



***TNW Wireless Inc Part 1 Refiled Application Regarding Wholesale
Roaming Agreements required under Telecom Regulatory Policy CRTC
2015-177***

Intervention of the

Public Interest Advocacy Centre

3 May 2018

Introduction

1. The Public Interest Advocacy Centre (“**PIAC**”) files this intervention in qualified support of the Part I application (the “**Application**”) by TNW Wireless Inc (“**TNW**”).
2. PIAC is a national non-profit and registered charity which provides legal and research services behalf of Canadian consumers, and in particular, vulnerable consumers, concerning the provision of important public services. PIAC advocates for equitable access, choice and affordability of telecom services, as well as for public interest goals such as transparency and accountability of telecommunications service providers.
3. TNW wishes to offer wireless service across Canada combining network access over Wi-Fi with mobile roaming. The technology TNW Wireless uses to deliver wireless service over Wi-Fi (iPCS) differs from over-the-top voice and text applications primarily in that:
 1. The device disconnects from mobile networks when on Wi-Fi
 2. The device remotely connects with TNW’s public mobile network.
4. Bell Canada (“**Bell**”) and Telus Communications Company (“**Telus**”) have refused to enter into wholesale roaming agreements with TNW. Bell and Telus argue that public¹ Wi-Fi networks cannot constitute a home-network for the purposes of roaming, so TNW’s proposed service would effectively allow permanent roaming on their networks.
5. In PIAC’s initial intervention, PIAC suggested that this application might be best resolved by clarifying that carrier Wi-Fi can be a home network for the purposes of accessing wholesale roaming tariffs. PIAC notes that TNW’s Reply indicates that it is interested in establishing a carrier Wi-Fi network through contractual agreements under which TNW customers open access to their Wi-Fi networks to all other TNW customers. As a result, these submissions distinguish customers who will be connecting over this contractually established carrier Wi-Fi network from customer connecting over public Wi-Fi.
6. TNW’s application thus relates to three distinct classes of customers:
 1. Traditional customers in TNW’s licensed territory (“Type A”)
 2. Customers who primarily connect to TNW’s public mobile network over carrier Wi-Fi (“Type B1”)

¹ The Commission uses the term “public” to refer to private Wi-Fi networks, whether or not they are available to the general public.

3. Customers who primarily connect to TNW's public mobile network over public Wi-Fi ("Type B2")
7. TNW meets the requirement for a wholesale roaming agreement under Bell and TELUS's carrier access tariffs in relation to traditional customers in TNW's licensed territory ("Type A").
8. Telecom Decision CRTC 2017-56 noted that carrier Wi-Fi is increasingly being used to offload data traffic, and that this is an efficient and appropriate technical model by which to provide wireless service. Telecom Decision CRTC 2018-97 did not revisit TD CRTC 2017-56 as it relates to carrier Wi-Fi. As a result, TNW should be deemed to meet the requirement for a wholesale roaming agreement under Bell and TELUS's carrier access tariffs in relation to customers primarily accessing TNW's public mobile network over carrier Wi-Fi ("Type B1").
9. TD CRTC 2018-97 indicates that public Wi-Fi does not constitute a home network for the purpose of determining whether roaming is incidental when the device remains permanently connected to the mobile network, but did not address:
 1. Whether a remote connection to the carrier's public mobile network constitutes a connection to the home network for the purpose of determining whether roaming is incidental;
 2. Whether public Wi-Fi constitutes a home network for the purpose of determining whether roaming is incidental when the device disconnects from any mobile network.

These differences are legally significant. Unlike a Wi-Fi First provider, TNW is a carrier, its customers are using its facilities, and its customers will not permanently roam.

Type A: Traditional Customers in Licensed Territory

10. Bell's raises concerns that that TNW's service may not be compliant with E9-1-1 Phase II rules. Many of the objections appear technology-specific and may need to be adapted to ensure TNW customers receive an equal quality of service without precluding the use of a new technology like iPCS. The Commission should ensure that TNW's offers a sufficient level of 9-1-1 service. However, adequate 911 service is a prerequisite to TNW offering services to the public to be enforced by the Commission and not a prerequisite to obtaining a wholesale roaming agreement to be enforced by wholesale providers. Telecom Regulatory

Policy 2017-11 limited the role of carriers to reporting known or suspected non-compliance by resellers to the Commission.²

11. TELUS's arguments regarding outstanding debts owed by allegedly-related companies are in the nature of an objection ITEM 112 of their tariff, which allow TELUS to require a deposit for customers without credit history or which present an abnormal risk of loss:

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.
12. Since the concerns raised by TELUS are addressed under its tariff by allowing TELUS to require a deposit, it is not necessary or appropriate to supplement that protection by also permitting TELUS to refuse to provide service.

Type B1: Customers outside TNW's licensed territory connecting to its public mobile network over carrier Wi-Fi

13. In PIAC's initial intervention, PIAC suggested that this application might be best resolved by clarifying that carrier Wi-Fi can be a home network for the purposes of accessing wholesale roaming tariffs.³⁴ TNW's Reply indicates that it is interested in establishing a carrier Wi-Fi network through contractual agreements under which TNW customers open access to their Wi-Fi networks to all other TNW customers.⁵
14. The status of carrier Wi-Fi was explicitly left unsettled under Telecom Decision CRTC 2017-56 and is not discussed in TD CRTC 2018-97.⁶ The Commission

² Telecom Regulatory Policy 2017-11 at para 26.

³ TELUS General Tariff Terms of Service, CRTC 21461, ITEM 112.1.

⁴ PIAC, Intervention at paras 15-19.

⁵ TNW, Reply at para 94 ("[T]he suggestions that a TNW customer could allow Wi-Fi access from their home network to all TNW customers is a concept that TNW has already considered and supports.")

⁶ Telecom Decision CRTC 2017-56 at para 28.

noted that carrier Wi-Fi facilities are an efficient and appropriate technical model by which to provide wireless services and which merit distinct regulatory treatment from public Wi-Fi facilities:

Wireless carriers are increasingly investing in Wi-Fi facilities as an additional way to provide wireless services to their customers. They may use a combination of licensed and unlicensed spectrum to provide service, but they do so by using cellular protocols. Currently, for example, unlicensed spectrum in the 2.4 and 5 gigahertz bands is used for offloading data traffic. When a Wi-Fi network is owned or operated by a wireless carrier, it is commonly referred to as “carrier Wi-Fi,” which is an efficient and appropriate technical model by which to provide wireless services.

However, carrier Wi-Fi is not the same as public Wi-Fi facilities. Unlike carrier Wi-Fi, public Wi-Fi facilities are not owned or operated by wireless service providers, nor are there necessarily any contractual or other arrangements between the Wi-Fi operators and the service providers that use them. Accordingly, wireless service providers cannot assure their end-users of the availability, quality, or reliability of such facilities in any meaningful or sustainable way. While the Commission has not yet had to address whether carrier Wi-Fi could be considered a home network for the purpose of roaming, it is clear that public Wi-Fi cannot be so considered for the reasons discussed.⁷

15. The national carriers are using carrier Wi-Fi networks as a core part of their network. Shaw has over 100,000 Wi-Fi hotspots which it explicitly markets as a means of reducing cellular data usage.⁸ Telus has over 20,000 Wi-Fi hotspots onto which it automatically offloads traffic.⁹
16. As noted in PIAC’s intervention, even if the Commission is interested solely in promoting investments in first-mile network connections, TNW’s application should be allowed insofar as it relates to customers who are primarily served by carrier Wi-Fi. Whether by building its own Wi-Fi facilities or entering into contracts with other Wi-Fi providers, TNW can assure customers of the availability, quality, or reliability of the wireless facilities.¹⁰ A carrier Wi-Fi provider has incentives to

⁷ Telecom Decision CRTC 2017-56 at para 27-28.

⁸ <https://www.shaw.ca/wifi/>

⁹ <https://www.telus.com/en/bc/deals/home/wi-fi-hotspots/>; Telus 2017 Annual Report (“Our public Wi-Fi service increasingly integrates seamlessly with our 4G network and offloads data traffic from our wireless spectrum to a continually growing number of available Wi-Fi hotspots” at 94).

¹⁰ This meets the criterion discussed in Telecom Decision CRTC 2017-56 at para 28.

invest in extending its network or negotiating access to additional Wi-Fi facilities on behalf of its customers. These investments may significantly improve the capacity of the mobile network to deliver data traffic, whether by increasing capacity or better utilizing existing capacity.

17. In most cases, TNW customers will primarily rely on their home Wi-Fi, which is owned and operated by the customer. PIAC submits that if a customer agrees, as part of their wireless contract with TNW, to offer Wi-Fi access from their home network to all TNW customers subject to certain service standards, then the customer's home Wi-Fi could possibly be considered an eligible home network. This would allow TNW to provide an assurance as to the availability, quality, and reliability of that network. It would also incentivize opening private Wi-Fi networks to allow the better offloading of mobile data traffic.
18. The Commission should take this opportunity to encourage the creation of national carrier Wi-Fi networks providing high-speed connectivity and carrier-based Wi-Fi offloading.

Type B2: Customers outside TNW's licensed territory connecting to its public mobile network over public Wi-Fi

19. Mandatory roaming is governed by both spectrum license conditions and tariff conditions. The spectrum license condition states:

The conditions of licence described below apply to all Licensees in the Cellular, Personal Communications Services (PCS), Advanced Wireless Services (AWS), Mobile Broadband Service (MBS) and Broadband Radio Service (BRS) bands.

1. The Licensee must provide automatic digital roaming (roaming) by way of a Roaming Agreement(s) on all of its networks in the Cellular, PCS, AWS, MBS and BRS bands in all of its licensed service areas to any other Licensee in these bands, including a provisional licence winner in accordance with a licensing process in these bands (A Requesting Operator).¹¹

20. The only prerequisite to obtaining a roaming agreement under Bell and TELUS' spectrum licenses is that the wholesale customer offers service to the particular end user using its own radio access network spectrum. TNW Wireless Inc. holds

¹¹ CPC-2-0-17 — Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements

25MHz and 850 MHz bandwidth licenses and use that spectrum for calls for all mobile communications. TNW therefore meets the technical requirements to be entitled to a roaming agreement under Bell and TELUS' spectrum licenses (the issue of which TNW customers would be entitled to roam is distinct).

21. Similarly, Bell and TELUS's GSM-based Roaming Service Tariffs are limited to other mobile wireless carriers. Unlike Wi-Fi first providers, TNW Wireless Inc. is a mobile wireless carrier that owns and operates facilities used in its provision of iPCS service.

22. The second restriction in both the condition of license and tariffs relates to which users may access roaming service. The condition of spectrum license states:

1. The roaming which must be offered in accordance with this licence condition is defined by the following characteristics:
 - i. Roaming must enable a subscriber (a Roamer) already served by the Requesting Operator's network (Home Network) to originate or terminate communications on the Licensee's network (Host Network), wherever technically feasible;
 - ii. The roaming offered must provide connectivity for voice and data services, including access to the public-switched network and the Internet, regardless of the spectrum band or underlying network technology used, provided that the Roamer's device is technically capable of accessing the Licensee's network. Roaming should provide a Roamer with the ability to access voice and data services offered by the Home Network at a level of quality comparable to that offered for similar services by the Licensee's Network. For greater certainty, this condition does not require the Licensee to provide to a Roamer a service which the Licensee does not itself provide on the Host Network, nor to provide to a Roamer a service or level of service which the Requesting Operator will not or does not itself provide;
 - iii. Roaming as provided for in this condition does not include resale;¹²

23. ISED explains:

35. Roaming enables a subscriber (a Roamer) already served by one carrier's network (the Home Network) to originate or terminate voice or data traffic on another carrier's network (the Host Network). Accordingly,

¹² CPC-2-0-17 — Conditions of Licence for Mandatory Roaming and Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements

a subscriber cannot roam unless he or she is already served on another radio access network. A carrier must therefore be offering service on its own network before its subscribers may benefit from roaming on another network, thus it does not include resale.

24. iPCS is designed to always serve customers using TNW's radio access network, whether accessed directly, over the internet via Wi-Fi, or over the internet via a wholesale roaming agreement. TNW customers are always connecting to TNW's home network so they are eligible to roam.
25. The restrictions in Bell and TELUS's wholesale tariffs are similar:

"Roaming End-Customer" shall mean a Person

a. with a valid subscription for roaming use issued by a Wholesale Roaming Customer but does not include subscribers of other Canadian or international mobile wireless carriers that are roaming on the Wholesale Roaming Customer's network; and

b. who is using the Supported Technology utilizing a GSM SIM (Subscriber Identity Module) and/or a GSM USIM (Universal Subscriber Identity Module) to enable that Person to access the mobile telecommunications service(s) of the VPMN Operator, for roaming in the Available Footprint of VPMN Operator, provided such person or entity is served by the Wholesale Roaming Customer that has not acquired spectrum or has acquired spectrum and is yet to build towers to provide coverage to its own customers.¹³

"Roaming Service" provides a Wholesale Roaming Customer's End-Customers with the ability to access voice, SMS and data services offered by the VPMN on an incidental basis and not on a permanent basis.

26. TD CRTC 2018-97 decided that Wi-Fi first service providers cannot access mandated wholesale roaming. These service providers were excluded both because they are not carriers, and because their customers were receiving permanent rather than incidental roaming.
27. TD CRTC 2018-97 defines the class of wireless carriers eligible to use mandated wholesale roaming as follows:

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https://assets.ctfassets.net/qqswi6c8cvkj/4Hryy19xxKOGya2IUmUaee/5874d7802c6a6165ca13d764c5d82687/Item_233.pdf

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.

28. As noted above, TNW Wireless Inc meets this definition. It owns and invests in network facilities including spectrum and towers.¹⁴ It is therefore a wireless carrier eligible to use mandated wholesale roaming (the issue of which TNW customers may would be entitled to roam is distinct).
29. TD CRTC 2018-97 also reaffirmed that wholesale roaming is only intended to provide incidental access, and that public Wi-Fi networks do not constitute part of the carrier's home network for the purposes of determining whether roaming is incidental.
30. The Oxford disctory defines "incidental" as "happening as a minor accompaniment to something else" or "occurring by chance in connection with something else".¹⁵ As noted in PIAC's first intervention, TNW's iPCS service is incidental in a variety of senses:
 1. **Mobile use is intermediary:** Roaming networks are only being used to deliver to data (including voice and SMS as data) to TNW's public mobile network rather than to devlier traffic to its end-destination – they are a part of the procees which may or may not be required,¹⁶
 2. **Mobile use is transitory:** Mobile cellular networks are only connected to the user's device when Wi-Fi is not avalaible – the mobile connection is not permanent,¹⁷ and
 3. **Mobile use is minor and limited:** Roaming is disabled if a subscriber exceeds mobile usage considered to be incidental roaming.¹⁸
31. These differences between iPCS and Wi-Fi first providers are significant. TNW customers will always be connecting with TNW's public mobile network and using TNW's facilities. When on Wi-Fi, the devices' connection with the wholesale roaming partners is severed, such that the device is only connected to TNW's public mobile network (remotely over the internet) and therefore is not permanently roaming. The restrictions on mobile data use imposed by TNW ensure that roaming is incidental in terms of the quantity of data used so that most data is not routed over wholesale roaming.

¹⁴ <http://tnwcorp.com/carrier/colocation/tower-site-colocation.html>

¹⁵ <https://en.oxforddictionaries.com/definition/incidental>

¹⁶ TNW, Application at para 56.

¹⁷ TNW, Application at para 52-53.

¹⁸ TNW, Application at para 62a.

32. While TNW does not control the access network outside of its licensed territory and any carrier Wi-Fi network, it does control other aspects of the network – specifically the transport network (likely by agreements with private network providers) – and its home public mobile network.
33. The Commission must decide whether it is interested in promoting investment in first-mile network connections, or whether it is, rather, interested in promoting investments in the overall telecommunications ecosystem.
34. As a creative form of relief, the Commission may consider impose a condition of service specifying a minimum share of revenues to be reinvested in facilities by TNW exceeding the share re-incested by the national carriers. This would allow TNW to leverage the its innovative iPCS technology while advancing the Commission’s commitment to facilities-based competition.

Conclusion

35. As a carrier with licensed spectrum TNW is entitled to a roaming agreement with Bell and TELUS on the limited basis outlined above. The Commission should permit TNW to offer that roaming service to traditional customers in TNW licensed territory (Class A) and customers relying primarily on carrier Wi-Fi to access TNW’s public mobile network remotely (Class B1). Unlike Wi-Fi first providers, TNW is indeed a carrier, its customers are using its facilities, and its customers will not be permanently roaming. These distinctions are legally relevant and the Commisison must decide whether they merit differential treatment for Class B2 customers.

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