Exhibit 1

Affidavit of Michael Starkey

BEFORE THE ONTARIO ENERGY Board

IN THE MATTER OF the *Ontario Energy Board Act, 1998*, S.O. *1998*, C. 15, (Schedule B);

AND IN THE MATTER OF an Application by **Canadian Distributed Antenna Systems Coalition** for certain orders under the Ontario Energy Board Act, 1998.

AFFIDAVIT OF

MICHAEL STARKEY

ON BEHALF OF

TORONTO HYDRO-ELECTRIC SYSTEM LIMITED
("THESL" or "Toronto Hydro")

Date: September 2, 2011

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AFFIDAVIT OF MICHAEL STARKEY
(sworn September 1, 2011)

I, Michael Starkey, in the City of Cottleville, State of Missouri, **MAKE OATH AND SAY**:

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Michael Starkey. I currently serve as President of QSI Consulting, Inc., a consulting firm specializing in regulated industries and economics with special emphasis in telecommunications. My business address is 243 Dardenne Farms Drive, Cottleville, Missouri, 63304.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. Included with this testimony as Attachment MTS-0l is a thorough description of my educational background and relevant work experience. In brief, I have been a consultant to government agencies, communications equipment manufacturers, communications providers, and other private communications stakeholders since 1996. Prior to my consulting experience I most recently served as the Director of Telecommunications for the state-wide agency assigned by the Maryland legislature to regulate utility services (i.e., the Maryland Public Service Commission). Prior to that I held the position of Chief

Telecommunications Policy Analyst for the Illinois Commerce Commission. I began my career as a Senior Economist at the Missouri Public Service Commission. Throughout my career I have spent a great deal of time studying telecommunications networks, including substantial time and effort aimed at developing rational, efficient means by which competing communications carriers can effectively access dominant carrier networks for purposes of entering monopolized markets. I have also analyzed the underlying economic characteristics of communications networks and markets and have, on numerous occasions, provided expert testimony regarding the costs of providing various telecommunications functionalities and access, including those associated with wireless networks.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE ONTARIO ENERGY BOARD ("OEB" OR "BOARD")?

A. No. However, I have been accepted as an expert in both wireline and wireless telecommunications and provided expert testimony before regulatory agencies in at least 35 U.S. states, and the Federal Communications Commission (“FCC”), the Federal Courts, several state legislatures and various other state courts and administrative bodies in the United States. During my consulting career I have served as an expert witness roughly 150 times.

Q. DO YOU HAVE EXPERIENCE WITH THE CANADIAN WIRELESS SERVICES MARKET?

A. Yes, I do. With the help of QSI's in-house research team, I stay abreast of general wireless market trends and activities in both the United States and Canada, as well as

other parts of the World. For example, I recently (April 2011) assisted numerous other QSI experts in preparing a report filed with Industry Canada in relation to Canada Gazette Notice SMSE-018-10 (*Consultation on a Policy and Technical Framework for the 700 MHz Band and Aspects Related to Commercial Mobile Spectrum*). The QSI report was entitled: *In Band Auction Cap; Promoting Sustainable Competition in the Canadian Mobile Wireless Industry Through an Equitable Auction Design*. This report was prepared on behalf of Videotron G.P. (a wholly owned subsidiary of Quebecor Media, Inc.) and Shaw Communications, Inc. Likewise, I oversaw production of a similar 2007 report filed by QSI on behalf of Bell Canada in relation to Canada Gazette Notice No. DGTP-002-07 (*Consultation on a Framework to Auction Spectrum in the 2 GHz Range including Advanced Wireless Services*). The QSI report was entitled: *The State of Wireless Technologies in Canada, A Comparison of Wireless Technologies in Canada and the United States*.

Q. ON WHOSE BEHALF WAS THIS TESTIMONY PREPARED?

A. This testimony was prepared on behalf of Toronto Hydro-Electric System Limited (hereafter “THESL” or “Toronto Hydro”).

Q. DESCRIBE THE PURPOSE OF YOUR TESTIMONY AND STATE YOUR CONCLUSIONS.

A. I've been asked by THESL to review the CANDAS Application, supporting materials and the interrogatory responses, as well as the Board's CCTA Decision[1] and evaluate the

[1] *In the Matter of the Ontario Energy Board Act 1998, S.O. 1998, c.15, (Schedule B), And in the Matter of an Application pursuant to section 74 of the Ontario Energy Board Act, 1998 by the Canadian Cable Television Association for an Order or Orders to amend the licenses of electricity distributors, Decision and Order,* RP-2003-0249, March 7, 2005 (hereafter "CCTA Decision").

extent to which the findings therein can reasonably be attributed to attachments for wireless equipment of the type proposed by CANDAS in its Application.[2] I have also been asked to describe numerous alternatives that exist to DAS ("Distributed Antenna Systems") in the provision of wireless communications services and explain how those alternatives are being deployed by wireless carriers in the United States and in Canada. Based upon my analysis, I have reached the following conclusions that I discuss in greater detail below:

1. A reasonable reading of the CCTA Decision indicates that neither the Board, nor the intervenors, contemplated that the "attachments" at issue would include the type of wireless attachments proposed by CANDAS.

2. The Board's determination that "power poles are essential facilities" was based upon the unique characteristics of wireline attachments. A similar analysis specific to wireless attachments shows that there are material differences in the underlying essential nature of power poles used for wireless attachments, in part, because numerous suitable alternatives exist and are being used extensively today in the marketplace.

3. DAS, as contemplated by CANDAS for the use of Public Mobile, is but one of numerous technologies used by carriers to provide wireless services. Other carriers, including Public Mobile, rely on extensive networks already deployed throughout Toronto without the need for power poles to support DAS. They have accomplished these networks both by (a) using wireless technologies that do not require power pole attachments, and (b) by attaching their wireless equipment to structures other than power poles.

4. A functioning market for the placement and maintenance of wireless equipment on stand-alone towers, rooftops and other non-power pole structures exists and is growing. All indications are that rates in that market substantially exceed the regulated rate adopted by the Board in its CCTA Decision for wireline attachments, further indication that the CCTA Decision and resultant rate are poorly suited for wireless attachments to power poles.

[2] *Application by Canadian Distributed Antenna Systems Coalition* ("CANDAS"); Board File No.: EB-2011-0120, filed July 26, 2011 (hereafter "CANDAS Application " or "Application").

II. THE CCTA DECISION DOES NOT APPLY TO WIRELESS POLE ATTACHMENTS AS REQUESTED BY CANDAS

Q. HAVE YOU HAD AN OPPORTUNITY TO REVIEW THE BOARD'S CCTA DECISION?

A. Yes, I have.

Q. DOES THE BOARD'S CCTA DECISION DISCUSS THE ATTACHMENT OF WIRELESS ANTENNAE OR OTHER SUPPORTING STRUCTURES?

A. No. The CCTA Decision includes no reference to wireless antennae or the attachment of any structures or equipment to support wireless antennae. Instead, the CCTA Decision focuses on two primary questions: (a) Should the Board intervene in the market and regulate wireline communications attachments to distribution poles and (b), if so, what is the appropriate wireline communications attachment rate. The Board's CCTA Decision is narrow, in part, because it adopts, and builds upon a Settlement Agreement reached by the parties on October 19, 2004. Among other things, the Settlement Agreement defines many of the terms in the case, with particular importance for this proceeding placed upon the definitions of "Attachment" and "communications space."

Q. WHY ARE THOSE TWO DEFINITIONS IMPORTANT IN THIS PROCEEDING?

A. Both definitions, and the way they are used by the Board in its CCTA Decision, help make clear that wireless antennae and supporting structure were not considered, especially as it relates to the attachment rental rate. For example, the extent to which wireless attachments should be included in the definition of "attachment" was one area

where the parties specifically could not reach agreement in the Settlement Agreement, as such, the inclusion of these types of attachments, or not, would have been something the Board would have needed to decide for the parties - but it did not. The Settlement Agreement at Appendix B, page 10, specifically states that the definition of attachment "excludes wireless transmitters...." but goes on to state that the parties had "Not Agreed" to that particular exclusion. In effect, by arguing that the CCTA Decision requires THESL to accommodate wireless attachments of the type proposed by CANDAS, CANDAS is attempting to redefine the definition of "Attachment" in a way that was specifically not agreed to by the parties, and adopted by the Board, in the Settlement Agreement.[3]

Q. WHAT IS THE DEFINITION OF "COMMUNICATIONS SPACE" USED BY THE BOARD IN ITS CCTA DECISION AND WHY IS IT IMPORTANT?

A. In the Settlement Agreement adopted by the Board, the parties agreed to the following definition of "communications space" within which all attachments would be found:

> "Communications Space" means a vertical space on the pole, usually 600 mm in length, **within which** Telecommunications Attachments are made."[4]

The Board specifically recognized that its findings in the CCTA Decision involved the Communications Space as agreed to by the parties: "In the Settlement Agreement of October 19, 2004, all parties agreed that if the Board does set access conditions, these conditions should apply to access to the communications space on the LDC poles...."

[3] While it could be argued that the language indicating wireless transmitters are specifically excluded was not agreed to and hence should not be considered, it is worth noting that the agreed to language in the definition of "attachment" clearly does not include language that would capture the types of wireless arrangements being proposed by CANDAS.

[4] Settlement Agreement, Appendix B, page 11.

Further, later in its CCTA Decision the Board adopted the CCTA's estimate of approximately 2 feet of "communications space" on a typical distribution pole, "within which Telecommunications Attachments are made." Yet, CANDAS admits that the wireless antennae and supporting structure that its members would intend to attach to THESL poles would not be confined to the "communications space" addressed by the CCTA Decision.[5] Indeed, the majority of the equipment to be attached by CANDAS members would fit outside of (rather than "within") the communications space.

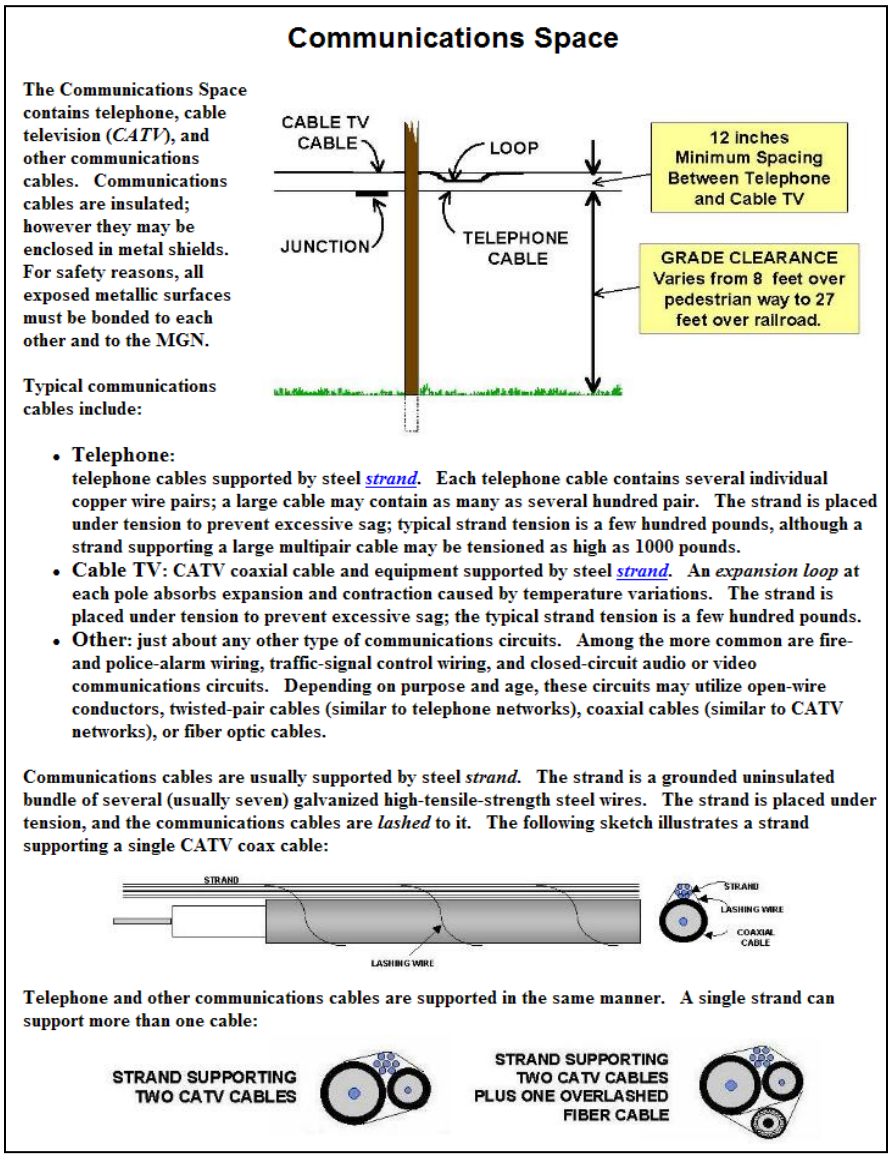
A. The Communications Space

Q. PLEASE DESCRIBE A TRADITIONAL POLE ATTACHMENT AS YOU USE THAT TERM.

A. A communications attachment traditionally describes a telecommunications carrier or cable television ("CATV") company attaching coaxial, copper or fiber-optic cables, strung between multiple utility poles along a designed route. In the case of poles used primarily for the transmission and distribution of electricity, these attachments generally occur at the bottom of a pole's useable space in an area defined as the "communications space." In other words, beyond the definition provided within the Settlement Agreement discussed above, "communications space" is a generally understood term of art within the communications industry. For example, when a utility pole is used to distribute electricity and also to accommodate communications equipment, it is commonly referred to as a "joint use" pole. The following description taken from the expanded definition of

[5] See CANDAS' response to THESL Interrogatory Number 39 and Exhibit D to the written evidence of Tormond Larsen.

"joint pole" as found in Newton's Telecom Dictionary provides additional information as to how a communications attachment is generally appended to a joint use pole:[6]



Communications Space

The Communications Space contains telephone, cable television (*CATV*), and other communications cables. Communications cables are insulated; however they may be enclosed in metal shields. For safety reasons, all exposed metallic surfaces must be bonded to each other and to the MGN.

Typical communications cables include:

CABLE TV CABLE
LOOP
JUNCTION
TELEPHONE CABLE
12 inches Minimum Spacing Between Telephone and Cable TV
GRADE CLEARANCE Varies from 8 feet over pedestrian way to 27 feet over railroad.

- **Telephone:** telephone cables supported by steel *strand*. Each telephone cable contains several individual copper wire pairs; a large cable may contain as many as several hundred pair. The strand is placed under tension to prevent excessive sag; typical strand tension is a few hundred pounds, although a strand supporting a large multipair cable may be tensioned as high as 1000 pounds.
- **Cable TV:** CATV coaxial cable and equipment supported by steel *strand*. An *expansion loop* at each pole absorbs expansion and contraction caused by temperature variations. The strand is placed under tension to prevent excessive sag; the typical strand tension is a few hundred pounds.
- **Other:** just about any other type of communications circuits. Among the more common are fire- and police-alarm wiring, traffic-signal control wiring, and closed-circuit audio or video communications circuits. Depending on purpose and age, these circuits may utilize open-wire conductors, twisted-pair cables (similar to telephone networks), coaxial cables (similar to CATV networks), or fiber optic cables.

Communications cables are usually supported by steel *strand*. The strand is a grounded uninsulated bundle of several (usually seven) galvanized high-tensile-strength steel wires. The strand is placed under tension, and the communications cables are *lashed* to it. The following sketch illustrates a strand supporting a single CATV coax cable:

STRAND
LASHING WIRE
STRAND
LASHING WIRE
COAXIAL CABLE

Telephone and other communications cables are supported in the same manner. A single strand can support more than one cable:

STRAND SUPPORTING TWO CATV CABLES
STRAND SUPPORTING TWO CATV CABLES PLUS ONE OVERLASHED FIBER CABLE

As described above, the "communications space" is common terminology with specific inference to the attachment of cables in an area of the pole near the bottom of its useable space (i.e. below electricity distribution cables). Importantly, the Board adopted this

[6] *Newton's Telecom Dictionary*, 18th Edition (New York: CMP Books, 2002, p. 410), expansion found at http://annsgarden.com/poles/poles.htm.

view when calculating the access rate in its CCTA Decision. At page 9 of its CCTA Decision the Board adopted the calculation of useable space on a utility pole put forward in the evidence of CCTA witness Donald A. Ford.[7] Mr. Ford's evidence clearly demonstrates that the "communications space" he was describing for the Board's benefit was a finite vertical space (2 feet) within which wireline attachments could be made:

- The term "support structures" is used to denote facilities such as poles and duct (conduit) that are used to carry or contain electrical power and/or communications wires and cables. Given that the main support structures at issue in CCTA's application are poles, this evidence is restricted to matters related to utility distribution poles. (p.1)

- The two foot communications space can accommodate a number of users and cables. The user will attach a steel strand to the pole, and lash one or more communications cables to the strand. Typical spacing of the strand attachments is one foot, which means that a maximum of three strands can be attached to each side of the pole.(p.2)

- To ensure that subsidization of a cable operator by the owner of a support structure does not take place, the support structure owner must recover from the cable operator all direct costs associated with the use of a portion of the communications space by the cable operator. In other words, to avoid being subsidized by a support structure owner, a cable operator must reimburse a support structure owner for all costs caused by or attributable to the use of a portion of the communications space by the cable operator. (p.8)

Q. IS IT SURPRISING THAT THE BOARD WOULD HAVE NOT CONSIDERED WIRELESS ATTACHMENTS IN ITS CCTA DECISION ISSUED IN MARCH 2005?

A. No. For decades, the vast majority of utility pole communications attachment requests involved some type of cable attachment. Like those detailed above, the majority of requests were intended to support telecommunications or CATV applications using

[7] See Appendix C to the CCTA Application.

coaxial or fiber-optic cable, strung from pole to pole along a given route. Only in the past 3-4 years have requests for wireless attachments become commonplace as demand for higher-speed wireless communications have risen (in large part because of the proliferation of "smart phones" that support not only voice, but also data-driven applications). Indeed, despite receiving hundreds, if not thousands of, attachment requests over the years, THESL did not receive any requests for wireless attachments from CANDAS until 2009 - some 4 years after the CCTA Decision was issued.[8]

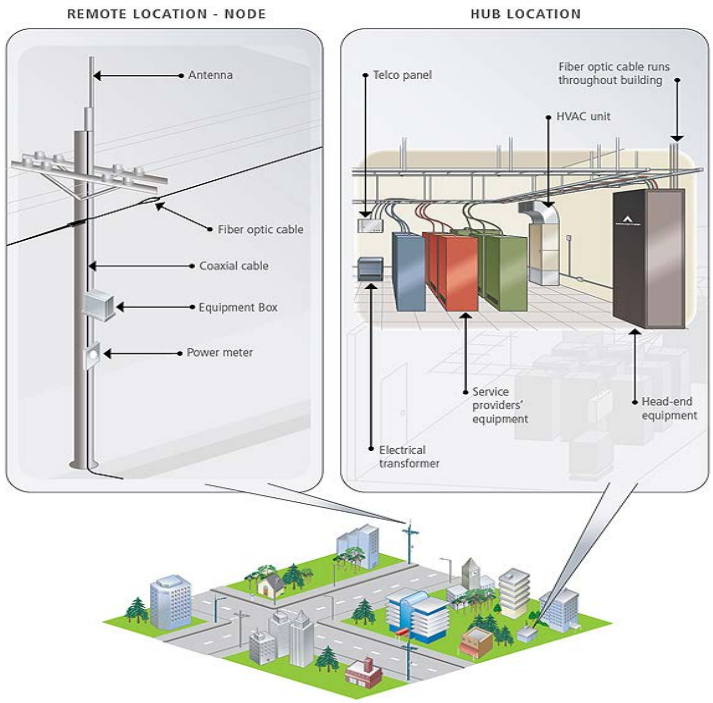
B. Wireless Equipment Will Not Fit Within the Communications Space

Q. PLEASE GENERALLY DESCRIBE WIRELESS POLE ATTACHMENTS.

A. There is no "typical or "standard" equipment or attachment process applicable to wireless equipment. Unlike traditional attachments intended to accommodate a self-contained cable within the communications space, wireless attachments come in many different shapes and sizes with as many different engineering requirements (intended to accommodate factors such as terrain, elevation, weather, etc.). Wireless pole attachments are likely to include some type of radio frequency ("RF") antenna, connections to transmission equipment (including a connection to fiber-optic cable either previously attached or appended in unison with the wireless attachment) in addition to power and control equipment attached to individual poles located throughout an engineered geographic region. The placement of these antenna is engineered in relation to the propagation properties of the equipment at issue in an attempt to provide necessary RF

[8] *See* CANDAS' *Application* at Tab 3. *See also* the Affidavit of Mary Byrne on behalf of THESL (hereafter "*Byrne Affidavit*"), paragraph 18.

signal to as many potential customers as possible. An example of such an attachment is depicted below. This diagram is taken directly from the sales literature of American Tower, a leading provider of wireless tower sites and network design assistance for wireless networking.[9]



The equipment detailed above comprises typical components of a Distributed Antenna System ("DAS"). DAS systems are designed to coordinate the use of several, smaller antennas spread throughout a geographic region. In today's environment, DAS networks are generally used in combination with more traditional stand-alone wireless tower sites in areas where either high-traffic volumes or terrain (e.g., indoor areas surrounded by concrete and steel, densely populated outdoor venues, etc.) tax the traditional wireless

[9] A complete copy of the American Tower "DAS Solutions" brochure is included as Attachment MTS-02, and can also be found at http://www.americantower.com/atcweb/SiteServices/UsSites/DAS+Networks.htm.

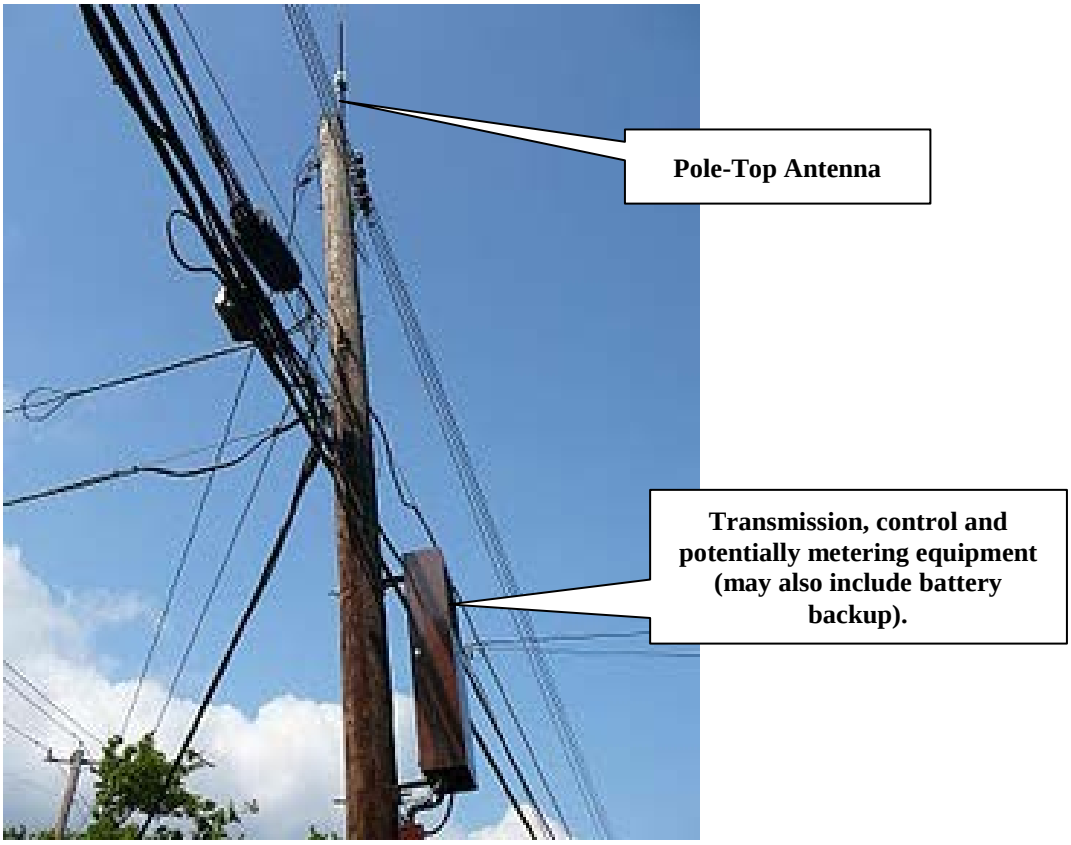
infrastructure causing undesirable service deterioration (i.e., call blockage, dropped calls, low-bandwidth availability, etc.).[10]

Q. HOW DO THESE TYPES OF WIRELESS ATTACHMENTS COMPARE TO TRADITIONAL ATTACHMENTS?

A. Wireless attachments of the type diagramed above are generally much larger and substantially more complex than traditional attachments, whether used for telecommunications carriers or CATV companies. In the example above, the outdoor wireless "attachment" actually includes the addition of numerous components to each the utility pole including: (a) an antenna; (b) an "equipment box" which houses necessary transmission and control equipment and, likely, battery backup equipment; (c) a power meter necessary to measure the amount of power being consumed by the attached wireless equipment; and, (d) cables connecting the various components of the antenna structure together. Also of note is the reference in the above diagram to the fiber optic cable. Those connections allow wireless operators to connect and coordinate multiple antenna sites geographically dispersed around a given service area. As detailed above, these various antenna sites are often connected to a local hub where the wireless transmission is transferred to the wireline network. An example of this type of DAS

[10] For additional information on DAS systems, see the following: (1) *Distributed Antenna Systems*, Dr. Adriano Mauri, available at: http://www.alino.com/Info/DistributedAntennaSystems/das.htm#DAS, (2) *Distributed antenna systems: From niche to necessity*, Fierce Wireless, March 4, 2010, available at: http://www.fiercewireless.com/story/distributed-antenna-systems-niche-necessity/2010-03-04, or (3) *Distributed Antenna Systems: Connecting America's hot spots*, RCR Wireless Special Report, April 2010, available at: http://www.rcrwireless.com/ARTICLE/20100427/STATIC/100429911/special-report-distributed-antenna-systems-connecting-americas-hot.

application in the field, using an existing utility pole as the necessary anchor, is provided below.[11]



Q. ARE THERE OTHER TYPES OF WIRELESS ANTENNA SYSTEMS THAT WIRELESS CARRIERS MAY SEEK TO ATTACH TO POWER POLES?

A. Yes. It is important to note that while CANDAS discusses primarily DAS antenna attachments in its evidence, its application is not limited only to DAS, but instead, would appear to encompass any wireless telecommunications attachment that its members or,

[11] http://whitmanhighcelltower.blogspot.com/2010/03/alternative-to-cell-tower.html.

for that matter, any Canadian Carrier may elect to propose at any point in time. In addition to DAS arrangements which tend to rely upon smaller antennas, there are numerous other types of wireless antenna systems, many of which can be attached to utility poles of varying size. These range from small WI-FI or WI-MAX antennas, to complete, stand-alone base-station units maintained for traditional cellular applications. I've provided just a few examples below:

The picture above, and the one below, are documentation maintained by the City of Portland as part of its *Strategic Vision* for municipal communications overseen by its Office of Cable Communications and Franchise Management. The City of Portland is somewhat unique in its documentation of wireless proliferation given the fact that Portland residents appear to have been particularly vocal about their objection to these

types of attachments being located in their neighborhoods or in close proximity to their homes.[12]

Both pictures above detail larger, more traditional cellular antenna array used by wireless providers.[13]

Q. APPROXIMATELY HOW MUCH POLE SPACE ARE WIRELESS COMPONENTS OF A DAS LIKELY TO UTILIZE?

A. Wireless attachments of the type being discussed by CANDAS use approximately 5 to 8 feet of pole space. For example, Niagara Mohawk Power Corporation (*d/b/a* National

[12] *See, e.g., A Hard Cell in Northeast Portland*, available at: http://www.naturaloregon.org/2010/02/26/a-hard-cell-in-northeast-portland/, also *Wireless Antenna Draws Heat*, The Portland Observer, January 21, 2010, available at: http://portlandobserver.com/?p=573.

[13] These pictures and additional materials (including the *Statement of Mission, Strategic Directions and Visions*) can be found at: http://www.portlandonline.com/cable/index.cfm?c=47110.

Grid), petitioned regulators in the State of New York to accept an agreement it had reached with its own affiliate National Grid Communications, Inc. for the placement of DAS wireless facilities on its electric transmission facilities.[14] The DAS facilities proposed by National Grid were similar to the diagram included above, i.e., a pole-top antenna in combination with an accessory panel (or equipment box), meter and connection to fiber-optic cable. Because the attached apparatus was so substantially larger than traditional communications pole attachments, the New York Public Service Commission ("NYPSC") required a higher attachment rate than what the two affiliates had agreed to. The final approved rate was based upon the following variables:

1. 2 ft. of pole space to anchor the pole-top antenna, plus
2. 5 ft. of pole space assigned to the accessory panel, equal
3. 7 ft. of space assigned to this single attachment (37.84% of the pole's total useable space).

The NYPSC confirmed these dimensions in its Order:[15]

> Each wireless attachment will consist of an antenna at the top of the pole, occupying about two feet of the current usable pole space, and an accessory panel that will occupy about five feet of pole space in the lower area of the pole. The antenna and panel are connected by a wire and are supplied with power by a wire attachment.
>
> The Distributed Antenna System ("DAS") requires:
>
> - a host base station with a wireline connection to the DAS;
> - distribution poles upon which DAS equipment can be installed;

[14] *Joint Petition of Niagara Mohawk Power Corporation and National Grid Communications, Inc. for Approval of a Pole Attachment Rate for Certain Wireless Attachments to Niagara Mohawk's Distribution Poles*, Case 03-E-1578, *Order Approving Petition with Modifications*, April 7, 2004.

[15] *Id*., pg. 3.

- a nearby fiber optic network (typically an existing system);
- a distribution pole network (Niagara Mohawk's distribution system);
- shared antennas and control boxes; and
- a neutral host for different wireless service providers.

The equipment attached to the distribution pole consists of an antenna varying in length from one to eight feet attached to the top two feet of the distribution pole. Between the communications space and the minimum grade level on the pole, the DAS equipment is mounted. This equipment includes (from top to bottom) a remote unit, a lightening protection box, an electrical ground within a u-shaped duct and an electric meter for the DAS service. The DAS contains a battery-powered back-up supply in the event of a distribution line loss of service.

Q. ARE THERE OTHER IMPORTANT PHYSICAL DIFFERENCES BETWEEN WIRELESS AND WIRELINE ATTACHMENTS?

A. Yes, as I have detailed above, wireless attachments are not confined to the "communications space" within which wireline attachments are generally found. Not only do these attachments use portions of the pole heretofore reserved for clearance or distribution facilities, they also require coordination between multiple pieces of equipment attached at varying points on the pole (e.g., pole-top antenna, management equipment below the neutral/separation space, battery back-up, etc.), oftentimes connected to low voltage power and coordinated with wireline attachments (e.g., fiber optics). In these circumstances the make-ready work and the ongoing management effort for poles that include these attachments may well give rise to relatively higher costs.[16]

C. CANDAS' Proposed Pole Attachments

Q. HOW DOES CANDAS DESCRIBE THE WIRELESS ATTACHMENTS IT INTENDS TO USE FOR THE PROPOSED TORONTO DAS NETWORK?

[16] *Byrne Affidavit*, paragraph 20.

A. The exhibits to Mr. Larsen's testimony provide images of numerous DAS nodes, or installations, each of which is substantially larger than traditional pole attachments. Moreover, these nodes all include equipment mounted outside of the communications space. Mr. Larsen's Exhibit D, for example, describes an "AS-BUILT" Toronto DAS Network node comprising: (1) an antenna; (2) an antenna bracket; (c) an FTE ("Fiber Termination Equipment ") box; (d) a radio box; and, (e) UPS ("Uninterruptable Power Supply") equipment. This equipment is attached to the pole in various locations outside the communications space beginning at about 3.9 meters above ground in an area generally described as the clearance space and extending upward to about 6.4 meters above ground through the communications space.[17] In total, CANDAS' proposed node uses approximately 2 1/2 meters of pole space, or about 8 feet, and is largely attached outside of the communications space. At Exhibit B of his testimony, Mr. Larsen provides photos of DAS nodes used by ExteNet in other cities. In most cases, these installations also include pole-top antennas supported by numerous equipment and power boxes which are mounted near but not wholly within the communications space. In each case, the total space used by these DAS nodes is substantially larger than traditional pole attachments that occur within the communications space and substantially different than any type of "attachment" considered by the Board in its CCTA Decision (or defined by the parties in the Settlement Agreement).

[17] At this height, equipment appears to be mounted in the separation space.

D. The CCTA Decision Contemplates Small Attachments Within The Communications Space

Q. DO THE WIRELESS POLE ATTACHMENTS DESCRIBED BY CANDAS APPEAR TO BE CONSISTENT WITH THE POLE ATTACHMENTS PROVIDED FOR IN THE CCTA DECISION?

A. No, they do not. In fact, based upon my review of the CCTA Decision and underlying application, it is clear to me that the attachments CANDAS proposes here are materially different in at least three ways.

First, whereas CANDAS has requested pole-top attachments in this proceeding, the CCTA Decision specifically indicates that the conditions it adopted "apply to access to the ***communications space*** on the LDC poles." ***(emphasis added)***. In fact, at least one witness filing evidence on behalf of the CCTA clarified that the "top 11.5 feet (3.55 meters) of the pole is power space."[18] Hence, CANDAS' pole-top request is clearly outside the scope of the plain language of the CCTA Decision as well as the CCTA's expert testimony and request in that proceeding.

Next, as I have previously described, CANDAS' proposal does not provide any limits, or even expectations, as to the pole space used by any particular wireless attachment. As I have shown, these attachments are likely to consume roughly 8 feet of pole space. By way of comparison, the CCTA had requested that cable companies be able to use the communications space - comprising 2 feet - and proposed specific prices considering "that a cable operator also uses half of the separation space for a total cable

[18] Appendix C, Evidence of Donald A. Ford, at p.2.

usage of 2.6 feet."[19] Hence, whereas the CCTA Decision limited attachment parameters to the communications space and calculated pricing based on a formula assuming no more than 2.6 feet of space may be used by all attachers, CANDAS is requesting that it not be limited in the amount of space it uses, but instead, be entitled to use as much space on the pole as necessary for its needs - which, in all likelihood, is 3 to 4 times more than the entire space allocation to be shared by all connectors in the CCTA Decision.

Finally, nothing that I could find in the CCTA Decision or the CCTA's application suggested that attachments would be mounted to poles below the communications space, adding to visual clutter much closer to eye level, as well as the ability for THESL personnel to manage other equipment on the pole.

In addition to these issues, it is reasonably clear to me that the CCTA and the Board likely did not contemplate the attachment of DAS network nodes by wireless carriers. As I have previously discussed, the CCTA's expert described poles as support structures "that are used to carry or contain electrical power and/or communications wires and cables" and that users of poles would "attach a steel strand to the pole, and lash one or more communications cables to the strand." Hence, the CCTA clearly was not contemplating wireless attachments when it filed its original petition with the Board and its expert did not discuss wireless attachments when proposing a pole attachment rate. The words "antenna," "DAS" and/or "wireless" cannot be found in the CCTA Decision at all. Hence, any suggestion that wireless antennas and supporting equipment similar to that discussed in CANDAS' Application and supporting evidence were contemplated by

[19] Appendix C, Evidence of Donald A. Ford, at p.21.

the Board and addressed in the CCTA Decision in early 2005 ignores the material differences between traditional pole attachments and the DAS attachments that are the subject of the CANDAS application.

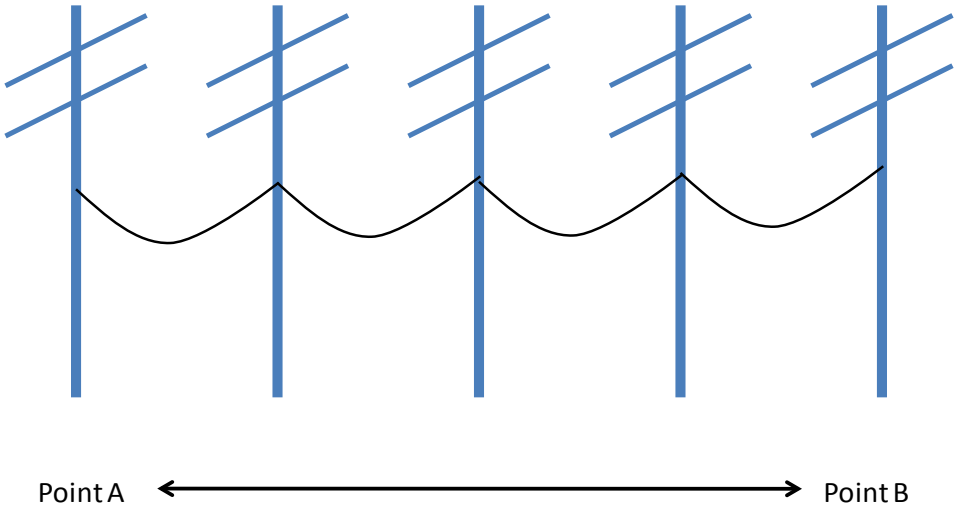
III. POWER POLES ARE NOT ESSENTIAL TO WIRELESS SERVICES

Q. ARE WIRELESS ATTACHMENTS TO POWER POLES ESSENTIAL TO WIRELESS SERVICES AS SUGGESTED IN CANDAS' APPLICATION?

A. No. I understand that CANDAS seeks access to power poles throughout Ontario under two theories. First, CANDAS argues that the CCTA Decision applies to wireless attachments and, therefore, it has already been determined that poles are essential facilities. Alternatively, CANDAS argues that if it is determined that the CCTA Decision did not already address wireless attachments, the Board should affirmatively apply that Decision to wireless attachments based upon a finding that power poles are essential to wireless services. I discuss above why I believe the CCTA Decision does not apply to wireless attachments. In this section I discuss why the Board should reject CANDAS' invitation to dramatically expand the scope of its original CCTA Decision. I demonstrate that attachments as they relate to wireless services are very different from traditional wireline attachments, not only in size and structure, but also in the economics that define "essential facilities."

Q. WHY ARE THE ECONOMICS ASSOCIATED WITH WIRELESS ATTACHMENTS LIKE DAS ANTENNAE DIFFERENT FROM TRADITIONAL CABLE ATTACHMENTS?

A. The primary difference is the "barriers to entry" that exist with respect to alternatives supporting traditional wireline attachments but are absent for wireless attachments. The primary theory supporting regulated rates, terms and conditions for utility pole attachments is the notion that utility poles represent an "essential facility."[20] In the case of wireline attachments, the primary basis of this theory generates from the relatively unique nature of utility poles and their organized deployment along a given route. For example, the right to attach cables to a single utility pole would be of little value to a telecommunications or CATV provider without the right to further extend the cable to additional poles. It is the ability to use utility poles in combination along a given route so as to convey necessary transmission cables contiguously from point A to point B that makes traditional utility pole attachments so valuable and unique (as diagramed simply below).



[20] *CCTA Decision*, pg. 3.

Likewise, it is this relatively unique contiguous nature of a pole-route's design that creates "barriers to entry" which realistically limits the number of alternative forms of supply, thereby arguably creating market power which regulation is intended to combat.[21] In the case of wireless communication attachments, however, the equipment at issue does not rely to the same extent upon the contiguous nature offered by a pole-route. Instead, wireless attachments rely upon utility poles primarily for elevation, and to some extent, strategically placed right-of-way. However, these attributes can be found in numerous alternative forms, e.g., buildings, stand alone towers, billboards, commercial signage or nearly any other elevated structure. And, importantly, wireless providers have for some time taken advantage of these other alternatives.

Q. IS IT IMPORTANT TO DEFINE THE PROPER PRODUCT AND GEOGRAPHIC MARKETS BEFORE DETERMINING WHETHER "MARKET POWER" EXISTS, AND THEREAFTER, WHETHER A GIVEN FACILITY IS AN "ESSENTIAL FACILITY?"

A. Yes. Dr. Yatchew describes his analysis of the proper markets in his evidence. I understand that Dr. Yatchew has determined that for purposes of the CANDAS application (and THESL's request for forbearance), the relevant product market is the market for siting wireless attachments. Further, Dr. Yatchew determines that the CANDAS application is insufficient in defining a relevant geographic product market in that its request is very broad from a geographic perspective (i.e., all of Ontario), while its

[21] In the traditional case for regulated pole attachments, the substantial reproduction cost, difficulty in obtaining necessary access to rights-of-way and societal impact (e.g., aesthetics) of erecting competing pole routes increase the relative barriers to entry associated with the market for utility attachments.

evidence in support of its request is far more geographically limited (discussing primarily issues associated with the densest urban portions of Toronto).

Q. DOES CANDAS DESCRIBE EITHER THE PRODUCT OR GEOGRAPHIC MARKET WITHIN WHICH IT BELIEVES POLES ARE AN "ESSENTIAL FACILITY?"

A. No. CANDAS appears to rely solely upon the Board's prior decision that utility poles are "essential" in relation to wireline attachments, to extrapolate that those poles must also, therefore, be essential to wireless attachments. That logic completely ignores the material differences that exist between the two types of attachments. Further, it is important note that CANDAS' evidence is limited to a particular outdoor DAS-based network designed to support Public Mobile's plans to provide wireless services in the City of Toronto. According to CANDAS, the use of power poles is essential to the rollout of its proposed plan.[22] However, even if we take the CANDAS evidence as is, the extent to which a facility is "essential" should not be considered based upon the business plan and/or experience of a single market participant using a particular type of technology. Instead, I understand that the Board has already described the framework around which an "essential facility" may be evaluated based upon the potential for market power and the resultant level of competition necessary to protect the public interest.[23] It is the competitiveness of the market at issue that must guide that decision, not a given carriers' ability to enter the market using a particular entry strategy (e.g., DAS).

[22] See CANDAS response to THESL Interrogator No.3(b) wherein CANDAS indicates the network was planned to meet the needs of Public Mobile - and possibly - other wireless carriers.

[23] Ontario Energy Board, Decision in *Natural Gas Electricity Interface Review Proceeding* (NGEIR), EB-2005-055 I (November 6, 2006).

Q. ARE THERE MULTIPLE CARRIERS IN THE WIRLESS SERVICES MARKET THAT PROVIDE SERVICE USING MEANS OTHER THAN ATTACHING DAS ANTENNAE TO UTILITY POLES AS CANDAS PROPOSES HERE?

A. Yes, in fact, the predominate method of entering and expanding wireless service coverage in the wireless services market does not rely upon attaching antennae to utility poles. The primary method of providing wireless services in Toronto (and elsewhere) involve self-erected towers at elevation sufficient to serve a substantial geographic region, substantially larger than the region that would be served by a DAS location. These are generally referred to as "macro" sites (whereas DAS and other technologies are often referred to as "small" cell sites). For example, even Public Mobile was able to deploy a macro cell site-based network in which it placed numerous traditional macro cell sites throughout the city as a complete substitute for the DAS network it intended to build utilizing attachments to power poles.[24] Public Mobile apparently uses this macro-site network to offer its wireless services throughout Toronto today.[25]

C. Macro Cell Site Deployment Is A Good Substitute For DAS Based Deployment

Q. IS THE MACRO CELL SITE DEPLOYMENT STRATEGY RELATIVELY QUICK TO IMPLEMENT IN TORONTO?

A. Apparently, it is. Mr. O'Shaughnessy testified that Public Mobile switched to a traditional macro cell site deployment strategy at the end of 2009. And, although CANDAS refused to provide any specific detail in response to discovery as to the precise

[24] *See* Written Evidence of Brian O'Shaughnessy at pp.8-9.
[25] *Id.*

timeline, locations and costs in comparison to the DAS deployment it had intended to use, Public Mobile was apparently able to launch services in Toronto in May of 2010, approximately 5 to 6 months after it changed its deployment strategy.[26]

Q. HAS CANDAS BEEN ABLE TO DEMONSTRATE THAT PUBLIC MOBILE, USING ITS MACRO-SITE NETWORK, HAS LIMITED COVERAGE AREA OR OTHER DEFICIENCIES IN ITS SERVICE?

A. No. When asked to provide information that would illuminate this issue, CANDAS and Public Mobile refused, indicating they did not understand the relevance of such information.[27] I suspect that had there been serious coverage issues which CANDAS wanted to bring to the Board's attention, they would have been disclosed in response to discovery. That said, Public Mobile's own website provides a coverage map for the Toronto area suggesting that the entire city of Toronto is fully covered.[28]

Q. ARE THERE NUMEROUS TOWERS AND OTHER SITING FACILITIES THAT ALREADY EXIST IN TORONTO?

A. Yes. Industry Canada maintains Canada's national database of radio frequency licenses, the Assignment and Licensing System ("ALS"), which includes detailed information on all registered antenna sites used by cellular, PCS ("Personal Communications Services"), and AWS ("Advanced Wireless Services") system operators.[29] This database demonstrates that there are roughly 4,000 cellular/PCS/AWS antenna arrays currently

[26] http://www.theglobeandmail.com/report-on-business/public-mobile-launches-cellphone-service/article1580258/

[27] See CANDAS response to THESL Interrogatory Numbers 50(f), 50(l) and 50(m).

[28] http://www.publicmobile.ca/pmconsumer/coverage

[29] See Industry Canada Spectrum Direct – Radiofrequency Search, at http://www.ic.gc.ca/eic/site/sd-sd.nsf/eng/h_00025.html

operating within 25 kilometers of the center of Toronto.[30] Moreover, the database also indicates that there are approximately 1,343 individual physical locations at which one or more radio communication carriers' antenna arrays are currently operating within the city of Toronto.[31] Each of these sites is a direct alternative to placing wireless antennae on a THESL utility pole for purposes of supporting the provision of wireless services.

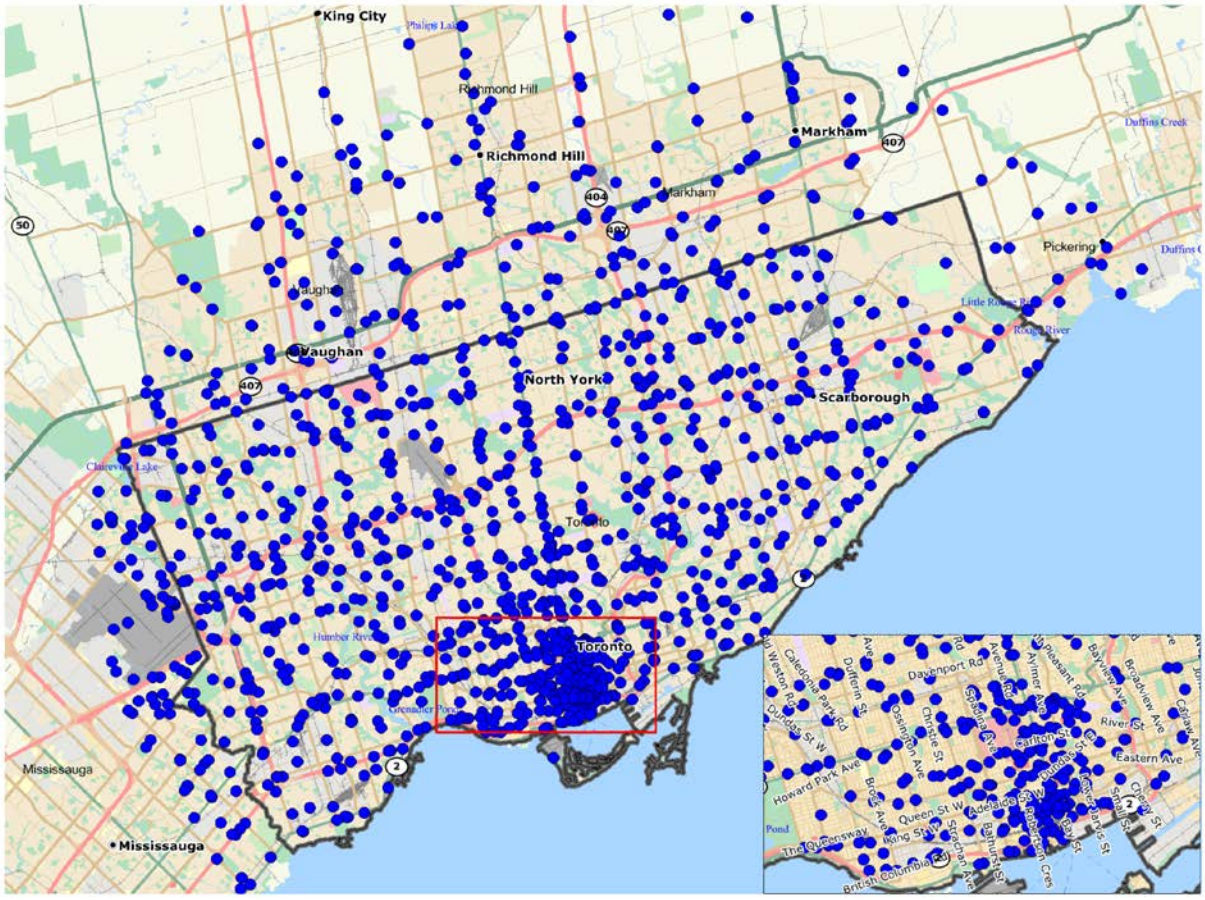
The City of Toronto maintains a database similar to that managed by Industry Canada that identifies potential sharing sites. At present, the database includes 140 pages of company names, location addresses, city ward numbers and antenna heights.[32] These data identify more than 7,000 antennas operating within the city of Toronto. Moreover, they also identify more than 1,300 physical locations within the city of Toronto where site sharing, or co-location, is a possibility. To put this into perspective, there are, on average, more than 2 potential co-location sites per square kilometer in the Toronto area. The maps below identify each of the unique antenna sites located within 25 km of the center of Toronto, as described within the ALS database:

[30] See Attachment MTS-03 (Listing of Cellular/PCS/AWS Antenna Arrays w/i 25 Km. of Toronto's City Center). For purposes of this listing, an antenna array is defined as one or more antennas operating at the same licensed frequency at a single station site (i.e., physical location), by a particular wireless carrier. An antenna array may include several antennas oriented in different directions, and multiple carriers may be operating antenna arrays at the same station site. As described in Attachment MS-03, this data was compiled using the Spectrum Direct Geographic Area Search Tool, see http://sd.ic.gc.ca/pls/engdoc_anon/web_search.geographical_input

[31] See Attachment MTS-04 (Listing of Cellular/PCS/AWS Station Sites w/i the City of Toronto). This listing was compiled from the data underlying Attachment MTS-03, by eliminating multiple antenna array entries at the same station location.

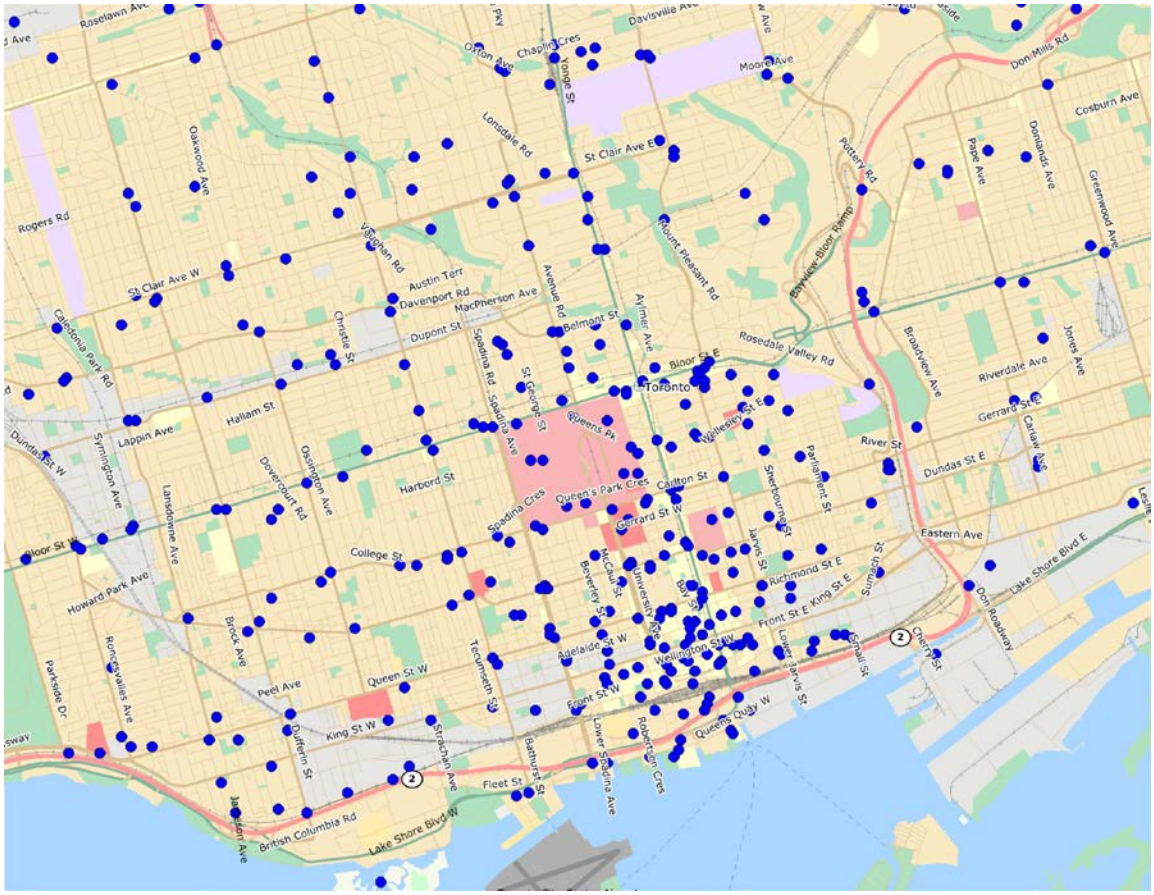
[32] See http://www.toronto.ca/planning/telecommunications.htm

MAP 1: ALS Listed Antenna sites w/in 25 Km of Toronto center
(see also Attachment MTS-03)



The map below provides a more detailed look at the excerpted portion above, representing the densest portion of the city:

MAP 2: Detail of Toronto city center
(see also Attachment MTS-03)



Q. OF WHAT SIGNIFICANCE IS THE INFORMATION YOU DESCRIBE ABOVE?

A. The information above leads to two important conclusions. First, as pictured below, it is clear that there are roughly 1,300 unique locations in or near the City of Toronto that currently accommodate wireless antennae being used to serve the wireless services market. Those locations clearly exist as alternatives to THESL utility poles thereby undermining CANDAS' claim that THESL poles are an "essential facility." Second, it is clear that Industry Canada and the City of Toronto work diligently to ensure that the wireless services market is as efficient as possible when erecting additional antennae

sites. The Board should consider these efforts before providing wireless service providers relative *carte blanche* in accessing THESL poles for additional sites aimed at supporting a particular technology (DAS) that serves merely as a substitute for technologies already supported by existing sites.

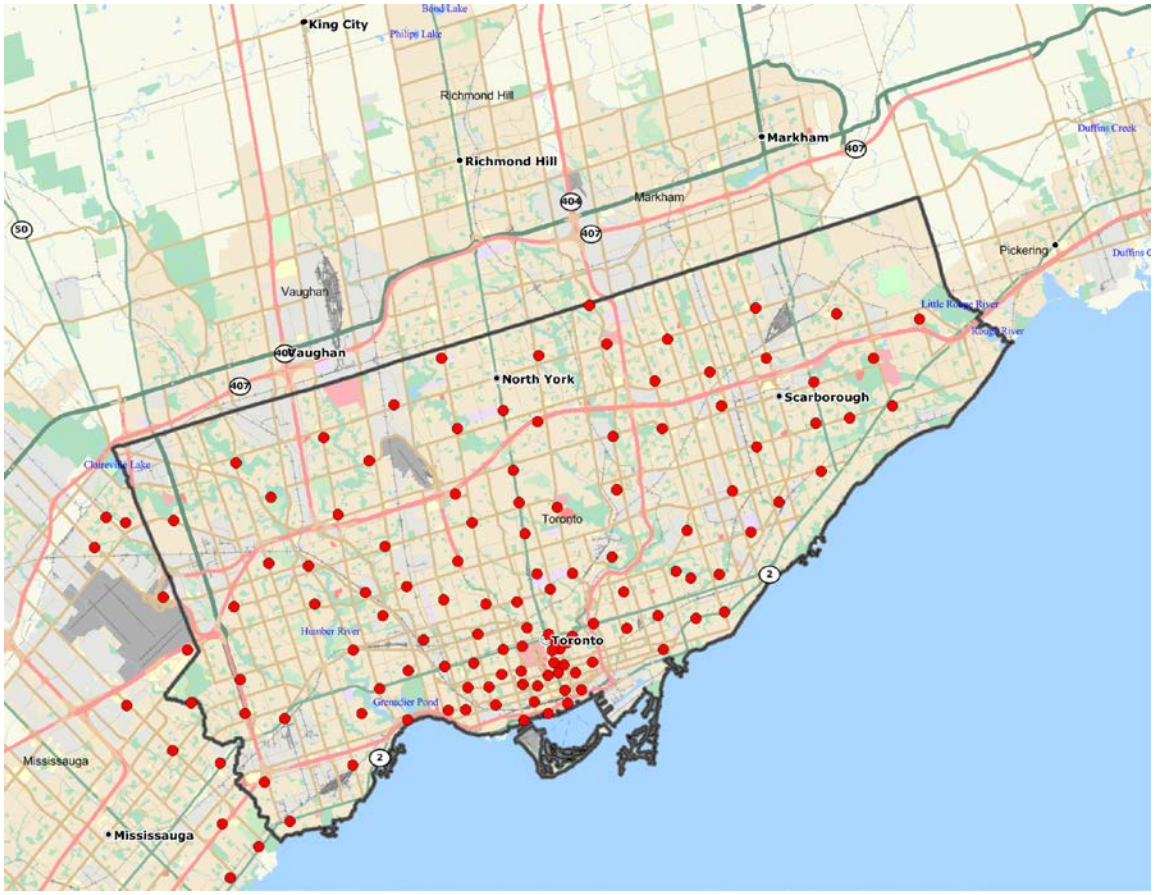
Q. HAVE YOU BEEN ABLE TO DETERMINE THE EXTENT TO WHICH PUBLIC MOBILE WAS ABLE TO LOCATE ANTENNAS WITHOUT THE USE OF THE TORONTO DAS NETWORK?

A. While Public Mobile and CANDAS refused to provide this information in response to THESL's interrogatories,[33] a good deal of information is available through the Industry Canada database discussed above. That database shows Public Mobile has established antennas in 125 unique locations within 25 kilometers of the center of Toronto.[34] The geographic distribution of Public Mobile's existing antenna locations is shown in the figure below.

[33] See CANDAS response to THESL Interrogatory Numbers 50(b) and 50(j).

[34] See Attachment MTS-05 (Listing of Public Mobile's Cellular/PCS/AWS Antenna Sites Within 25 Km. of Toronto's City Center). This listing was compiled from the data underlying Attachment MS-03, by selecting only those records indicating Public Mobile was the license holder, and then eliminating multiple antenna array entries at the same station location.

MAP 3: Public Mobile's antenna locations w/i 25 km. of Toronto center
(also see Attachment MTS-05)



Q. PLEASE DISCUSS THE EXTENT TO WHICH COMPETITIVE TOWER AND/OR PROPERTY MANAGEMENT COMPANIES OFFER SITES FOR THE PLACEMENT OF ANTENNAS WITHIN TORONTO.

A. While outdoor DAS[35] is still a relatively new deployment strategy in the wireless industry, traditional cell tower development and management has matured into big business. In the United States, for example, there were 253,086 cell sites in 2010, many of which were managed by large firms such as American Tower, Crown Castle and

[35] Also called "O-DAS."

SBA.[36] Data pulled from SBA's website alone shows there are 142 sites available throughout Ontario as of 8.20.11.[37] Another management company, Antenna Management also offers sites in the Toronto area.[38]

D. Substitutes for DAS in a Heterogeneous Wireless Network

Q. ARE MACRO SITES AND SMALL CELLS (e.g., DAS AND OTHERS) OFTEN USED IN COMBINATION TO ENHANCE THE SERVING CAPACITY OF WIRELESS CARRIERS?

A. Yes, they are. With increased demands on wireless networks resulting in large part from the proliferation of data applications, carriers are supplementing their macro-site networks with multiple small cell site technologies (DAS being one such technology) intended to provide them increased capacity, primarily in densely populated areas. This combination of technologies is often referred to as a "heterogeneous wireless network." Heterogeneous networks combine the advantages of traditional macro cell sites complimented by additional, lower power network layers, or small cells, each of which leverages existing technologies to provide the best possible wireless experience. [39] The diagram below was presented to Industry Canada by Rogers Communications in a recent consultation regarding 700MHz spectrum.[40] The diagram describes how Rogers intends

[36] See Year-End 2010 Top-Line Survey Results located at http://www.ctia.org/media/industry_info/index.cfm/AID/10316.

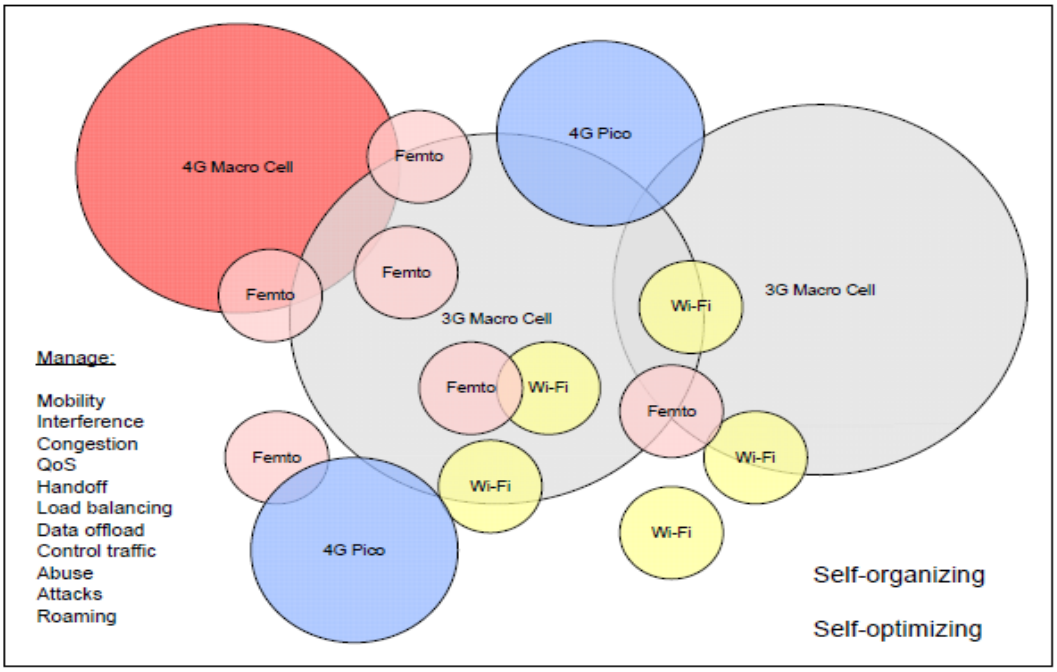
[37] http://map.sbasite.com/.

[38] http://www.antennamgt.com/.

[39] For a more detailed discussion of heterogeneous networks and the complimentary role lower powered small cell technologies play, see http://www.ericsson.com/res/thecompany/docs/publications/ericsson_review/2011/heterogeneous_networks.pdf.

[40] http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf09997.html

to increase its necessary wireless capacity, in the future, to accommodate increased demands. Rogers intends that traditional 3G and 4G macro cell sites will comprise the largest portions of its wireless network, with smaller, low powered cells (Wi-Fi and Femtocells in this example) delivering coverage in certain densely populated (or dense demand) areas as a compliment to the larger, more traditional macro sites. Note that Rogers does not indicate that it will rely upon DAS to further its wireless capacity needs, instead, it intends to rely upon Wi-Fi offload and femtocell technology (both of which are direct substitutes for the DAS network CANDAS described below):



Q. PLEASE ELABORATE ON HOW THESE SMALLER CELLS COMPLIMENT THE MACRO NETWORK.

A. 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. Alcatel-Lucent describes the benefits of a heterogeneous network as follows:

> Combining these different network layers can deliver a seamless service. At home the subscribers' mobile internet sessions are routed through the residential femtocell; on their commute into the city, their service is delivered by the wide-area 3G. Once in the city, data sessions are delivered by urban 4G LTE macro cells. As the subscriber stops for coffee and a croissant, service is then routed via a metro femtocell. As they walk into their office next door, data sessions are then routed through enterprise femotocells. Subscribers get a continuous, high-quality experience, and operators can meet the data demand both geographically and during peak loads.[41]

While each of these technologies complement the larger, macro based network, they are competing technologies and serve as substitutes for one another (and for DAS networks) in certain, densely populated, or high traffic areas, or in areas which are difficult to cover through macro sites.

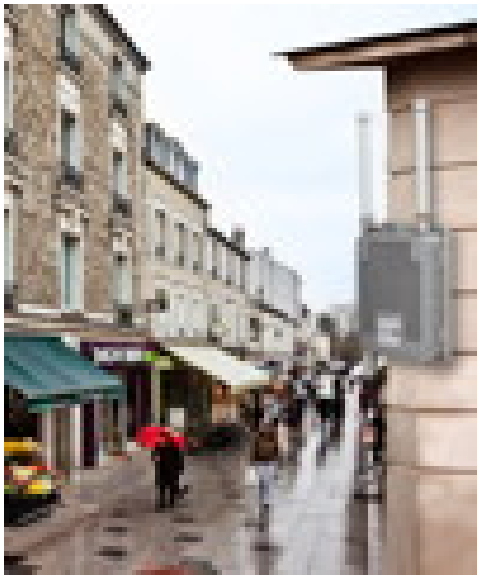
E. WiFi and Femtocells As Substitutes for DAS

Q. PLEASE DESCRIBE THE "FEMTOCELLS" IDENTIFIED IN THE DIAGRAM ABOVE?

A. A femtocell is used to improve mobile network coverage in small areas. They connect locally to mobile phones and similar devices through their normal GSM, CDMA, or UMTS connections, and then route the connections over a broadband internet connection

[41] See Attachment MTS-06 at p.2. See also, http://www.wilson-street.com/2011/05/solving-the-capacity-crunch-small-cells%E2%80%99-role-in-a-4g-lte-network/

to the carrier, bypassing the traditional cell sites.[42] Femtocells can be deployed in residential, enterprise and urban settings. A picture of a femtocell installed in an urban, or metropolitan, environment is provided below[43]



Femtocell technology is relatively new but its flexibility and effectiveness is fueling substantial deployment growth. It is estimated that there are approximately 2.3 million 3G femtocells deployed worldwide as compared to roughly 1.6 million 3G macro cell sites.[44] Growth in femtocell deployment is also anticipated to increase substantially over the next several years with expectations that 48 million femtocells may be deployed by 2014. Korea's SK Telecom, for example, has recently announced its plans to deploy

[42] GSM ("Global System for Mobile"), CDMA ("Code Division Multiple Access") and UMTS ("Universal Mobile Telecommunications System") are standards by which wireless equipment is manufactured for purposes of interoperability.

[43] See Attachment MTS-06 at p.4. See also, http://www.thinkfemtocell.com/Use-Cases/new-business-case-study-makes-the-case-for-metro-femtocells.html.

[44] See Attachment MTS-06 a p.5. See also, http://www.cellular-news.com/story/49671.php

10,000 femtocell access points throughout South Korea's high traffic areas, including cafes, shopping malls, offices and apartment blocks. Alcatel-Lucent has released several statements regarding numerous carrier trials and the company has announced it holds more than 17 commercial deployment agreements in which carriers are deploying its new line of femtocells, including outdoor metro-femtocells.[45]

Q. DO FEMTOCELLS TYPICALLY CARRY BOTH VOICE AND DATA?

A. Yes, they do. Although I understand at least one carrier has restricted its femtocell deployment such that the small cells manage data connections only, leaving voice connectivity to the macro cellular sites currently deployed in the network.[46]

Q. CAN FEMOTOCELLS BE DEPLOYED WITHIN LARGE OUTDOOR, OR METRO TYPE, SETTINGS AKIN TO THE MANNER IN WHICH CANDAS INTENDS TO DEPLOY ITS DAS NETWORK IN TORONTO?

A. Yes. In fact, Alcatel-Lucent recently reported that its second generation of "metro femtocells" provide a footprint up to 300 meters in inner cities and up to 2 km, if positioned high enough, in less densely populated locations. [47] Hence, newer, higher powered generations of this proven technology when adapted specifically to the outdoor environment provide a compelling substitute to DAS for purposes of carrying both voice and data traffic in urban environments as a complement to larger, macro cell sites,

[45] See Attachment MTS-06 at p.7. See also, http://www.alcatel-lucent.com/wps/portal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4x3tXDUL8h2VAQAURh_Yw!!?LMSG_CABINET=Docs_and_Resource_Ctr&LMSG_CONTENT_FILE=News_Releases_2011/News_Article_002354.xml

[46] See Attachment MTS-07. See also, http://www.lightreading.com/document.asp?doc_id=208549; http://www.cieonline.co.uk/news/fullstory.php/aid/2442/picoChip_and_Contela_supply_SK_Telecom_in_first_commercial_Iuh_deployment.html

[47] See Attachment MTS-08 at p.1. See also, http://www.wilson-street.com/2011/03/easing-inner-city-congestion-with-public-service-femtocells/

especially when costs are considered. Alcatel-Lucent, estimates that metro femtocells can cover the same area as a macro cell site for approximately 1/10 the cost.[48]

Q. ARE POWER POLES NEEDED TO MOUNT METRO FEMTOCELLS?

A. No. Alcatel-Lucent metro femtocells, for example, are designed be attached to building walls and street furniture. Alcatel-Lucent touts the ease of installing its metro femtocell sites in the following way: an "engineer simply needs to mount the access point on a building or street furniture, plug in the power and the broadband and its ready to go."[49] In other words, metro femtocell sites are specifically designed to operate by affixing them to existing buildings and other structures without complex utility pole attachments. Further, they rely upon existing broadband infrastructure to backhaul traffic to the necessary network, without the need, or expense, of extending fibre-optic cables to the antennae site.[50]

Q. IN ADDITION TO FEMTOCELL TECHNOLOGY, ARE THERE OTHER ALTERNATIVES TO DAS NETWORKS?

A. Yes. The industry press is replete with case studies where various low powered wireless technologies are used to supplement macro-site based services in densely populated areas. For example, consider the Bloomberg Businessweek described case study of Towerstream, a 12 year old company that specializes in providing broadband coverage to corporations. Towerstream is in the process of deploying an outdoor network comprised

[48] See Attachment MTS-08 at p.2.
[49] See Attachment MTS-08 at p.1.
[50] *Id*.

of approximately 1,000 high end Wi-Fi routers in an area covering approximately 7 square miles in Manhattan. [51] The network allows users of Wi-Fi enabled mobile phones to off-load data traffic onto the Wi-Fi network, increasing data speeds up to 26Mbps, from approximately 0.35Mbps over the traditional 3G network.[52] When traffic that would ordinarily be carried on the macro cell is off-loaded to the Wi-Fi network and supporting transport, the macro cell network is less congested and, therefore, better able to manage the balance of its voice and data needs.

Interestingly, Towerstream appears to have deployed its network in a layered wireless configuration that does not rely upon fiber-optic cabling (or any "wired" facility) to backhaul traffic from customer access points ("AP") to its backbone network. Instead, Towerstream relies upon a high-capacity microwave "ring" to gather traffic from multiple APs for transport back to its core network, as demonstrated in the following diagram taken from its website:[53]

[51] http://www.businessweek.com/magazine/content/11_23/b4231036687850.htm
[52] *Ibid.*
[53] http://www.towerstream.com/images/pics/wifi-diagram-large.jpg

In December of 2010, AT&T described expansion of its outdoor Wi-Fi "hotzones" in New York City, including, for example, expansion of its existing Time Square Wi-Fi hotzone and new hotzones in Rockefeller Center and St. Patrick's Cathedral. In that same announcement, the company underscored similar deployments of this same technology in Charlotte, NC, Chicago, IL and upcoming projects in San Francisco, CA. In these situations, AT&T is managing its overall wireless network by "off loading" wireless demand that would normally require the participation of macro-cell equipment, using strategically placed Wi-Fi systems. As of July 2011, AT&T indicates

that it operated the United States' largest Wi-Fi network, with more than 24,000 hotspots and that it provides Wi-Fi access in more than 135,000 locations worldwide. Numerous other carriers, including T-Mobile and O2, for example, utilize Wi-Fi off load in the same way.[54]

Q. DO ALL OF AT&T'S WI-FI SITES OPERATE IN OUTDOOR SPACES?

A. No, much like DAS, Wi-Fi sites may be indoor or outdoor, depending upon the needs of the carrier. While AT&T didn't provided a specific breakdown, splitting the totals between indoor and outdoor applications, it is fair to assume a good majority of the Wi-Fi sites are operated indoors. That said, industry data suggest that somewhere between 60%-80% of wireless data connections occur indoors.[55] Additionally, carriers like Rogers also offer Wi-Fi services in an effort to off- load voice traffic, even offering discounted pricing for its Wi-Fi voice service.[56]

Q. DO WI-FI DEPLOYMENTS REQUIRE THE USE OF POWER POLES?

A. No, they do not. In the case of AT&T, the majority of its Wi-Fi sites are able to use indoor infrastructure, including power and internet connections for backhauling traffic. Towerstream's deployment in New York, for example, relies upon locating Wi-Fi equipment with building property owners rather than accessing public rights of way, power poles, etc.[57]

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[54] See Attachment MTS-09.

[55] See, for example, Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2010-2015 available at: http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html.

[56] http://www.telecompaper.com/news/rogers-launches-wi-fi-voice-service-for-smartphones

[57] Towerstream also reported that it pays roughly $50 to $1,000 per month per site to locate and operate its equipment in New York City.

Q. DO YOU DRAW ANY GENERAL CONCLUSIONS BASED UPON THE PROLIFERATION OF SMALLER WIRELESS CELL SITES LIKE THOSE YOU'VE DESCRIBED ABOVE?

A. Yes, I conclude that multiple alternatives to utility poles exist for the placement of radio equipment used to support wireless services (including broadband access). Further, it is clear that manufacturers are quickly creating, and carriers are adopting and implementing, technologies that require less stringent siting requirements that will serve only to expand the number of available alternatives (and reduce siting costs) for these same purposes in the future.

A. CANDAS' Requested Relief Is Not Limited To Toronto

Q. IS IT YOUR UNDERSTANDING THAT THE SCOPE OF CANDAS' APPLICATION IS LIMITED TO THESL AND/OR TORONTO?

A. No, it is not. My understanding is that CANDAS' application requests an Order determining that the Board's CCTA Decision applies to all electricity distributors operating throughout Ontario. As such, the request would appear to apply to all power poles in Ontario regardless of who owns them and whether they are essential to the provisioning of wireless services. CANDAS' Application specifically requests the following:

> (a) Orders under subsections 70(1.1) and 74(1) of the *Ontario Energy Board Act,*1998 ("OEB Act"): (i) determining that the Ontario Energy Board's RP-2003- 0249 Decision and Order dated March 7, 2005 ("CCT A Order") ***requires electricity distributors to provide*** "Canadian carriers," as that term is defined in the *Telecommunications Act,* S.C. 1993, c. 38 ("Telecommunications Act"), with access to the power poles of such distributors for purposes

of attaching wireless equipment, including wireless components of distributed antenna systems ("DAS"); and (ii) directing all licensed electricity distributors to provide such access if they are not so doing;

(b) in the alternative, an Order under subsection 74(1) of the OEB Act ***amending the licences of all electricity distributors requiring them to provide*** Canadian carriers with timely access to the power poles of such distributors for purposes of attaching wireless equipment, including wireless components of DAS:

(c) an interim Order under subsection 21(7) of the OEB Act ***directing electricity distributors to refrain*** from adopting, implementing or enforcing, as the case may be, any policy or conduct that denies Canadian carriers timely access to the power poles of such distributors for purposes of attaching wireless equipment, including wireless components of DAS, pending disposition of the Applicant's requests for final orders;

(d) an interim Order under subsection 21(7) of the OEB Act directing Toronto Hydro Energy Services Inc. ("THESI") to identify THESI's light standards, poles or other structures classified as distribution assets in accordance with the Board's Decision and Order issued on February 11, 2010 in EB-2009-0180 ("MADD Order") and to refrain from removing, selling or disposing of any DAS facilities currently affixed to any of the foregoing, pending disposition of the Applicant's requests for final orders. A copy of the MADD Decision and Order is included at Tab 1 of this Application;

(e) an Order under subsections 74(1) and 70(2)(c) of the OEB Act ***amending the licences of all licensed electricity distributors requiring them to include,*** in their Conditions of Service, the terms and conditions of access to power poles by Canadian carriers, including the terms and conditions of access for the purpose of deploying the wireless and wireline components of DAS, such terms and conditions to provide for, without limitation: commercially reasonable procedures for the timely processing of applications for attachments and the performance of the work required to prepare poles for attachments ("Make Ready Work"); technical requirements that are consistent with applicable safety regulations and standards; and a standard form of licensed occupancy agreement, such agreement to provide for attachment permits with terms of at least 15 years from the date of attachment and for commercially reasonable renewal rights;

(emphasis added)

With the exception of paragraph (d), which applies to THESL specifically, CANDAS' requests apply to "all electricity distributors," seeking to amend their licenses generally rather than in the specific geographic areas or markets in which the Board has determined that power poles comprise essential facilities regarding the provisioning of wireless telecommunications services. As I discuss below, the evidence CANDAS has offered in this proceeding does not even suggest access to power poles is essential to the provisioning of wireless telecommunications services in densely populated areas within Toronto, let alone the entire Province of Ontario.

B. CANDAS' Evidence Is Limited To Toronto

Q. SETTING ASIDE WHETHER OR WHERE CANDAS' MEMBERS ARE ENTITLED TO ACCESS POWER POLES PURSUANT TO THE CCTA DECISION, HOW DOES CANDAS DESCRIBE ITS NEED FOR SUCH ACCESS?

A. CANDAS states that it intended to attach the components of a DAS to 790 power poles in the City of Toronto in support of Public Mobile's wireless network:

> Without access to existing power and lighting poles ***in the City of Toronto*** upon commercially reasonable terms and conditions, neither ***the Toronto DAS Network, nor any other DAS network deployment in Toronto***, would be economically or technically feasible.[58] ***(emphasis added)***

Q. HOW DOES CANDAS ENVISION THE TORONTO DAS NETWORK SUPPORTING PUBLIC MOBILE'S WIRELESS SERVICES IN TORONTO?

[58] Application at paragraph 6.6.

A. Generally speaking, CANDAS states that DAS technology can function as a substitute for or as a complement to - in particular areas with particular demands - a traditional macro cell site architecture as follows:

> Depending on the particular needs of a given wireless carrier, the customers it serves and the characteristics of the area in which services are to be provided, a DAS network may be: ***(i) a complete substitute for a traditional macro cell site deployment (as detailed below)***; or (ii) a ***complement to a traditional deployment,*** providing enhanced coverage and increased network capacity ***in particular areas with high demands*** for services.[59]
> ***(emphasis added)***

In this specific case, CANDAS has indicated the Toronto DAS Network was intended to be a substitute deployment strategy (i.e., Public Mobile would use the DAS rather than a traditional macro cell site deployment). Public Mobile's witness, Mr. O'Shaughnessy, indicates that DAS was public Mobile's "preferred solution for delivering new mobile wireless services to Toronto residents and local business" and that it "selected ExteNet Systems (Canada) Inc. ("ExteNet") to develop a DAS network in Toronto," rather than provisioning its services in Toronto based upon a traditional macro site deployment.[60]

Q. HAS THE APPLICANT STATED WITH SPECIFICITY WHERE IN TORONTO IT BELIEVES ACCESS TO POLES IS NECESSARY TO PROVISION WIRELESS SERVICES?[61]

A. Other than indicating in its Application that the Toronto DAS Network is to be comprised of 790 nodes designed to cover the city, it has not. In fact, CANDAS has specifically refused to answer interrogatories aimed at determining the precise geographic area the

[59] Application at paragraph 5.4.

[60] See Written Evidence of Brian O'Shaughnessy at p.3.

[61] Application at paragraph 6.3.

Toronto DAS Network was designed to address. For example, when asked to provide a map or other information detailing the coverage area to be supported by the node sites included in the planned network, CANDAS refused, indicating that the "information requested is not relevant to the issues raised by the Application" and that the production of such information would be "unduly onerous relative to its probative value."[62] Further, when asked to show the extent to which Public Mobile's current coverage area, call carrying and data carrying capacities differ from those to be supported by the Toronto DAS Network, CANDAS again refused to provide any information, this time indicating that it "does not understand the relevance of " the request and that requiring a response "having regard to the probative value, if any, would be unduly onerous." [63] It stands to reason that if Public Mobile had a need for the Toronto DAS Network, it would be easy for it to answer these questions and to demonstrate how and where macro cell site deployment fails as compared to the planned DAS deployment. Despite the Applicant's refusal to provide information related to the specific geographic area in which it claims poles are essential to its wireless services and the specific failing of its substitute network deployment, all of its evidence relates to City of Toronto as opposed to the whole Province of Ontario.

[62] See CANDAS' response to THESL Interrogatory number 12 (b)

[63] See CANDAS' response to THESL Interrogator Numbers 50(f) and 50 (m).

IV. ALTERNATIVES TO WIRELESS POLE ATTACHMENTS FOR DAS DEPLOYMENTS

Q. CAN DAS BE PLACED ON STRUCTURES OTHER THAN UTILITY POLES?

A. Yes. Canadian carriers are required by Industry Canada and the City of Toronto, to explore site sharing and co-location options. And, while it is likely that not all of the existing tower sites, roof tops and other structures currently supporting other wireless technologies may be suitable for any particular DAS deployment, they certainly offer a large set of potential site options. Moreover, as I discuss below, use of existing buildings, particularly those to which fiber facilities have already been deployed, existing city infrastructure and the placement of new poles and/or decorative fixtures are other alternatives carriers pursue when deploying a DAS in an urban environment. Moreover, as with the more traditional cellular tower options, additional alternatives are likely to evolve over time as the market for placement of wireless attachments matures.

Q. CAN DAS ANTENNAS BE MOUNTED ON EXISTING BUILDINGS AND OTHER EXISTING INFRASTRUCTURE?

A. Yes, they can. For example, in October of 2010 Crown Castle,[64] one of the United States' largest independent owners and operators of shared wireless infrastructure, announced it was constructing a DAS for the Colonial Williamsburg Foundation which "utilizes existing infrastructure for antenna placement, including rooftops, the cupolas of historic buildings" and stealth flagpoles.[65] The company also deployed a 42 node DAS covering 16 square miles in Paradise Valley, AZ without using any utility poles. In this case, the

[64] http://crowncastle.com/das/index.aspx

[65] See Attachment MTS-10. See also, http://www.cellular-news.com/story/45750.php.

company used a handful of traffic signals and dozens of new, decorative installations that were designed to conceal the wireless antenna equipment.[66]

Q. CANDAS STRESSED THAT "DAS TECHNOLOGY DEPENDS ON LOW ELEVATION ATTACHMENT OF NODES NEAR FIBER OPTIC CABLING AND ELECTRIC POWER."[67] ARE POWER POLES THE ONLY PLACES WITHIN TORONTO WHERE FIBER OPTIC CABLING AND POWER CAN BE LOCATED?

A. No. CANDAS has stated in response to discovery that it seeks to use existing fiber resources where they are commercially available. Nonetheless, it appears CANDAS may have ignored the alternative of placing DAS antennas at commercial building sites where both optical fiber and electric power are readily available. With respect to the city of Toronto and greater Toronto area, for example, there are multiple providers of fiber connectivity to commercial buildings that have extensive networks in place. Cogeco, which is a partner in CANDAS' planned DAS deployment in the city of Toronto,[68] indicates on its website that it "owns and operates over 500 kilometres of fibre optic network connecting more than 500 buildings throughout the city of Toronto."[69] According to the Greater Toronto Marketing Alliance, "Bell has installed fiber under most major Metro Toronto roads and installs fiber entrance cables in new buildings

[66] See Attachment MTS-10. See also, http://www.reuters.com/article/2011/03/30/idUS111907+30-Mar-2011+GNW20110330.

[67] Application at pp. 16-17.

[68] Application at p. 15.

[69] See http://www.cogecodata.com/about_us (accessed 8/18/2011).

requiring 300 or more phone lines."[70] As I discussed previously in this testimony, numerous wireless services providers, including CANDAS participant Public Mobile, have already installed (in aggregate) thousands of antenna arrays at commercial building sites throughout the city of Toronto and the greater Toronto area. Thus, it is clear that, while CANDAS might prefer to use utility poles as DAS antenna sites, other viable options exist.

Q. CAN EXISTING MUNICIPAL INFRASTRUCTURE BE USED TO SUPPORT DAS ANTENNAS?

A. Yes, it can. In fact, CANDAS indicated that fiber optic cabling was deployed in existing conduit and DAS nodes were attached to City infrastructure pursuant to City ordinances in Chicago, IL.[71] The photograph below is taken from an article discussing the ease with which AT&T was able to deploy a DAS in downtown Chicago as a result of City ordinances which permit telephone companies to utilize city infrastructure for the attachment of DAS antennas. In addition to favorable City ordinances, the article describes AT&T's use of micro trenching to reduce the overall time and costs involved with connecting node sites and hub locations with fiber optic cabling.[72]

[70] See http://www.greatertoronto.org/economic-overview/7-telecom-a-utilities.html (accessed 8/18/2011).

[71] See CANDAS response to THESL Interrogatory Number 3.

[72] http://www.ospmag.com/issue/article/The-City-of-Big-Broadband-Shoulders

DAS equipment on traffic light pole near Grant Park

Q. IS THERE EVIDENCE TO SUGGEST THAT NEW STRUCTURES CAN BE USED TO SUPPORT DAS ANTENNAS?

A. Yes. My understanding is that municipalities, in this case the City of Toronto, can elect to permit vendors to install decorative poles and other municipal furniture which can be located near existing fiber conduits and used for wireless attachments and, potentially, for purposes of concealing wireless antenna equipment if requested to do so by the municipality involved. In fact, in response to discovery, CANDAS indicated that ExteNet undertook this solution in Las Vegas to support a DAS deployment.[73]

[73] See, for example, CANDAS' response to CEA Interrogatory number 12(b) and Energy Probe Interrogatory number 7.

V. WIRELESS ANTENNA SITE AND ATTACHMENT RATES VARY SUBSTANTIALLY

Q. MR. BORON FROM PUBLIC MOBILE SUGGESTS THAT THE EXISTING ANNUAL POLE CHARGE, $22.35 PER ATTACHER, IS APPROPRIATE FOR WIRELESS ATTACHMENTS. DO YOU AGREE?

A. No, I don't. In the first instance, my belief is that CCTA Decision is inapplicable as it relates to wireless attachments, particularly those that will require attachments outside the "communications space" of the pole. Second, even if the CCTA Decision were to be applied in the case of wireless attachments, the rate taken from that Order is out of line. The Board when it set the current pole attachment rate for wireline attachments identified two primary areas of costs that would be incurred by electricity distributors in accommodating attachments: (1) Direct Costs and (2) Indirect Costs. The OEB described these costs as follows:

> There are two elements to the proposed rate. The first is the incremental or direct cost incurred by electricity distributors that results directly from the presence of the cable equipment. Second, there are common or indirect costs which are caused by both parties. The parties agree that the direct or incremental costs should be borne by the cable companies.[74]

In its subsequent calculation of its pole attachment rate, the OEB assumed $1.92 associated with direct costs (administrative costs and lost productivity), and $20.43 of indirect costs, based upon an assumption of 2.5 attachers sharing the 2 feet of pole within the communications space.[75] As explained above, clearly these values do not properly recognize the more complicated nature of most wireless attachments, nor do they

[74] *OEB Pole Attachment Decision*, pg. 4.
[75] *Id.*, pg. 13.

properly consider the fact that most wireless attachments will use substantially more of the pole's space (much of it outside the communications space).

Q. HOW SHOULD WIRELESS ATTACHMENT RATES BE DETERMINED?

A. The underlying theory that generally supports regulatory oversight in the area of utility pole attachments for wired applications - i.e., the existence of an "essential facility" and ensuing market power on the part of the utility - fails in the context of wireless attachments. There a numerous suitable substitutes to utility poles for the placement of wireless equipment and I have seen no indication that electricity distributors have discernable market power in what has evolved into a robust competitive market for these types of applications. Likewise, whereas traditional wired pole attachment arrangements are relatively homogenous and "standardized" rules related to rates, terms and conditions are an arguably workable method of regulating those attachments, the same is not true in the arena of wireless attachments. The shapes, sizes and applications relevant to wireless equipment that might be attached to a pole are still evolving. As such, a "one size fits all" approach like that applied to wire line attachments is almost certainly to fail, thereby slowing necessary access at a time when demand is increasing dramatically.

Q. IS THEIR EVIDENCE THAT A LIGHT-HANDED REGULATORY APPROACH WORKS IN SETTING RATES, TERMS AND CONDITIONS FOR WIRELESS PROVIDERS?

A. Yes, there is. New York City, for example, is undoubtedly one of the most competitive wireless markets in the world, and one of the most challenging to serve from the prospective of a wireless provider given its geographically dense customer base and

erratic urban terrain. The regulatory agency responsible for regulating pole attachments in New York City is the New York Public Service Commission ("NYPSC"). The NYPSC has specifically declined to adopt regulations which would limit the ability of the competitive marketplace to set efficient rates, terms and conditions. The NYPSC articulated its opinion on the matter as follows:

> Unlike telephone, cable and power facilities, which may only be attached to utility poles, wireless attachers have other options for attaching their facilities, such as buildings, existing towers, and newly constructed towers. Although attachers argue that it is sometimes difficult to get permission [*9] from local governments to erect new towers, it is appropriate for local governments and community residents to be involved in considering whether tall antenna structures should be placed in their communities. If wireless attachers were given unrestricted access to all utility poles, local governments might be excluded from the decision-making process. (pgs. 3-4).
>
> Wireless attachments occupy a much larger portion of a pole than the 12 inches used by a standard wire attachment. The wireless attachment contemplated by National Grid would use as much as 7 feet of pole space and include an antenna on top of the pole up to 9 feet tall. n6 Wireless attachment designs vary, which makes advance evaluation of their safety difficult. We are not applying pole attachment policies and rates to wireless attachments at this time. Because of the variation in wireless configurations, the status quo of a negotiated rate and process is more appropriate until more information is developed about wireless attachments generally on utility poles.[76]

I believe the conclusions reached by the NYPSC have merit and can be of benefit to the Board in this proceeding. They recognize that where numerous suppliers exist in a market, the public interest is best served by allowing those suppliers to compete for the business of prospective attachers - without the distorting effects that regulation can create. This is especially true in an area, like wireless communications, where technology, service offerings and infrastructure change so quickly. When the alternative of a competitive market exists, heavy-handed regulations which dictate connectivity

[76] *Proceeding on Motion of the Commission Concerning Wireless Facility Attachments to Utility Distribution Poles*, Case 07-M-0741, July 27, 2007, *Order Instituting Proceeding*, pg. 4.

options and/or rates, tend to unnecessarily slow innovation, reduce capital investment and put the regulator (rather than consumers) in the role of choosing "winners and losers." Clearly, there are numerous alternatives that exist for the placement of wireless equipment, beyond the use of utility poles. With this in mind, and for the reasons stated above, I conclude that a light-handed regulatory approach to the issue of wireless pole attachments would best serve the public interest.

Q. HAVE DAS NETWORKS BEEN DEPLOYED IN NEW YORK CITY DESPITE THAT THE NEW YORK PUBLIC SERVICE COMMISSION HAS STATED THAT ATTACHMENT RATES SHOULD BE THE PRODUCT OF NEGOTIATIONS?

A. Yes, they have. In fact, Mr. Larsen noted at page 12 of his written evidence that more than 2,000 DAS nodes are currently in operation in the New York metro area alone. This, of course, is in additional to hundreds, if not, thousands of traditional macro cell sites, Wi-Fi hot zones and hot spots and untold femtocells (whether metro, enterprise or residential).

Q. GENERALLY SPEAKING, IS THERE A RANGE OF RATES WHICH IS APPLICABLE TO THE SORT OF WIRELESS ATTACHMENTS DISCUSSED IN YOUR TESTIMONY?

A. Rates clearly vary dramatically depending upon the location, elevation, anticipated coverage available, access to power/fiber and numerous other factors. Indeed, consultants who negotiate arrangements for, and management of, these types of leases abound. Unfortunately, as is the case in competitive markets, rates, terms and conditions

agreed to between suppliers and consumers are often confidential or difficult to obtain. Nonetheless, xChange magazine, in February 2007, published an *e*book evaluating various aspects of WiMAX technology, including challenges faced by companies evaluating the introduction of WiMAX into their more traditional menu of wireless technologies.[77] As part of its analysis xChange evaluated what they termed "Towernomics" - the costs associated with gaining and maintaining access to suitable antenna sites. The analysis was presented as follows:[78]

The Lease: A Cost Snapshot

By Tara Seals

So what are we talking about when it comes to monthly, ongoing tower leases, anyway? Like real estate, leasing costs can vary widely, and it's a game of location, location, location. While no sources agreed to go on the record, the following are some anecdotal estimates of industry averages.

A respondent in cellular operations had this to say:

"It really depends on two things. One, are you in a major city or out in the suburbs/rural areas, and two, are you building something new or using an existing structure? In cities, rooftops go from $1,000 per month on up, with some sites in cities like New York City as high as $5,000 per month.

"Outside cities, tower/rooftop management companies are often involved and they will charge around $1,500 per month depending on current occupancy, their cost to buy, lease and/or develop the property, how many sites you rent from them and so on. The antenna configuration can also make a difference if you use an inordinate amount of weight or 'windload' capacity."

If you are developing a new tower or rooftop site, you should expect to pay anywhere between $500 and $2,000 per month, depending on the location and value of the underlying space, the source said, possibly even more.

Meanwhile, a current operations manager at a major telco says for cell sites, the ballpark for leasing tower space is around $2,500 per month for a full array, depending on the variables mentioned above.

And another source at a network operator says a 10-foot section of tower typically leases for between $800 and $1,200 per month for a "light" application, such as broadband omnidirectional antennas, for instance. Heavier tower loads can drive the price up to $2,500.

[77] *Shouldering the Weight of WiMAX, Heavy Loads network Operators Must Bear*, February 2007, available at www.xchangemag.com/ebooks.

[78] *Id*. pg. 5.

In summary, prices differ substantially depending upon the variables I described above, but range from $500-$800 per month on the low side to $5,000 per month on the higher side for the more traditional tower and rooftop access. For example, the City of Chicago currently assess fess of $1,654 and $3,307 per pole, per year for use of light poles and traffic signals, respectively.[79] Moreover, Chicago's prices increase automatically year over year and may be adjusted, at a later date, to include a revenue sharing component. [80] Additionally, as described in Section III, it was reported earlier this year that rates regarding the attachment of high end Wi-Fi equipment, which is substantially smaller than equipment used for more traditional macro cell sites, ranges from $50-$1000 per site per month in New York City.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

I make this affidavit in support of THESL's motion for a Decision and Order of the Ontario Energy Board:

a. that the CCTA Decision does not apply to wireless communications attachments;

b. that the Board refrain from exercising its powers on the basis that there is or will be competition in the wireless communications market sufficient to protect the public interest;

c. denying the relief sought by CANDAS and dismissing CANDAS' application; and

[79] See Attachment MTS-12 at p.4.

[80] See Chapter 10-29-040 of City of Chicago's ordinances which indicate, in part, that attachment rates may be adjusted to "add a revenue component or make other reasonable adjustments which are not in excess of prevailing municipal rates."

d. such other relief as THESL may request and the Ontario Energy Board may deem appropriate,

and for no other or improper purpose.

SWORN BEFORE ME
at the City of Cottleville,
in the State of Missouri,
on September 1, 2011.

Name:
A Notary, etc.

Michael Starkey

MELISSA SMITH
Notary Public-Notary Seal
State of Missouri, St Charles County
Commission # 07396067
My Commission Expires Dec 3, 2011