January 1 and July 1 each year at a rate equal to the rate established on those dates for daily interest savings accounts at the Bank of Montreal or any equivalent Canadian financial institution.*

112.6 *Interest on deposits will be credited to the customer's bill each month.*

112.7 *The Company must show the amount of the customer's deposit on the customer's monthly bill.*

Therefore, if TNW Wireless truly represents an “abnormal risk of loss”, the Telus tariff is clear on how to deal with this.

## 2.9 The Commission should not Reward Anti-Competitive Behavior

78. In early 2016 TNW Wireless was ready to launch. It had developed a realistic business plan and had invested in its network to meet all necessary compliance with ISED Conditions of License. ISED tested the network and confirmed such compliance. Furthermore, TNW Wireless informed ISED in full transparency that it wanted to launch its iPCS technology which ISED acknowledged without objection.
79. Simultaneously the company made all proper applications to Bell and Telus to provide roaming agreements and began negotiations with US wireless operators for US roaming. Roaming agreements for small wireless operators are critical to their feasibility as recognized by both the Commission and by ISED – which is why they are mandated under CRTC 2015-177. It is crystal clear that without the ability to roam and offer national coverage, a wireless operator’s offerings have limited appeal.
80. Bell and Telus both refused to provide TNW Wireless with the mandated roaming agreements, at the time citing “potential abuse” of the roaming agreements. At one point Telus informed TNW Wireless that it would only provide TNW Wireless roaming service if mandated by the Commission which is why the Part 1 Application was originally filed. Ultimately they were telling TNW Wireless that they did not want the company to be in business, further reinforced in early 2017 by one of of Telus’ counsel who commented to two of TNW Wireless management that Telus’ would never enter into a wireless wholesale roaming agreement with TNW Wireless and that Telus would be prepared to “bring this to the Supreme Court of Canada if necessary”.
81. By withholding roaming services to TNW Wireless, on the pretext of abuse that might occur sometime in the future, this action effectively prevented TNW Wireless from launching its service commercially, a completely predictable outcome and an outcome that is now used as one reason not to offer service at this time. Bell and Telus therefore created the conditions to prevent the commercial launch of the TNW Wireless service and then use this inability to launch commercial service as one of the reasons to deny mandated roaming – the classic Catch-22 situation.
82. So rather than providing TNW Wireless with a framework for providing services, they have instead elected to refuse services under any circumstances, and therein lies the anti-competitive nature of their actions in our opinion.
83. The wireless industry in Canada is a high stakes game. As we have shown, it is exceptionally profitable, particularly for the largest companies which command some 90% of the market. At the same time, the Commission and consumer groups such as the CCTS (Commission for Complaints for Telecom-Television Services) deal regularly with complaints of business practices – towards consumers and between wireless operators themselves. One has to go no further than the Commission’s current *Inquiry on use of misleading or aggressive sales practices by large telecommunications service providers* to understand that the major wireless operators are under scrutiny for their business practices in order to maintain or capture additional market share.

84. We therefore respectfully request that the Commission evaluate TNW Wireless' Application based solely on the extensive technical and regulatory information provided by the company over the last 15 months and to consider that the opposition to the Application is for the most part, self-serving based more on anti-competitive behavior than a purported concern for the industry.
85. The dominant wireless providers should not be allowed to become the gatekeepers for entry into the wireless market.

### **3.0 Summary and Conclusion**

86. TNW Wireless' Part 1 Application was filed originally on July 3, 2017 and as such this has been a long and extensive process spanning nearly 15 months and we thank the Commission for giving us the opportunity to make the company's case in a fairly comprehensive way.
87. TNW Wireless has not changed its request for final relief in its Application except to the extent that some aspects may need to be updated based on subsequent decisions, rulings etc. by the Commission.
88. TNW Wireless has demonstrated clearly that it meets all conditions to obtain mandated roaming agreements including the legal ability to utilize its licensed spectrum.
89. TNW Wireless has demonstrated clearly that iPCS while on Wi-Fi, while detached from any VPMN and connected to its HPMN, is not extending its HPMN but is in fact accessing its HPMN remotely and therefore in compliance with all current Commission rules and decisions.
90. Furthermore, the company believes that the Commission's determinations regarding the use of Wi-Fi in decisions 2017-56, 2017-57 and 2018-97 are specifically targeted at what the Commission defines as MVNO's, Wi-Fi-first service providers and any other form of non-facilities-based service providers which do not own licensed spectrum or operate their own network. TNW Wireless is a facilities-based operator with its own network and spectrum licenses.
91. TNW Wireless has provided ample evidence that all Canadian wireless operators are making extensive use of public Wi-Fi to provide Wi-Fi-Calling services to their subscribers regardless of their residence or physical location and outside their licensed spectrum Service Areas.
92. TNW Wireless has demonstrated that iPCS, while on Wi-Fi, while detached from any visited public mobile network and connected to its HPMN cannot be considered roaming and as such, a permanent roaming condition cannot occur and if granted its requested relief regarding iPCS, that it will make only incidental use of visited public mobile networks.
93. TNW Wireless has provided support for its position that granting its request for relief would not create any disincentive for wireless operators to invest in the industry and that the industry itself and particularly the large wireless operators accrue enviable profits from their wireless services

and that such profits are increasing and dependent on their investment in infrastructure. Nor has any wireless operator in their interventions stated that granting TNW Wireless' requested relief would alter their investment plans.

94. TNW Wireless contends that if any investment disincentive exists, it is due to the wireless operators' own increasing use and promotion of public Wi-Fi-Calling to deliver their voice and text services which decreases the need for wireless infrastructure and licensed spectrum and shifts some of the cost burden of services to their wireless subscribers or any party which is paying for the Wi-Fi connectivity used. At the same time, wireless subscribers do not appear to gain any real benefit from this shift.
95. TNW Wireless believes that all issues related to credit raised by Bell and Telus can be dealt with through contract conditions contained within their respective tariffs. That Bell and Telus may not want to do business with TNW Wireless should not be a factor in the Commission's determination. To allow Bell and Telus not to deliver mandated services on this basis would allow them to become gatekeepers as to which companies enter the industry and therefore would be anti-competitive and contrary to the objectives of the Commission and contrary to public good.

\*\*\*END OF DOCUMENT \*\*\*