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October 11, 2011

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
PO Box 2319, 27th Floor
Toronto, ON
M4P 1E4

Dear Ms. Walli:

RE: Application by Canadian Distributed Antenna Systems Coalition ("CANDAS");
Board File No.: EB-2011-0120

We represent CANDAS in connection with its application to the Board regarding access to the power poles of licensed electricity distributors for the purpose of attaching wireless telecommunications equipment ("**Application**").

In accordance with Procedural Order No. 3, CANDAS is filing the Reply Evidence of Johanne Lemay (Lemay-Yates Associates Inc.).

CANDAS will file two paper copies of the above-noted evidence as soon as possible.

Yours very truly,

(signed) H.T. Newland

HTN/ko
Encls.
cc: Mr. George Vinyard

ExteNet Systems, Inc.
Mr. Mark Rodger
Borden Ladner Gervais
All Intervenors

Reply Comments on the Evidence presented by THESL and CEA in the OEB Matter Related to the CANDAS Application

REPORT Presented to CANDAS

October 11, 2011

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1. Introduction and Scope of this Reply

At the request of the Canadian Distributed Antenna Systems Coalition ("CANDAS"), Lemay-Yates Associates Inc. ("LYA") reviewed the following submissions (collectively, the "Intervener Reports") to the Ontario Energy Board (the "OEB"):

1. Mr. Michael Starkey, Affidavit of Michael Starkey on behalf of Toronto Hydro-Electric System Limited, sworn September 1, 2011 and filed on behalf of Toronto Hydro-Electric System Limited ("THESL") (the "Starkey Affidavit")
2. Dr. Adonis Yatchew, "Regulation of Wireless Facilities on Joint-Use Poles", Affidavit of Dr. Adonis Yatchew, and filed on behalf of THESL ("the Yatchew Affidavit"); and
3. LCC International, Inc., "Outdoor Distributed Antenna Systems and their role in the Wireless Industry", filed on behalf of the Canadian Electric Association ("CEA") (the "LCC Report").

The Intervener Reports discuss at great length the characteristics and relative merits of different new and emerging wireless technologies and topologies. The Intervener Reports devote little space to discussing the nature of utility poles themselves or that they are built in the public rights-of-way.

While these latter factors are, in our view, the most salient facts to be considered in any proceeding to determine whether the OEB should mandate non-discriminatory access to hydro utility poles for all Canadian carriers, we have been asked to:

- consider and comment on the Intervener Reports and their singular focus on the characteristics and relative merits of different wireless infrastructure technologies in the context of the substitutability of the deployment of WiFi and femtocells,

compared to an outdoor DAS network as contemplated by CANDAS in Toronto, as well as

- highlight the evolution and current status of the supposed wireless siting market in Canada.

This reply builds on the information contained in the LYA Report previously submitted on July 26 2011 by CANDAS to the OEB. LYA does not comment on the OEB's "CCTA Order" or, for that matter, on all aspects and issues raised in the Intervener Reports. Indeed, any failure on the part of LYA to address an issue or argument raised in the Intervener Reports should not be construed as agreement with or acceptance of such issue or argument on the part of LYA.

2. Different Wireless Technologies Serve Different Purposes

The Starkey Affidavit and the LCC Report that were filed with the OEB by THESL and CEA, respectively, focus on a discussion of the use of Distributed Antenna Systems (DAS) solely as a means of:

1) providing coverage in hard to reach areas (e.g. some indoor locations) as well as
2) alleviating or augmenting network capacity for the rapidly increasing usage of mobile data, an application that can involve both indoor as well as outdoor coverage for hot spots and which is often referred to as "off-loading" or "data off-loading."

In both these applications, DAS would be deployed indoors, *i.e.* in office buildings, in public spaces or in relatively small outdoor areas, as a means of complementing, and not replacing, adjacent conventional macro cell-based mobile facilities already deployed with antennas mounted on towers and rooftops.

While we agree with Mr. Starkey and LCC that outdoor DAS, Wireless Fidelity ("WiFi") and femtocells can be used for the applications described above, these differ markedly from that which was envisaged by CANDAS in Toronto.

The members of CANDAS originally did not plan to deploy outdoor DAS only in hot spots as a complement to a conventional macro cell network. Instead, the members of CANDAS were planning to build, from the ground up, a brand new mobile network in the City of Toronto, with the objective of achieving blanket coverage for both voice and data mobile services, with future potential for flexible growth and targeted capacity increases. This is an approach to building a new network similar to what has already been deployed by Videotron and CANDAS in Montreal.[1]

The Starkey Affidavit and the LCC Report create confusion by suggesting that WiFi and femtocells are substitutes to the deployment of outdoor DAS.

This is simply not the case. As discussed below, we highlight why technologies such as WiFi and femtocells, in contrast to outdoor DAS, cannot be deployed at the present time for the purpose of providing blanket outdoor and indoor coverage for both mobile voice and data applications.

We also note below that when these technologies are actually deployed outdoors in an attempt to provide blanket wide area coverage for a specific application, *e.g.* for fixed wireless Internet access, WiFi and femtocells are efficiently deployed on utility poles, similar to outdoor DAS.

[1] As noted in LYA's July 26, 2011 Report, both these networks use utility poles including lamp standards and hydro poles. Additional details on these outdoor DAS deployments can be found in our July 26, 2011 Report, entitled " The Deployment of Distributed Antenna Systems (DAS) on Utility Poles ".

2.1 *WiFi is not a mobile technology*

WiFi technology provides a fixed wireless, data access capability within a very short radius, which enables users to gain access to the Internet wirelessly, using a variety of devices such as laptops, smartphones and tablets. It thus provides for wireless Internet access that is stationary and "portable", but not mobile.[2]

WiFi is provided using unlicensed radiofrequency spectrum, which is why anyone can buy a WiFi modem. WiFi radio units have a very short range (typically less than 200m) and transmit at low power levels (in the order of 4 Watts). This compares to transmitted power ranging from 80W to 320W for outdoor DAS technology.[3]

WiFi modems provide access to the Internet by connecting to an underlying high-speed Internet connection provided via wireline or licensed wireless facilities. To date, WiFi technology has not supported public switched voice communications, unless it is by means of Voice over IP services such as Skype.

Furthermore, WiFi access points do not support seamless hand-off between WiFi access points when the end-user is on the move at a speed greater than 50 km/hr, which is a unique attribute of mobile wireless networks.[4]

However, WiFi is very useful to laptop and mobile users who access Internet services that they already pay for from an underlying wireline carrier (cable company or telephone company) in their homes, a key convenience enjoyed by many consumers. This type of application provides for the "offloading" of data traffic from a mobile network to the

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[2] Using conventional macro cell deployment, high mobility is defined as providing 50 Mbps service when moving at a speed > 50 km/hr (see ITU-R M. 2078, "Estimated spectrum bandwidth requirements for the future development of IMT-2000 and IMT-Advanced," 2006).

[3] See Evidence of Tormod Larsen for a technical comparison of various wireless technologies, including WiFi.

[4] Seamless hand-off at high mobility, as referred to above in footnote 2, *supra,* is an attribute of mobile networks, not fixed networks.

Internet access line (*e.g.* a cable or telephone line) within the user's home via a short-range wireless WiFi connection. WiFi is deployed indoors by both private consumers and in public spaces by a variety of parties, such as enterprises, restaurants, cafes, *etc.* Any organization or individual can deploy a WiFi network for convenience of access to the Internet and many have done so.[5]

We note that no Canadian mobile carrier has yet to embark on any large-scale deployment of WiFi outdoors as a means of alleviating capacity concerns on their mobile broadband networks. Cogeco Data Services and Shaw Communications currently offer or plan to offer public WiFi services over fairly large areas,[6] but neither one is a mobile wireless carrier at the present time.

The Toronto One Zone WiFi Network Uses Utility Poles

The One Zone network initially built by Toronto Hydro Telecom Inc.[7] is a prime example in Canada of an outdoor WiFi system providing street level blanket coverage for Internet access in downtown Toronto. This network was intended to provide blanket coverage over 6 square kilometers and 235 city blocks in downtown Toronto as explained in background materials provided by Toronto Hydro Telecom on the One Zone website (see Figure 1 below).[8]

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[5] For example, coffee shop chains, such as Starbucks and Second Cup in Toronto, provide WiFi access to their clientele, often via arrangements with Bell and Rogers respectively, who are the providers of this infrastructure for a fee to these restaurants. These WiFi access points only support data applications[5] in a *fixed* mode, *i.e.* not mobile, and typically require a WiFi modem which is likely to be installed on top of a table. Approximately 200 locations in Toronto are supported by these carriers, a far cry from any kind of widespread geographic coverage of the city.

[6] Cogeco does not hold any mobile spectrum licences from Industry Canada. Shaw Communications Inc. is a licensee of mobile spectrum in the AWS band in certain areas in Canada following the 2008 spectrum auction, but has recently announced that it would not build out and operate a mobile network at this point in time.

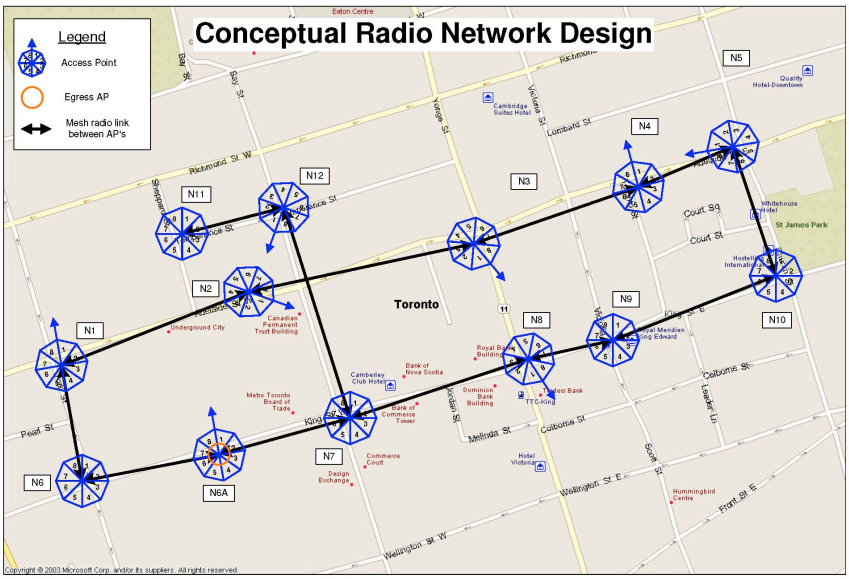
[7] The One Zone WiFi network is now owned and operated by Cogeco Data Services.

[8] See Nuts and Bolts Technical Briefing on Toronto Hydro Telecom's proposed WiFi network that can be found on the website of One Zone, *infra*.

Figure 2 provides an illustration of this network within one area of downtown Toronto. Each access point represents a WiFi antenna. This figure clearly illustrates the recurring nature, at regular intervals, of the support infrastructure required to provide such blanket coverage.

Figure 1 –Nuts and Bolts Technical Briefing on Proposed WiFi Network

Figure 2 – Conceptual Radio Design of OneZone in Downtown Toronto[9]



Utility poles, available at fairly regular intervals, were selected by Toronto Hydro Telecom to provide blanket outdoor WiFi coverage in downtown Toronto.[10]

As a matter of fact, the role of utility infrastructure, in this case streetlights, was so important for this deployment that the acquisition of the City's 160,000 streetlights by Toronto Hydro Telecom was stated to be one of three catalysts for the One Zone WiFi deployment at the start of this initiative in 2006. In the words of Toronto Hydro Telecom:

[9] http://www.onezone.ca/tech_brief/OneZone_ConceptualNetworkDesign_Phase%201_Loop%205.jpg

[10] An illustration and photograph from One Zone provided in Appendix A to this Reply clearly show the deployment on utility poles in Toronto.

Figure 3 –Rationale for the deployment of the WiFi One Zone network in Toronto[11]

Rationale: One Zone
Catalysts:
_ Provincial "smart meter" legislation
_ Under-utilized fibre optic network asset
_ *Toronto Hydro acquisition of 160,000 street lights from the City of Toronto*
Who benefits?:
_ Increased value proposition to our existing customers
_ Increased value of corporate assets
_ New revenue stream – new customer growth
_ Increased value to shareholder
_ Residents of City of Toronto via dividend to City

Based on the foregoing, we conclude the following with respect to WiFi technologies and their deployment:

- WiFi technologies do not provide for the same mobile services as those provided by outdoor DAS technology and are thus not a substitute to provide basic mobile coverage.
- When WiFi is deployed to provide blanket coverage outdoors, antenna support infrastructure that is relatively uniform, contiguous and evenly spaced at fairly regular intervals is required for efficient deployment. Utility poles such as streetlights were seen as necessary infrastructure for the One Zone network in Toronto.

2.2 *Femtocells complement and do not replace conventional macro cell networks*

Femtocell deployment is different than WiFi as it uses radiofrequency spectrum that is licensed to mobile wireless carriers. The technical standards for femtocells are developed by the same standards organisations as those developing technical standards for other mobile communications technologies.[12]

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[11] Emphasis added. Online: http://www.One_Zone.ca/tech_brief/One_Zone_TechBriefingPPT_07-20-06.pdf

[12] For example, 3GPP is developing standards for UMTS femtocells and 3GPP2 for CDMA femtocells.

Up to now, the vast majority of femtocell deployments has been for the purposes of extending the reach of or to increase the capacity for mobile networks *indoors*, either in private residences or in enterprise locations and in limited public areas. Femtocells support a limited number of pre-registered users, in the order of four to 32 users, which corresponds to a very different application than an outdoor DAS system, wherein each node is able to transmit on multiple radiofrequency bands and can support more than 300 users per frequency band.[13]

Femtocells can be deployed to support data only or a combination of voice and data services within specific, small areas. However, like WiFi, femtocells deployed for indoor applications rely on an underlying high-speed Internet connection that is provided by the user.

Like WiFi, femtocells have mainly been deployed up to this point in time by end users. However, unlike WiFi, femtocells are offered by carriers as a product specific to each carrier's technology and they are frequency band specific. Details regarding key attributes of such femtocells as offered by AT&T in the US are provided in Appendix B to this Reply.

Femtocells have also been designed to provide for a limited degree of seamless mobility. The AT&T femtocells will transfer calls seamlessly from a femtocell to a macro cell tower, but no seamless handover is available in the opposite direction, from the macro cell tower to the femtocell. It also does not support handover between different femtocells of the same mobile provider.[14]

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[13] See evidence of Mr. Tormod Larsen for a comparison of various wireless technologies including femtocells.

[14] See Text Box describing the attributes of the AT&T Femtocell product offering in Appendix B to this Reply.

The foregoing limitation is one reason why a mobile carrier cannot rely solely on consumer femtocells over a wide geographic area, such as over a city, to offer mobile services, as can be done with outdoor DAS technology. The use of these femtocells presupposes the availability of an underlying, conventional macro cell network, over which femtocells are deployed as complementary to and not as a replacement for a macro cell antenna deployment.

We note that Mr. Starkey makes a similar statement in his Affidavit.[15]

Femtocells are also starting to be deployed outdoors, for example to add capacity to a conventional macro cell mobile network within a specific area. Alcatel Lucent is a key equipment manufacturer with a full suite of femtocell equipment, including for outdoor applications (the Alcatel-Lucent 9364 Metro Cell Outdoor V2). As per Alcatel-Lucent documentation, the targeted applications for outdoor applications are hot spots, train stations, entertainment centers, *etc.* for filling holes within the larger macro cell network.[16] The Alcatel Lucent 9364 outdoor femtocell needs to be vertically installed on a pole or is also wall mountable.

2.3 *Outdoor DAS technology can be deployed for blanket mobile coverage applications contrary to WiFi and femtocells*

The requirement to provide blanket mobile coverage for voice and data over a large area

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[15] See Starkey Affidavit, p. 34: "Small cells - whether indoor, outdoor or both - are specifically intended to complement larger macro site based networks by providing enhanced/expanded coverage in target areas."

[16] Data sheet for the Alcatel-Lucent 9364 Metro Cell Outdoor V2, 2100 MHz for the European Market: "The Alcatel-Lucent 9364 Metro Cell Outdoor (MC OD) V2 is a low power, high capacity device that cost- effectively extends Wideband Code Division Multiple Access (W-CDMA) coverage and high-speed packet access (HSPA) capacity to public outdoor places, delivering fast, responsive data service and crystal-clear voice. It is well suited for providing dedicated coverage in high-use hotspots such as train stations, bus stops, and busy outdoor shopping and entertainment centers, for extending coverage to remote rural locations, and for filling in coverage holes within the larger macro network…. Provides localized hotspot capacity to offload data traffic from the macro network."**, available at** **http://www.alcatel-lucent.com/wireless/femto_small_cells.html**

carries implications when it comes to what can be considered suitable antenna support structures for the deployment of an outdoor DAS network.

First, we note that while Mr. Starkey states[17] that WiFi and femtocell technologies complement the macro cell network and that they are competing technologies, he does not mention that unlike outdoor DAS, WiFi or femtocell are not suitable for stand-alone deployment to provide blanket coverage for mobile voice and data services for a new mobile carrier, the specific type of deployment planned by CANDAS members in Toronto.

The LCC Report also addresses the issue of the deployment of outdoor DAS and the substitutability between outdoor DAS and other technologies. The LCC Report agrees that WiFi and femtocells are suitable to fill in for areas of high demand or poor coverage. However, the LCC Report also states it is unlikely that outdoor DAS will evolve as a full substitute for traditional coverage with macro and micro cell site deployment.[18] These statements are difficult to reconcile with the fact that such deployments have already taken place in a number of urban and suburban centres.

The only rationale provided for LCC's views concerning outdoor DAS technology appears to have little to do with consideration of actual outdoor DAS deployments and the capabilities of outdoor DAS and more to do with the observation that there are a large number of macro cell sites in the US.[19] In addition, the LCC Report states "These outdoor DAS deployments are typically done in selected geographic areas. In fact, it is difficult to deploy DAS uniformly in most geographic areas as the primary or dominant

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17 Starkey Affidavit, p. 34, lines 15 to 18.

18 LCC Report, p. 2: "It is highly unlikely that ODAS will evolve as a full substitute for traditional transmission engineering found today in the form of macro and multiple micro-site technologies." See also LCC Report, p. 6: "it is important to note that ODAS is by no means a substitute for traditional cellular network planning and deployments for mobile communication."

19 LCC Report, p. 6: "Indeed, with an installed base of approximately 275,000 macro and micro cell sites cell antennas throughout the U.S., it is evident that ODAS will never function as a replacement or substitute for macro cell technology in the foreseeable future."

technology.”[20]

We note that LCC provides no explanation of what is meant by “most geographic areas.” In our view, while coverage of large rural areas and corridors along sparsely populated highways would likely be problematic for outdoor DAS technology, the same is not true for suburban and urban areas, where outdoor DAS technology is typically being deployed for blanket coverage applications. Thus, in our view, suburban and urban areas do not correspond to “most geographic areas” as referred to by LCC.

LCC’s affirmations regarding the deployment of outdoor DAS for wide area, blanket coverage applications are contradicted by the fact that such deployments have already taken place in the United States as well as in Canada, in urban and suburban centres.

The fact that there are many, many macro cell sites already deployed in the US (and in Canada for that matter) in no way implies that outdoor DAS cannot be deployed on a stand-alone basis to provide blanket coverage and meet wireless capacity needs in urban and suburban areas. Such an outdoor DAS deployment was envisioned by the members of CANDAS in Toronto and completed successfully by both CANDAS and Videotron in Montreal.

Incumbent carriers can also deploy outdoor DAS technology to enhance coverage in certain areas and to augment data throughput through more efficient use or reuse of available bandwidth, for both indoors and outdoor applications.[21] The Starkey Affidavit implies that a Canadian incumbent, namely Rogers, has no plans to deploy outdoor DAS technology in this way. The Starkey Affidavit refers to a diagram attached to a Rogers

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[20] LCC Report, p. 9.

[21] See p. 23 of LYA Report filed July 26, 2011 for additional details on the deployment of outdoor DAS by US carriers including large incumbent carriers such as AT&T and Verizon.

submission to Industry Canada[22] to conclude that Rogers has no plans to deploy outdoor DAS technology, thereby implying that incumbent carriers have no plans to deploy outdoor DAS but plan to use WiFi and femtocells instead. Mr. Starkey has erred in at least two ways:

1. First, the diagram does not depict a network architecture proposed by Rogers to Industry Canada[23] at all. Rather, the diagram reproduced by Mr. Starkey was attached as an appendix to an expert report[24] that was intended as a technology primer focused on discussing how operators can meet the demand for mobile data and spectrum requirements.
2. Rogers did not state in its submissions to Industry Canada that it intends to use only WiFi offload and femtocell technology nor did it state that it does not intend to rely on DAS technology to meet wireless network needs. Indeed, the referenced Rogers document does not contain the words WiFi, femtocell or DAS at all.

Conclusion to Section 2

This review of WiFi and femtocell technologies highlights why these technologies are not substitutes to outdoor DAS to provide blanket coverage for mobile data and voice services in urban and suburban areas. It also highlights that when the wireless deployment objective is to achieve blanket coverage over small or wide geographic areas using small-cell wireless technologies, utility poles, including hydro poles, streetlights, and traffic light standards, are a necessary support structure for antenna mounting.

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22 Starkey Affidavit, pp. 32-33

23 http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/smse-018-10-abridged.pdf/$FILE/smse-018-10-abridged.pdf

24 http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/smse-018-10-rysavy-submission.pdf/$FILE/smse-018-10-rysavy-submission.pdf

3. The characterization of the Canadian wireless siting market as vibrant

Dr. Adonis Yatchew ("Dr. Yatchew") characterized the wireless siting market in Canada as vibrant and thus in no need of regulation:[25]

> *Q. IS THERE EVIDENCE THAT THE MARKET HAS FAILED IN THE PRESENT INSTANCE?*
>
> **A.** I am not aware of evidence that the market has failed CANDAS. On the contrary, Public Mobile is successfully providing services in its market areas. And there is broad evidence **of vibrant siting markets for wireless facilities**.
>
> *Q. PLEASE DESCRIBE THE SITING MARKETS TO WHICH YOU HAVE REFERRED?*
>
> **A. The existence of a very active, extensive and competitive siting market is well supported by the presence of companies whose primary business is the siting of wireless and other communications facilities**. Consider, for example the corporate profile of American Tower Corporation, a multi-billion dollar company:
>
> > "Founded in 1995, American Tower is a leading wireless and broadcast communications infrastructure company with a portfolio of over 35,000 communications sites, including wireless communications towers, broadcast communications towers and distributed antenna system (DAS) networks…[A]s of December 31, 2010, approximately 20,900 towers in the United States and approximately 13,900 towers internationally in Brazil, Chile, Colombia, India, Mexico and Peru." [emphasis added]

We are puzzled by Dr. Yatchew's conclusions for the following three key reasons:

1. Dr. Yatchew points to the existence of thousands of sites for the placement of antennas as the basis for his conclusion that there is a well functioning, competitive market. In so doing, Dr. Yatchew, in our view, incorrectly groups all types of antenna support structures into a single market, as if antenna towers and utility poles are interchangeable as antenna support structures. This does not reflect the reality of the different technologies deployed and poles on the one hand

[25] Yatchew Affidavit, pp.18-19.

and on towers and rooftops on the other. Antenna towers and utility poles are not at all interchangeable and they should not be considered as such.

2. Nowhere in the Yatchew Affidavit does Dr. Yatchew mention the fact that the Canadian government has had to intervene to mandate access to antenna towers[26] and to prohibit exclusive arrangements with landlords regarding the mounting of antennas on rooftops. The Mandatory Antenna Tower and Site Sharing rules, as this intervention by the government is known, was intended specifically to enable new entrants to deploy their networks in Canada, as well as to alleviate environmental concerns regarding the proliferation of towers. These rules are now a Condition of Licence for mobile carriers. Thus, the Canadian government has already concluded and taken action in light of the fact that even the conventional wireless siting market using towers and rooftops was not a well functioning commercial market.
3. Dr. Yatchew relies on the existence of large third party tower companies in the United States, such as American Tower Corp. and Crown Castle USA as proof that there is a commercial market for antenna placement in Canada. However, the reality is that these companies are not active in Canada. They are however active in other markets outside of the US. Thus, the fact that independent tower operators are not active on any significant scale in Canada corroborates the view that even macro cell wireless siting is not a well functioning commercial market in Canada, a situation which is very different than what prevails in the US.

3.1 *Are all wireless antenna support structures equal and interchangeable?*

Typical outdoor DAS radio units, such as the DeltaNode fiber optical DAS remote unit that can be pole mounted, weigh from 12 Kg to 24 Kg, depending on the configuration chosen[27]. Outdoor DAS nodes have limited power and reach, typically less than 600 metres and thus cannot be installed at the top of large towers to provide coverage for kilometers as macro cell sites do. Thus, macro cell sites are not interchangeable with

[26] To LYA's knowledge, there is no standard definition of what constitutes a tower for antenna siting. However, CPC-2-0-03, Issue 4 (Released: June 2007), excludes antenna structures with a height of less than 15 m above ground level from the public consultation process.

[27] DeltaNode Fiber Optical DAS Technology Overview, available at http://www.deltanode.com/resources/2/DeltaNode%20DAS_2010.pdf

utility poles for the deployment of outdoor DAS and an outdoor DAS network cannot be deployed on, for example only rooftops or towers.

We conclude, therefore, that:

- utility poles are not interchangeable with towers and rooftops for the deployment of outdoor DAS equipment and antennas; and
- the fact that there are thousands of antenna tower and rooftop sites in Toronto does not imply :
    a. that all of these sites could be useful in any way for the deployment of an outdoor DAS network to provide mobile coverage,
    b. or that THESL would have a negligible market share in the wireless siting market, as Dr Yatchew apparently assumed, as these different types of support structures are clearly suited for different applications and not part of a single wireless siting market.

3.2 *The Canadian wireless siting market is not a well functioning competitive market*

We have highlighted in Section 3.1 above the fact that utility poles and conventional macro sites are *not* interchangeable and should not be considered as such for the purpose of wireless siting.

We discuss below the historical background as to why the Canadian government felt compelled to mandate access to antenna towers and to prohibit exclusive arrangements for rooftops.

The LYA evidence submitted on July 26, 2011 refers to the *Policy Framework for the Auction for Spectrum Licenses for Advanced Wireless Services and other Spectrum in the 2 GHz range*, which was published in November 2007. At page 9 of this document, Industry Canada cites compelling social and economic reasons to mandate the sharing of

antenna sites and explains why the refusal to provide access to these sites acts as a barrier to competition:

> **New entrants contend that they cannot gain ready access to new antenna sites and that rates charged are artificially high so as to preclude new entrant access.**[28] [emphasis added]

The difficulties encountered by new entrants in siting their antenna was not a new phenomenon that suddenly emerged in 2007, nor have the issues identified only been related to towers or rooftops.

As a matter of fact, Industry Canada first announced a National Antenna Tower Policy Review on October 31, 2002. As part of its recommendations, the Final Report of the panel in charge of this review urged the Government to:

> **Recommendation 28:** … implement new and more explicit policies designed to stimulate the sharing of antenna towers and other supporting structures for the mounting of radio antennas.
>
> **Recommendation 29:** … explore policy options to stimulate the co-location of the antennas at common terrestrial or rooftop sites and to increase the incidence of the co-location of antennas with other (urban) infrastructure which society might regard as unsightly, or otherwise objectionable."[29] [30]

In a subsequent initiative, the Government of Canada created a Telecommunications Policy Review Panel (the "TPRP"). The TPRP was set up with the objective of recommending how to modernize the national telecommunications policy. In its 2006 Final Report submitted to the Industry Minister, the TPRP encouraged the *"sharing of*

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[28] Industry Canada, *Policy Framework for the Auction for Spectrum Licences for Advanced Wireless Services and other Spectrum in the 2 GHz Range*, November 2007, p.9.

[29] http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/antennareport-e.pdf/$FILE/antennareport-e.pdf, p. XIV

[30] We note that in addition to a recommendation for more explicit policies regarding the sharing of towers and other supporting structures for the mounting of radio antennas, this Report also recommended exploring options for the sharing of "other (urban) infrastructure" for the co-location of antennas. We highlight that the sharing of utility poles for the placement of outdoor DAS equipment would be an example of what would be defined as "other urban infrastructure."

towers for radio transmission equipment and prohibit exclusive rooftop arrangements by wireless service providers, both for environmental reasons and efficient service deployment."[31]

We highlight that the Final Report of the TPRP also made mention of the need to access utility poles and of the potential for streetlights and traffic light standards to be treated as essential facilities in the future:

> In addition, new essential facilities may emerge. Today, for example, it is recognized that many support structures (**such as poles and ducts**), antenna towers and certain rights-of-way are essential facilities. In some cases, a significant requirement for these facilities has emerged only with the evolution of technology. **As this process continues, other facilities, such as light standards, may also become essential.**[32] [emphasis added]

The government's interventions in the antenna siting market did not stop with the establishment of a Condition of Licence (COL) for wireless carriers. In 2009, Industry Canada published stronger guidelines setting out how carriers were expected to abide by the tower sharing COL, highlighting the fact that serious difficulties were still being reported.[33]

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[31] http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/tprp-final-report-2006.pdf/$FILE/tprp-final-report-2006.pdf, Executive Summary, p. 7 (emphasis added).

[32] http://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/tprp-final-report-2006.pdf/$FILE/tprp-final-report-2006.pdf, page 3-37.

[33] Industry Canada, *Guidelines for Compliance with the Conditions of Licence Relating to Antenna Tower and Site Sharing and to Prohibit Exclusive Site Arrangements*, GL-06, Issue 1, April 2009, p. 1: "Although the conditions of licence set out the requirements of the Department, they did not establish firm and specific time frames and requirements for every step. The Department's initial position was to set time frames for certain steps only and rely upon the entities involved to establish reasonable practices for other steps depending on the specifics of the circumstances. Since the implementation of the conditions of licence, the Department has received complaints from different licensees regarding a failure to adhere to licence conditions such as "negotiating in good faith" and responding "in a timely manner." In dealing with the complaints, the Department heard divergent views and has seen the need for increased clarity in certain areas. On February 17, 2009, Industry Canada issued a consultation letter to address several issues related to the preliminary phase of the antenna tower and site sharing process. These guidelines flow from that consultation and will assist in providing all licensees with a clearer sense of the Department's expectations with respect to the issues set out below."

The publication of these guidelines further highlights the fact that serious difficulties were still being reported in the antenna siting market and that the "entities involved" could not be relied upon to establish reasonable practices on a negotiated, bilateral basis as the Department had initially hoped.

Even after publication of the guidelines, difficulties with tower sharing persisted and the Industry Minister took a further step in late 2010, initiating a review to determine if the tower sharing policy and COL were working effectively. In a speech providing an interim report on the development of Canada's digital strategy, the Minister said:

> While I was consulting, it became clear another important element of the regulatory framework is the issue of tower sharing and roaming. We introduced these policies to encourage competitive entry and reduce tower proliferation. To assess whether these policies are working as intended, I have instructed my department to conduct a review, starting immediately. By spring of next year, I will be in a position to assess how all these elements fit together and decide on the best way forward.[34]

We submit that the foregoing demonstrates that Industry Canada recognizes that new entrants encounter significant opposition to deploy and expand their networks in Canada. In comparison to the US, for example, where the proportion of third party ownership of antenna sites is high, the Canadian market is characterized by the fact that many antenna sites are carrier owned. This has created a significant barrier to entry for new wireless carriers.

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[34] An Interim Report on the Digital Economy and Telecom Strategies - International Institute of Communications Canada Conference 2010, News Release: Minister Clement Updates Canadians on Canada's Digital Economy Strategy, Speaking Points, The Honourable Tony Clement, PC, MP, November 22, 2010.

3.3 *The Canadian wireless siting market is characterized by very little third party owned tower sites*

In 2006, following extensive consultations with all types of organisations across the country, the TPRP observed in its Final Report that tower sites were generally owned by wireless carriers and not by independent third parties in Canada:[35]

> **Because antenna towers are generally owned by wireless carriers** rather than by third-party utilities, antenna tower access issues differ from the wireline support structure access issues. [emphasis added]

Dr Yatchew refers to Crown Castle USA and American Tower Corp. (ATC) as evidence of a vibrant wireless siting market in Canada, but neither operates in Canada. The existence of these companies, therefore, cannot be taken as circumstantial evidence of a vibrant wireless siting market in Canada. For greater clarity, ATC did form a joint venture to enter the Canadian market in March 2000, but this venture was terminated not long after and ATC is no longer active in Canada.[36] However, it is active in many countries outside of the US.

The third largest tower company in the USA is SBA. LYA's research of the antenna siting locations of SBA in Ontario has revealed that SBA has approximately 145 sites, based on a list of sites downloaded from its web site. A map of SBA sites in North America in provided in Appendix C to this Reply.

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[35] TPRP Final Report (2006), p. 5-12.

[36] ATC 10-K, Annual report for the period ending 12.31.2000, p.12: "In March 2000, we entered into a joint venture with Telemedia, a privately held Canadian telecommunications company, to form Canadian Tower L.P. Canadian Tower, which is Canadian controlled and operated, will develop and acquire wireless and broadcast towers throughout Canada. We have committed to invest $18.0 million (Canadian) in exchange for which we will own 45.0% of Canadian Tower. The joint venture's initial assets will include more than 20 broadcast towers to be contributed by Telemedia. We plan for our Canadian operations to include sites in major metropolitan areas."

LYA has also reviewed other references provided by Dr. Yatchew and Mr. Starkey regarding the wireless siting market and its status. One of them is Global Tower Partners, mentioned in the Yatchew Affidavit at p. 21. Global Tower Partners, manages four (4) sites in Canada of which two (2) are in Toronto. Another wireless siting company mentioned in the Starkey Affidavit is Antenna Management. Upon review, Antenna Management boasts seven (7) sites that it manages in Toronto.[37]

Conclusion to Section 3

In conclusion:

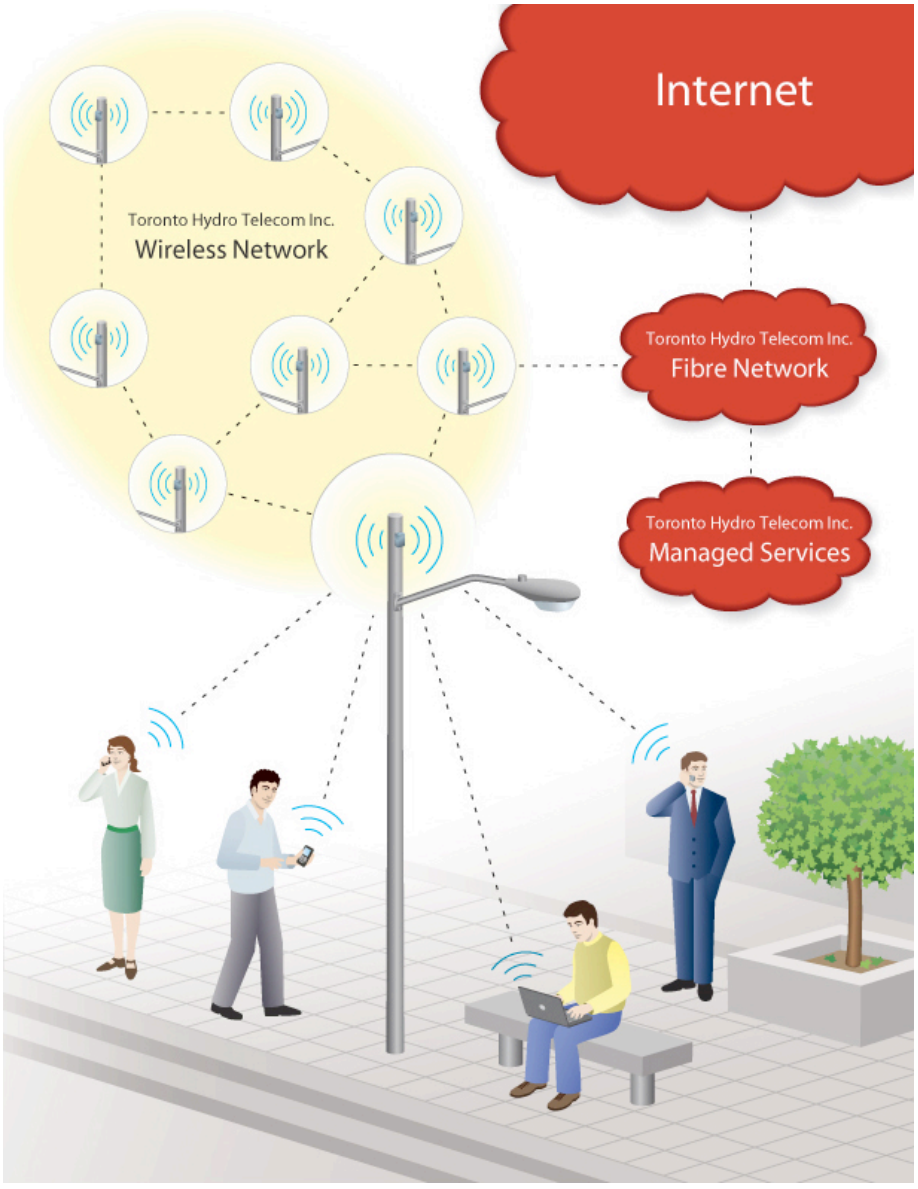
- To the greatest extent possible, Canadian mobile carriers have typically owned their towers. Among the Canadian "Big Three" mobile wireless carriers, Rogers has its own tower sites across the country as do Bell and TELUS.[38]
- The dominance of the incumbent mobile carriers in the antenna siting market – as evidenced by weak third party tower ownership in Canada – demonstrates why Industry Canada has intervened in order to mandate tower sharing, in spite of the very good economic and environmental reasons to do so in the first place.
- There is no strong third party wireless siting market in Canada. Although many companies are active in the wireless siting market, their participation usually extends only to providing advice to building owners, or managing rooftops or a few hundred towers; it does not have a significant impact on the overall market for the siting of macro cell sites.

[37] See details on the sites managed by Global Tower Partners and Antenna Management in Canada in Appendix D to this Reply.

[38] Bell and TELUS enacted a network sharing agreement in 2001 which included tower sharing between them; the BELL-TELUS agreement has evolved since 2001 but it is still well in place today.

Appendix A
Additional Information on the One Zone WiFi Deployment in Toronto

Illustration of WiFi as per Toronto Hydro Telecom[39]



39 http://www.One Zone.ca/media_photos/One Zone_WiFi_Illustration_03-07-06.jpg

Photograph of a Toronto Hydro Telecom WiFi equipment located close to the top of a streetlight[40]

The photograph above goes back to 2006. The Siemens cylinder at the tope of the utility pole is the WiFi equipment.

40 http://www.onezone.ca/media_photos/OneZone_AP_NewCityHall.jpg

Appendix B
Overview of key attributes of femtocell product offered by AT&T [41]

AT&T

- What is the range of the AT&T 3G MicroCell (femtocell)device?

The signal range is **approximately 40 feet from the base station** (in all directions), or about 5000 square feet.

- Can I surf the Web with my PC while making a call on my AT&T 3G MicroCell device?

Yes, you will be able to surf the Web from your computer while making a call.

- Can I use more than one AT&T 3G MicroCell device?

Yes, they may be used in different locations or within the same location if 5000 square feet of coverage is not sufficient. The devices should be placed at least 40 feet apart. If they are too close together interference between the two devices could cause calls to drop.

- Can I use my normal phone functions like voicemail and text messaging over my AT&T 3G MicroCell device?

Yes. These functions work exactly the same. However, at this time certain location-based services and Video Share features may not be fully functional.

- Can data services like mobile Web surfing, picture messaging, and file downloading use the AT&T 3G MicroCell device? How about billing?

Yes, most data services are compatible with the AT&T 3G MicroCell device. Standard data plan rates apply.

- **Do calls started on one AT&T 3G MicroCell device "hand over" to another AT&T 3G MicroCell if I move out of range of one and into range of another?**

No. Calls will not hand over between two AT&T 3G MicroCell devices.

- Does AT&T 3G MicroCell support E911?

Yes, E911 services are supported. You must keep the address where the AT&T 3G MicroCell device is physically located up-to-date in order to ensure the proper location is available to emergency personnel.

- …….

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- How many simultaneous calls or data sessions are possible with my AT&T 3G MicroCell device?

Up to four simultaneous sessions are possible with your AT&T 3G MicroCell device.

- **If I start a call on the AT&T 3G MicroCell device and leave my home, does the call continue uninterrupted? How about billing?**

Yes, calls seamlessly transfer from the AT&T 3G MicroCell device to the strongest AT&T cell tower signal. Billing will continue based on the initial connection being placed on the AT&T 3G MicroCell device. For example, if you have an Unlimited MicroCell Plan, your Unlimited MicroCell Plan rates will continue to apply.

- **If I start a call away from my AT&T 3G MicroCell device and then come within range, does the call move to the AT&T 3G MicroCell device? How about billing?**

No. Calls initiated on a cell tower do not transfer to the AT&T 3G MicroCell device. Standard wireless rate plan billing applies.

- Will my device work in areas of strong coverage (4 or 5 bars)?

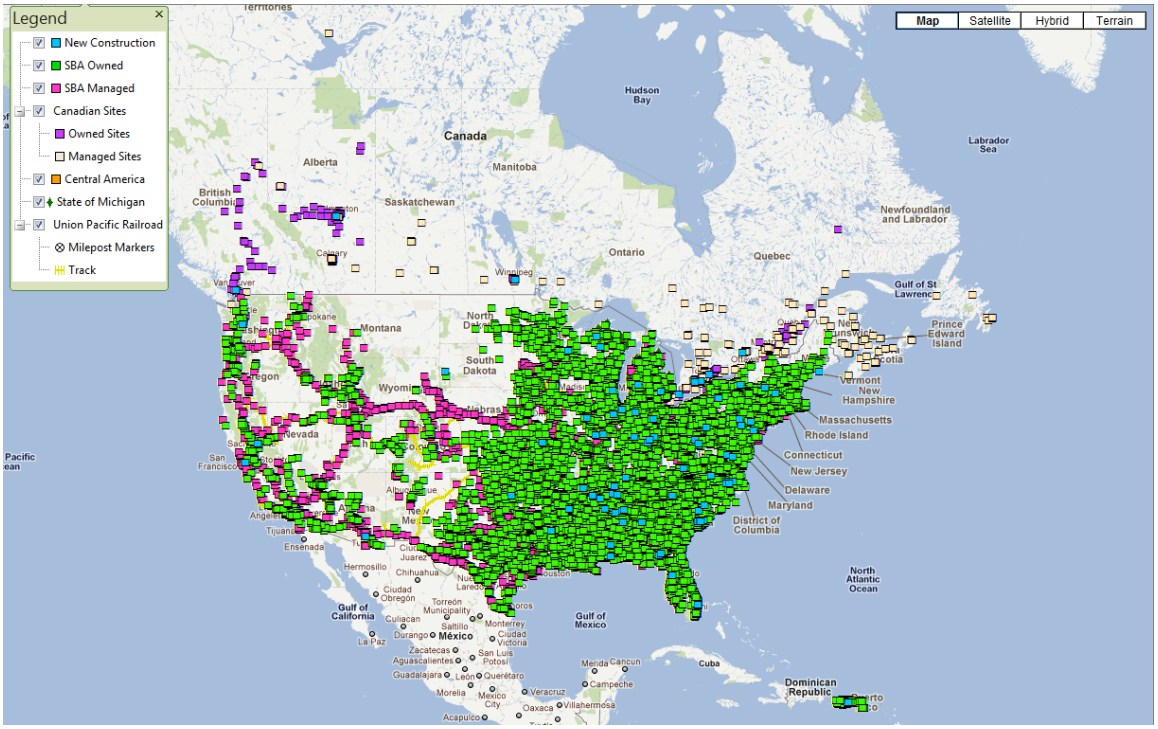
The AT&T 3G Microcell is intended for sale and use in areas and homes with poor wireless signal strength. Use of the device in areas with strong wireless signal strength is not recommended. A strong wireless signal may interfere with the Microcell device resulting in call set up failure or drop

[41] Available at http://www.att.com/shop/wireless/devices/3gmicrocell.jsp?fbid=wRL63nbRdv3#features

Appendix C
Overview of SBA Antenna Sites in Canada

The map below highlights the SBA sites in Southern Ontario and one can easily observe that there are not thousands of sites available and that they represent essentially a "drop in the bucket" for wireless carriers. We also note that many of the BSA sites in Canada are "managed" by SBA and not owned by SBA, as per the Legend provided on the map.

Map of SBA sites in North America including Canada



Appendix D
Antenna sites of Global Tower Partners and Antenna Management

List of sites managed by Global Tower Partners in Canada, per their web site, October 4, 2011

Site No	Site Name	Category	Type	Address	City	County
CN-0001	Ottawa-downtown	Rooftop	Hotel	Canada	141 Cooper Street	Ottawa, On
CN-0002	St. John's - Downtown	Rooftop	Hotel	Canada	232 Lemarchant Road	Saint John Newfoundlan
CN-0003	Toronto - Vaughan	Rooftop	Hotel	Canada	3600 Steeles Avenue We	Vaughan Ontario
CN-0004	Courtyard By Marriott	Rooftop	Hotel	Canada	475 Yonge Street	Toronto

The seven potential sites managed by Antenna Management in Toronto (as per their web site on Oct. 4, 2011)