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September 20, 2011

*via RESS e-filing – signed original to follow by courier*

Ms. Kirsten Walli  
Board Secretary  
Ontario Energy Board  
PO Box 2319  
2300 Yonge Street, 27<sup>th</sup> floor  
Toronto, ON M4P 1E4

Dear Ms. Walli:

**Re: Toronto Hydro-Electric System Limited's ("THESL")  
Interrogatory Responses  
OEB File No. EB-2011-0120**

Please find attached THESL's responses to selected interrogatories in the above-captioned proceeding. The responses are listed in the accompanying Index. We continue to work diligently to complete the responses and will provide those as soon as possible.

Yours truly,

*[original signed by]*

Amanda Klein  
Senior Regulatory Counsel

:AA/acc

cc: J. Mark Rodger, Counsel for THESL, by electronic mail only  
Intervenors of Record for EB-2011-0120, by electronic mail only

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## **RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES**

1 **INTERROGATORY 8:**

2 **Reference(s):** Vol1/Exh1: Affidavit of Michael Starkey  
3 Attachment MTS-12, page 4  
4

5 Please clarify whether the amounts of \$1,654.00 per calendar year per pole and \$3,307.00  
6 per calendar year per pole are intended by the witness to illustrate market rates for use of  
7 poles for wireless attachments in Chicago, or to indicate the availability of alternative  
8 sites, or for some other purpose.  
9

10 **RESPONSE:**

11 Section V of Mr. Starkey's affidavit within which the Chicago rates are discussed, is  
12 entitled: "Wireless Antenna Site and Attachment Rates Vary Substantially." Mr.  
13 Starkey's evidence compares the City of Chicago attachment rates detailed in MTS 12  
14 with other publicly available attachment rate data to demonstrate the disparity. Mr.  
15 Starkey understands that wireless carriers use the City of Chicago infrastructure for the  
16 placement of wireless antennae, in combination with (and in some cases, in lieu of) other  
17 attachment alternatives throughout the City. For that reason, Mr. Starkey believes the  
18 rates detailed in MTS 12 provide some insight into the scope of market-based attachment  
19 rates.

## **RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES**

1 **INTERROGATORY 9:**

2 **Reference(s):** Vol1/Exh1: Affidavit of Michael Starkey  
3 Attachment MTS-12, page 4  
4

5 Please provide any information available as to how the pole charges referenced in  
6 question 8, above, were determined.  
7

8 **RESPONSE:**

9 Mr. Starkey's research has not unearthed any legislative history or other description of  
10 how the rates were determined. Mr. Starkey does note, however, that the ordinance  
11 establishing the "permit fee" contemplates the City participating in a "revenue share"  
12 arrangement as partial compensation for attaching to its facilities [City of Chicago 10-29-  
13 040(b)]. This would seem to indicate that the City was attempting to collect attachment  
14 fees consistent with the commercial (or "market") value of those attachments, rather than  
15 those rates having been based upon some type of cost analysis.

## **RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES**

1 **INTERROGATORY 10:**

2 **Reference(s):** **Voll/Exh1: Affidavit of Michael Starkey**  
3 **Attachment MTS-12, page 4**  
4

5 If available, please provide for the City of Chicago, the total number of wireless  
6 attachments, the number of wireless attachments mounted on Department of  
7 Transportation poles, and the number of wireless attachments mounted on the poles of the  
8 electric utility.  
9

10 **RESPONSE:**

11 It does not appear that the information requested is available in the public domain.  
12 However, to the extent that such efforts are not so onerous that they would outweigh the  
13 probative value of the information sought, Mr. Starkey and QSI's research team will  
14 continue their attempts to locate this data and will supplement this response if the  
15 information can be found.

## **RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES**

1 **INTERROGATORY 13:**

2 **Reference(s):** Vol1/Exh 2: Affidavit of Adonis Yatchew  
3 Section C.2., page 15: “Utility poles are not an essential facility  
4 for CANDAS. Perhaps the best evidence to support this  
5 conclusion is that Public Mobile was able to roll out its service  
6 in Toronto with minimal reliance on THESL poles for its  
7 wireless attachments.”  
8

9 Please describe the alternate facilities to which DAS antennas were attached during roll  
10 out of service by Public Mobile.  
11

12 **RESPONSE:**

13 Mr. Starkey’s evidence identifies over 120 Public Mobile facilities within a 25 km radius  
14 of the center of Toronto. Please see Affidavit of Mr. Starkey, Attachment MTS-03.

## **RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES**

1 **INTERROGATORY 30:**

2 **Reference(s):** Affidavit of Mary Byrne  
3 **Section 46: “Further, THESL’s experience is that wireless**  
4 **companies prefer to have their attachment antennas mounted**  
5 **on THESL Pole tops. However, installing wireless antennas on**  
6 **pole tops above energized electric facilities, creates a number**  
7 **of additional safety and operational concerns, including: a.**  
8 **pole top attachments require workers to pass through**  
9 **energized lines to work on those attachments, posing a safety**  
10 **risk to those workers operating on THESL Poles .....”**  
11

12 In the case of such installations, is the construction work done by THESL’s staff or by a  
13 contractor working on behalf of the communications company?  
14

15 **RESPONSE:**

16 THESL has not permitted any attachments to the pole top. Any work in the power space  
17 would need to be done by THESL staff or THESL contractors.

## **RESPONSES TO ONTARIO ENERGY BOARD STAFF INTERROGATORIES**

1 **INTERROGATORY 31:**

2 **Reference(s):** Affidavit of Mary Byrne  
3 **Section 46: “Further, THESL’s experience is that wireless**  
4 **companies prefer to have their attachment antennas mounted**  
5 **on THESL Pole tops. However, installing wireless antennas on**  
6 **pole tops above energized electric facilities, creates a number**  
7 **of additional safety and operational concerns, including: a.**  
8 **pole top attachments require workers to pass through**  
9 **energized lines to work on those attachments, posing a safety**  
10 **risk to those workers operating on THESL Poles .....”**  
11

12 Is this type of work carried out on energized lines using live line work methods or on de-  
13 energized lines?  
14

15 **RESPONSE:**

16 THESL has not permitted any attachments to the pole top, so no such work has been  
17 carried out.



## **RESPONSES TO ELECTRICITY DISTRIBUTORS ASSOCIATION INTERROGATORIES**

1 **INTERROGATORY 2:**

2 **Reference(s):** **Evidence of Michael Starkey, President QSI Consulting**

3

4 At page 55, Mr. Starkey refers to the attachment prices charged by the City of Chicago.  
5 Does Mr. Starkey know the derivation of these charges, e.g. are they cost based or market  
6 based? Is there mandatory access? Are there multiple users associated with these  
7 attachments, such that the actual cost to each user would be lower?

8

9 **RESPONSE:**

10 See THESL response to the Ontario Energy Board's Interrogatory No. 9.

11

12 The City of Chicago's ordinances at Chapter 10-29-040 establish permit fees related to  
13 the use of city light poles and traffic standards. The ordinances establish annual charges  
14 that were initially set at \$1,500 and \$3,000 for light poles and traffic standards,  
15 respectively. These ordinances also establish that annual charges will increase by the  
16 greater of a CPI, or price inflation, adjustment or five percent per year. The figures  
17 identified at page 55 reflect annual charges published by the Chicago Department of  
18 Transportation as of February 8, 2011. The same ordinances establish that the City may,  
19 at a later date, increase annual charges to include a revenue component so long as the  
20 resulting annual rate does not exceed prevailing municipal rates.

21

22 While Mr. Starkey was unable to find any publicly available information detailing how  
23 many parties used the City's infrastructure in the way contemplated by the ordinances in  
24 question (or how many may use a single pole), Chapter 10-29-040 of the City of  
25 Chicago's ordinances provides that rates established therein may also be adjusted to

## **RESPONSES TO ELECTRICITY DISTRIBUTORS ASSOCIATION INTERROGATORIES**

- 1 reflect (1) the actual size of attachments to light poles and traffic signals and (2) the
- 2 existence of multiple attachers at any one location. This provision appears to envision
- 3 multiple tenants on a single structure and that attachment rates could vary accordingly.

## **RESPONSES TO ELECTRICITY DISTRIBUTORS ASSOCIATION INTERROGATORIES**

1 **INTERROGATORY 3:**

2 **Reference(s):** **Evidence of Michael Starkey, President QSI Consulting**

3

4 Relatedly, is Mr. Starkey aware, either based on the evidence filed by CANDAS or from  
5 other sources, whether the DAS network proposed in this case would in whole or in part  
6 be available for sharing with other carriers? If so, would some additional attachments  
7 still be necessary? If so, who would determine the price charges by the owners of the  
8 installed equipment to other users? Could revenues exceed the CCRA rate proposed by  
9 the Applicants?

10

11 **RESPONSE:**

12 It is somewhat unclear as to whether the questions is using the term “sharing” in relation  
13 to multiple attachments sharing a single pole, or, multiple wireless carriers sharing  
14 attached DAS equipment for purposes of supporting their wireless services. Nonetheless,  
15 it is highly unlikely that a single utility pole would be used to support more than one  
16 antennae array of the type envisioned by DASCom in the CANDAS evidence (see, e.g.,  
17 the Evidence of Tormod Larsen, Exhibit D). Hence, additional revenue generated by  
18 more than one such antennae array attachment per pole (i.e., revenue that might “exceed  
19 the CCTA rate proposed by Applicants”) is unlikely. That said, CANDAS does explain  
20 that more than one carrier could use the attached equipment to support its wireless service  
21 (e.g., see CANDAS response to CEA Interrogatory No. 16), and that Extenet/DASCom  
22 could potentially offer wireless capacity to carriers other than Public Mobile using the  
23 planned attachments to THESL utility poles. Hence, some “sharing” of the network  
24 capacity generated via attached equipment might exist, but revenues associated with such  
25 sharing would accrue to the attached provider, not the owner of the pole.

## **RESPONSES TO ELECTRICITY DISTRIBUTORS ASSOCIATION INTERROGATORIES**

### **INTERROGATORY 5:**

**Reference(s):**        **Evidence of Dr. Yatchew, Prof of Economics, University of  
Toronto**

At page 23, Dr. Yatchew notes that mandated attachment at other than market rates would distort the development of relevant siting markets. Could this distortion ultimately result in a shortage of attachment sites for carriers wishing to deploy DAS or other micro site technologies in the future? Is there a risk that what is proposed by CANDAS will impede deployment of future networks and impede their competitors?

### **RESPONSE:**

At present, the growth and competitiveness in siting markets would suggest that there is unlikely to be a shortage of attachment sites in the near term. For example, American Tower makes the following statements:

***“Increasing competition in the tower industry may create pricing pressures that may materially and adversely affect us.***

Our industry is highly competitive, and our tenants have numerous alternatives for leasing antenna space. Some of our competitors, such as wireless carriers that allow collocation on their towers, are larger and may have greater financial resources than we do, while other competitors may have lower return on investment criteria than we do.

## **RESPONSES TO ELECTRICITY DISTRIBUTORS ASSOCIATION INTERROGATORIES**

1 Competitive pricing pressures for tenants on towers from these competitors  
2 could materially and adversely affect our lease rates and services income.  
3 In addition, we may not be able to renew existing tenant leases or enter into  
4 new tenant leases, resulting in a material adverse impact on our results of  
5 operations and growth rate. Increasing competition could also make the  
6 acquisition of high quality tower assets more costly. Any of these factors  
7 could materially and adversely affect our business, results of operations or  
8 financial condition.”

9 American Tower Corporation, Annual Report, 2010, page 14.

10  
11 Similarly, Crown Castle describes its competitive environment as follows:

12  
13 “CCUSA competes with (1) other independent tower owners which also  
14 provide site rental and network services, (2) wireless carriers which build,  
15 own and operate their own tower networks and lease space to other wireless  
16 communication companies, and (3) owners of alternative facilities,  
17 including rooftops, water towers, broadcast towers, DAS networks, and  
18 utility poles. Some of the larger independent tower companies with which  
19 CCUSA competes in the U.S. include American Tower Corporation, SBA  
20 Communications Corporation, Global Tower Partners and TowerCo.  
21 Wireless carriers that own and operate their own tower networks generally  
22 are substantially larger and have greater financial resources than we have.  
23 We believe that tower location and capacity, deployment speed, quality of  
24 service and price have been and will continue to be the most significant  
25 competitive factors affecting the leasing of a tower.

## **RESPONSES TO ELECTRICITY DISTRIBUTORS ASSOCIATION INTERROGATORIES**

1 Competitors in the network services business include site acquisition  
2 consultants, zoning consultants, real estate firms, right of- way consulting  
3 firms, construction companies, tower owners and managers, radio frequency  
4 engineering consultants, telecommunications equipment vendors who can  
5 provide turnkey site development services through multiple subcontractors,  
6 and our customers' internal staffs. We believe that our customers base their  
7 decisions on the outsourcing of network services on criteria such as a  
8 company's experience, track record, local reputation, price and time for  
9 completion of a project.”

10 Crown Castle, Annual Report, 2010, page 5.  
11  
12

13 However, subsidized provision of siting services by power companies would  
14 certainly have an influence on the development of siting markets and the effects  
15 would be adverse. Providers of siting services would be deprived of a reasonable  
16 expectation of future sources of business.  
17

18 Keeping in mind that once the precedent is set for subsidized and mandated  
19 attachments by the current applicants, other parties developing higher density  
20 technologies would likely follow, perhaps in high volume. The ensuing regulatory  
21 problems to determine who is entitled to attach and who is not, would place further  
22 uncertainty on siting markets, hindering investment and development. In such  
23 circumstances, it is possible that shortages could develop.

## **RESPONSES TO VULNERABLE ENERGY CONSUMERS COALITION INTERROGATORIES**

1 **INTERROGATORY 1:**

2 **Reference(s):**           **none provided**

3

4 In THESL's materials and motion, it submits that the poles in issue are not essential  
5 facilities because of technically viable alternatives to attachment. Does THESL believe  
6 that the essential facilities test also has an economic component, and if so how is it met?

7

8 **RESPONSE:**

9 Please refer to THESL's response to Energy Probe IR#5 for a detailed description and  
10 analysis of the "essential facilities" doctrine as it has been established under US and  
11 Canadian competition law.

12

13 THESL does not believe that the fact that a certain alternative may be the least expensive  
14 among others satisfies any test that would demonstrate that the facilities involved are  
15 'essential'.

16

17 Furthermore, relative costs are highly conditioned on prior choices of any proponent  
18 wishing to use the facilities. For example, a bridge may be essential if it provides the  
19 only access to an island; it is non-essential if a ferry service also operates. Neither is  
20 essential if it is possible to fly to the island. The relative costs of these alternatives do  
21 nothing to establish whether any one of them is essential, and in fact that character can  
22 only exist conditionally upon the prior choices made by the traveller.

## **RESPONSES TO VULNERABLE ENERGY CONSUMERS COALITION INTERROGATORIES**

1 **INTERROGATORY 2:**

2 **Reference(s):**           **none provided**

3

4 The effect of THESL's position would be to benefit wireless competitors of members of  
5 CANDAS that also happen to have their wireline attachments on THESL poles. To what  
6 extent does THESL believe that the Board should be concerned about the effect on  
7 competition in telecommunications.

8

9 **RESPONSE:**

10 VECC has provided no reference for the statement that "The effect of THESL's position  
11 would be to benefit wireless competitors of members of CANDAS that also happen to  
12 have their wireline attachments on THESL poles." THESL does not know the basis upon  
13 which VECC has reached this conclusion, and therefore cannot agree with it.

14

15 As a general matter however, THESL has addressed the extent to which it believes that  
16 the Board should be concerned about competition in the telecommunications market.  
17 Namely, insofar as that competition is relevant to the Board's mandate and jurisdiction as  
18 defined by the relevant legislation, it may be a concern of the Board. However, there  
19 does not appear to be any specific statutory basis to include the competitiveness of the  
20 telecommunications market in the Board's existing mandate.

21

22 In particular, and as addressed by the evidence of Dr. Yatchew (e.g., 26-27 of his  
23 affidavit) and Mr. Starkey (e.g., pages 27-31 of his affidavit), THESL believes that the  
24 fact that there is competition in the market for wireless attachments sufficient to protect



## **RESPONSES TO VULNERABLE ENERGY CONSUMERS COALITION INTERROGATORIES**

1 the public interest indicates that the Board should exercise its forbearance powers  
2 pursuant to section 29 of the OEB Act.

3

4 Quite apart from the forbearance issue, this evidence supports the conclusion that LDC  
5 poles are not “essential facilities” for wireless attachers, which undermines the  
6 applicability of the CCTA Decision to wireless attachments: the Board’s finding in the  
7 CCTA Decision that LDC poles are essential facilities for wireline attachers was central  
8 to their decision mandating access for wireline attachers to those poles. This evidence  
9 about the competitive siting market for wireless is also illustrative of how there are  
10 material differences between wireless and wireline attachments.

## **RESPONSES TO VULNERABLE ENERGY CONSUMERS COALITION INTERROGATORIES**

1 **INTERROGATORY 3:**

2 **Reference(s):**           **none provided**

3

4 In the event that the Board finds that the poles are essentially facilities, and wireless  
5 attachments are in scope of the CCTA order, will the current method of allocation and  
6 pricing structure be fair to all stakeholders? If not, how can it be changed without  
7 conferring a benefit to existing holders of attachments.

8

9 **RESPONSE:**

10 Application of the current method of cost allocation and pricing to wireless attachments  
11 does not produce a fair outcome for ratepayers, and in fact leads to a subsidy from  
12 ratepayers to non-essential attachers such as wireless attachers.

13

14 THESL accepts that poles are essential facilities for wireline attachments. However, the  
15 existing pole occupancy cost allocation and pricing formula does not recognize the pole  
16 occupancy required by equipment that is incidental to wireline and therefore understates  
17 the proportion of pole capital-related costs that should be borne by wireline attachers.

18

19 In the case of non-essential facilities that could be used for wireless attachments, cost-  
20 based pricing regulated by the Board cannot be justified, since the facilities are non-  
21 essential. In that case, pricing for facilities that are available, in the sole discretion of the  
22 utility, should be determined on a market basis.

## **RESPONSES TO VULNERABLE ENERGY CONSUMERS COALITION INTERROGATORIES**

1 **INTERROGATORY 4:**

2 **Reference(s):**           **none provided**

3

4 Can you provide the date when THESL first determined that the CCTA order did not  
5 apply?

6

7 **RESPONSE:**

8 THESL had no occasion to turn its mind to the issue until it first received wireless  
9 applications in 2009, but its position is that the determination on this point was made by  
10 the Board in its 2005 CCTA Decision which did not mandate Ontario distributors to  
11 accommodate wireless attachments on their distribution poles. In particular, the issue and  
12 subject of wireless attachments was not raised, considered or addressed in the CCTA  
13 Decision or the CCTA proceeding. The CCTA Settlement Agreement explicitly  
14 excluded wireless as an unsettled issue and the Board accepted that Settlement  
15 Agreement as part of the CCTA proceeding, and as such, the CCTA Decision was not  
16 intended to encompass wireless. It was not until sometime in the summer of 2010 that  
17 THESL was required to articulate this determination in writing. Please see THESL's  
18 August 13, 2010 letter, which is attached to CANDAS' evidence (dated April 21, 2011)  
19 at Tab 3.

## **RESPONSES TO VULNERABLE ENERGY CONSUMERS COALITION INTERROGATORIES**

1 **INTERROGATORY 5:**

2 **Reference(s):**           **none provided**

3

4 In the event that THESL was successful in showing sufficient competition in the  
5 provision of attachments for wireless antenna use (and presumably wireline use, as well)  
6 to allow the Board to forbear from the regulation of attachment policy and rates, please  
7 explain how forbearance would affect the regulatory treatment of revenues obtained by  
8 THESL from attachments in the future.

9

10 **RESPONSE:**

11 Forbearance with respect to wireless attachment rates would have no impact on the  
12 treatment of revenues derived from pole attachments. This revenue, whether produced  
13 under regulated rates or market-based rates, would continue to be credited to customers  
14 via revenue offsets.

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

**INTERROGATORY 2:**

**Reference(s):           Starkey Affidavit, p. 25-26**

Mr. Starkey notes that Public Mobile used macro cells “as a complete substitute for the DAS network it intended to build utilizing attachments to power poles.”

a) Given that Public Mobile switched to macro cell development after it concluded that it would not receive access to THESL poles, does Mr. Starkey maintain that DAS and macro cell technologies are equally good technologies for a wireless service provider?

b) Does he contend that these two technologies are good substitutes in the economic sense?

**RESPONSE:**

a) The extent to which two different technologies or delivery methods are “equally good” in many circumstances depends upon the party being asked. Clearly, it appears that ExteNet and Public Mobile preferred to use DAS, rather than macro sites, for purposes of building smaller serving areas in support of wireless services. The reasons for that preference are discussed in detail in the CANDAS evidence. However, the fact that Public Mobile was able to use macro site deployment as a relatively quick alternative, and still sell wireless services in the Toronto marketplace indicates that the two technologies were “equally good” to the point of satisfying at least some number of wireless service customers.

It cannot be ignored that one potential preference for placing DAS equipment on

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

- 1        THESL utility poles may be the artificially suppressed attachment rate  
2        ExteNet/Dascom believed it was eligible for under the CCTA Decision. Given the  
3        alternative for paying market-based rates to place macro site equipment (or DAS or  
4        other smaller cell equipment on buildings, signage, etc.), it is possible that ExteNet's  
5        preference was dominated as much by economics as it was by whether one  
6        technology was “equally good” versus another.  
7  
8        b) Yes.

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

**INTERROGATORY 3:**

**Reference(s):           Starkey Affidavit, Volume 2, Exhibit 4**

Mr. Starkey presents the NGEIR decision in this exhibit.

- a) Does Mr. Starkey agree with the Board's finding that the approach of the Competition Bureau is "helpful when assessing whether the forbearance of regulation is likely to lead existing firms to exercise market power" (NGEIR, p.29)? If not, why not?
- b) Does Mr. Starkey believe that all available alternatives (e.g. femtocells) to DAS that he identifies in his report are in the same "product market" as DAS when the market is delineated using the approach of the Competition Bureau?

**RESPONSE:**

a) Yes.

b) Yes.

The ultimate product market supported by DAS, macro sites, femto cell technology, etc. is the wireless services market wherein consumers purchase the ability to make/receive calls and data transmissions via mobile devices. Each of these technologies can be, and indeed is today, used to provide the wireless services consumers purchase and use in this market. Further, prices in the mobile services market are not generally stratified by the underlying technology providing the signal that supports the mobile transmission. Indeed, most consumers do not know what

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

1        type of antenna is receiving/transmitting the radio signals supporting their usage (and  
2        the type of antenna may change, even during a single transmission).

3

4        It is important to note that these technologies serve both as substitutes in some  
5        circumstances, and compliments in others (further indicating that they should be  
6        considered to operate in the same product market). For example, one carrier may be  
7        serving a customer in location A using macro site technology, while another carrier  
8        serves another customer in that same location using DAS or some other smaller cell  
9        technology (e.g., pico or femto cells). Yet, the same carrier may also serve Customer  
10       A in one location using macro site technology, and serve that same customer (even  
11       during the same call) using DAS or other smaller cell technology as the customer  
12       moves.



**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

**INTERROGATORY 4:**

**Reference(s): Yatchew Affidavit, p.10**

Professor Yatchew states that cable systems “of necessity have had to construct their systems across populations of poles or networks of underground conduits”.

a) Does Professor Yatchew believe that cable and satellite television are in the same or different consumer product markets in a market power analysis? How does he know this?

b) Does Professor Yatchew believe that underground cabling is a good alternative to pole attachments for cable television providers? Why or why not?

c) If pole attachment is less expensive than underground cabling, does Professor Yatchew believe that pole attachment is essential for cable television providers? Why or why not?

**RESPONSE:**

a) Cable and satellite television services are in the same broad product market by virtue of the fact that the end-user products which they provide bear close similarity to each other.

b) The use of underground conduits for power, telecom and cable company wires has important advantages relative to above ground placement. Among them, underground placement dramatically reduces risks of service disruption from storm damage as well as aesthetic benefits. However, underground placement is significantly more costly. The two modes of deployment can provide a means of continuous physical

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

- 1 connection, essential for wireline services, but they but also have important  
2 distinguishing characteristics.  
3  
4 c) Central to the determination that both poles and conduits are essential facilities for  
5 wireline systems is that there does not exist, nor is it likely that there will exist in the  
6 foreseeable future, market-based alternatives to these facilities.

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

1    **INTERROGATORY 6:**

2    **Reference(s):**           **Yatchew Affidavit, p.17**

3

4    Professor Yatchew states that “Exploding demand growth for bandwidth may also entail  
5    increasing need for wireline facilities which have no alternative but to attach through  
6    poles or run through conduits”.

7

8    If, as Professor Yatchew believes, pole access is essential for certain attachers such as  
9    cable and telephone, does he believe that their access needs should always be  
10   accommodated by local public utilities? If not, please explain.

11

12   **RESPONSE:**

13   On the assumption that attachment is feasible and that poles are essential, in the formal  
14   sense, wireline facilities belonging to cable and telephone companies should be  
15   accommodated by owners of support structures wherever this is possible. Costs incurred  
16   by the support structure owner to make such accommodations should be paid for by the  
17   attacher.

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

**INTERROGATORY 7:**

**Reference(s):** Yatchew Affidavit, p. 25-26

Professor Yatchew states that the relevant market as the “market for siting wireless attachments”.

- a) Please discuss briefly the analytical methods, research techniques and economic theory he used in arriving at this definition of the relevant product market.
- b) On what basis does he distinguish between the market for siting wireless attachments and the market for siting attachments generally?
- c) Does the fact that Public Mobile deployed macro cell towers after being denied access to THESL poles indicate to Professor Yatchew that macro cell towers and hydro poles are in the same market delineated for market power analysis?

**RESPONSE:**

- a) In this portion of the testimony, the relevant market is the “market for siting wireless attachments”. The determination was based upon the CANDAS application which seeks attachment to THESL poles. The natural question to ask is what alternatives does CANDAS have for attaching its facilities which leads one to the identification of the siting market for wireless attachments.
- b) The nature of the attachment and its requirements would distinguish the siting market. For example, wireless facilities need access to power and fibre. They also need to be positioned at certain heights and spaced to meet coverage requirements.

**RESPONSES TO  
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INTERROGATORIES**

- 1 c) The potential siting market for attachments is large and includes all sorts of  
2 structures, including towers, commercial and public buildings, in addition to poles.  
3 Not all structures are perfect substitutes for each other and individual sites can have  
4 varying degrees of convenience associated with them.

**RESPONSES TO  
ENERGY PROBE RESEARCH FOUNDATION  
INTERROGATORIES**

1    **INTERROGATORY 8:**

2    **Reference(s):**           **Yatchew Affidavit, p.26**

3

4    Professor Yatchew states that “Poles may be especially attractive if attachment rates are  
5    regulated at rates based on historic costs.”

6

7    Does Professor Yatchew contend that the current wireline attachers to THESL poles are,  
8    or could be, paying too little for access to those poles?

9

10   **RESPONSE:**

11   I have not, for the purposes of this proceeding, reviewed tariffs associated with traditional  
12   wireline pole attachments. I am aware that some utilities in Canada are now charging  
13   much higher rates for conventional wireline attachments than those currently in place in  
14   Ontario.

**RESPONSES TO  
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**INTERROGATORY 9:**

**Reference(s):** Yatchew Affidavit, pp.26-27

Professor Yatchew believes that there is no market power in his relevant market.

a) Having regard to the Starkey affidavit, Attachment MTSW-03 that shows the sitings of Rogers, Bell, Telus and others, does Professor Yatchew believe that no individual participant in that market (i.e. within 25 Km. of Toronto's City Centre) has any significant degree of market power?

b) What does that information suggest to Professor Yatchew about the possibility of interdependent rather than purely competitive pricing?

**RESPONSE:**

a) I have not performed a detailed assessment of the market power that could be attributed to Rogers, Bell and Telus in the Toronto siting market. However, I would note that any such assessment must incorporate not only the number and market shares of current site owners or operators, it must also consider the potential for entry, that is, the degree that the market is contestable. Contestability serves as an important deterrent to the exercise of market power, even if there are few players in the market at any given time.

Distributed antenna systems require lesser elevation, are smaller in size and evidently do not require tower-type structures. Thus, the number of candidate sites (such as buildings of lower height) would seem to be much larger. The potential for response by the siting market would therefore also be enhanced by the absence of requirements

**RESPONSES TO  
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1       for constructing large, obtrusive towers. In short, since the siting market responded to  
2       the need for towering structures, some of which are visible for long distances, one can  
3       reasonably expect the market to respond to the need for siting DAS components that  
4       are much smaller and can be placed at lower elevations.

5

6       b) That Public Mobile was able to assemble over 120 sites and to successfully launch its  
7       services in Toronto in a relatively short time frame suggests that the three major site  
8       owners (Rogers, Bell and Telus) were either unable or unwilling to block entry  
9       through interdependent pricing or other anti-competitive devices. This too, suggests  
10      that the siting market is functioning.



## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

### **INTERROGATORY 23:**

**Reference(s):** Byrne, paras. 4, 18 and 26-28.

The language in these paragraphs also appears in the THESL letter date August 13, 2010 and has been repeated several times throughout this proceeding.

a) Did Ms. Byrne author this language. If “no”, who did?

b) Paragraph 4, states that the THESL pole network is highly variable due to the acquisition of other LDCs. Paragraph 27 states that wireline attachments are largely uniform. Reconcile these two statements.

### **RESPONSE:**

(a) Ms. Byrne was part of the THESL team that drafted the THESL letter dated August 13, 2010. The matters stated in THESL’s August 13, 2010 letter and also re-stated in Ms. Byrne’s affidavit are matters within Ms. Byrne's knowledge. As noted in Ms. Byrne's affidavit, where she does not have knowledge of a matter, she states the source of her information and believes it to be true.

(b) THESL does not believe that these statements are in conflict, so no reconciliation or resolution is needed.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 7:**

2 **Reference(s):** **Starkey, page 9, lines 3 to 25**

3

4 In including a reference to Donald Ford's evidence, Mr. Starkey states "Mr. Ford's  
5 evidence clearly demonstrates that the "communications space" he was describing for the  
6 Board's benefit was a finite vertical space (2 feet) within which wireline attachments  
7 could be made".

8 a) Provide specific references to Mr. Ford's evidence or testimony where Mr. Ford  
9 expressly states that his use of the term 'communications space' corresponds to a  
10 finite, vertical, 2 foot space.

11

12 **RESPONSE:**

13 a) See *Direct Testimony of Michael Starkey*, filed September 2, 2011, pg. 9.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 15:**

2 **Reference(s):** **Starkey, page 15, line 9 to page 16, line 3**

3

4 Mr. Starkey states:

5 Wireless attachments of the type being discussed by CANDAS use approximately 5 to 8  
6 feet of pole space. For example, Niagara Mohawk Power Corporation (d/b/a National  
7 Grid), petitioned regulators in the State of New York to accept an agreement it had  
8 reached with its own affiliate National Grid Communications, Inc. for the placement of  
9 DAS wireless facilities on its electric transmission facilities.

10 a) Have either the equipment or attachment methods been improved, reduced in size,  
11 made more efficient or otherwise made better for attaching to utility poles since the  
12 NY case was decided in 2004?

13 (i) If so, state how has this been taken into account in Mr. Starkey's testimony?

14

15 **RESPONSE:**

16 a) Yes, Mr. Starkey believes that equipment which would be attached to poles in  
17 support of wireless services is generally decreasing in size over time.

18 (i) See page 18 of Mr. Starkey's Affidavit where he discusses the particular "As  
19 Built" DAS Node included with Mr. Larsen's evidence as Exhibit D, which  
20 also uses approximately 8 feet of pole space (similar to the Niagra Mohawk  
21 example).

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 25:**

2 **Reference(s):** **Starkey, Page 23, lines 15 to 18**

3

4 Mr. Starkey refers to Dr. Yatchew's evidence that the relevant product market is the  
5 market for siting wireless attachments.

6 a) Confirm whether in Mr. Starkey's view, towers and rooftops for the deployment of  
7 macro sites for mobile communication services are complete substitutes for wireless  
8 pole attachments and vice-versa? Explain how these installations could be  
9 substitutes?

10 b) Clarify whether Mr. Starkey agree with Dr. Yatchew that the relevant product market  
11 encompasses all types of siting for wireless carriers' attachments in the context of the  
12 deployment of outdoor DAS systems?

13

14 **RESPONSE:**

15 a) Mr. Starkey believes that various placement alternatives (including, but not limited to  
16 those listed in the question) are substitutes for utility poles to which wireless  
17 equipment might be attached. *See* Section 3 of Mr. Starkey's affidavit for a  
18 description of "how these installations could be substitutes." *See also Outdoor*  
19 *Distributed Antenna Systems and their role in the Wireless Industry*, Industry Report,  
20 LCC International, Inc., filed by EDA in this docket on September 2, 2011.

21

22 b) Mr. Starkey agrees with Dr. Yatchew.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 32:**

2 **Reference(s):** **Starkey, page 32, lines 4 to 9**

3

4 In response to the question of ARE MACRO SITES AND SMALL CELLS (e.g., DAS  
5 AND OTHERS) OFTEN USED IN COMBINATION TO ENHANCE THE SERVING  
6 CAPACITY OF WIRELESS CARRIERS, Mr. Starkey answers, “Yes they are”.

7 a) In addition, Mr. Starkey states (page 32, line15) that “Heterogeneous networks  
8 combine the advantages of traditional macro cell sites complimented by additional,  
9 lower power network layers or small cells, each of which leverages existing  
10 technologies to provide the best possible wireless experience”.

11 b) Given the correlation between small cell sites and the enhancement of the serving  
12 capacity of wireless carriers, does this not entail sites or antennas that are lower to the  
13 ground to keep them from propagating like macro sites?

14 c) Is it Mr. Starkey’s opinion that outdoor DAS technology can only and exclusively be  
15 deployed to enhance capacity in a mobile network? Please explain why.

16

17 **RESPONSE:**

18 a) There does not appear to be a question related to 32(a).

19

20 b) Small cell site antennas are often lower to the ground than macro-site antennas.

21

22 c) No.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 35:**

2 **Reference(s):** **Starkey, page 35, line 10 to page36, line 13**

3

4 When questioned "CAN FEMTOCELLS BE DEPLOYED WITHIN LARGE  
5 OUTDOOR. OR METRO TYPE, SETTING AKIN TO THE MANNER IN WHICH  
6 CANDAS INTENDS TO DEPLOY ITS DAS NETWORK IN TORONTO, Mr. Starkey  
7 answers "Yes." In fact Alcatel - Lucent recently reported that its second generation of  
8 "metro femtocells" provide a footprint up to 300 meters inner cities and up to 2 km, if  
9 positioned high enough"

- 10 a) Can a femto cell be deployed on a utility pole?
- 11 b) Is Alcatel Lucent's femtocell and "cube" technology specifically targeting pole  
12 installations?
- 13 c) Did Alcatel-Lucent disclose when this equipment would be available for commercial  
14 release and testing?
- 15 d) Is this Alcatel-Lucent equipment actively being:
- 16 (i) Lab tested?
- 17 (ii) Field tested?
- 18 (iii) Being tried in small trial deployments?
- 19 (iv) Currently enjoying wide commercial deployment?
- 20 e) In relation to the qualification that a wider footprint is possible if the femtocell is  
21 "positioned high enough", doesn't this mean that femtocells placed lower on  
22 buildings could not produce the result of providing for a 300 meter to 2 km footprint?
- 23 f) Would these new "metro femtocells" benefit from the higher elevation and 360  
24 degree propagation characteristics and contiguous nature of LDC or other utility poles

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 to offer a ubiquitous footprint and the effective range the Alcatel-Lucent femtocell  
2 claims are possible when the equipment ready for commercial deployment?

3

### **4 RESPONSE:**

5 a) Yes. Although not all femtocells are designed to be mounted on utility poles, some  
6 outdoor, metro femtocells can be mounted on utility poles.

7

8 b) Mr. Starkey's evidence at page 35, line 10 to page 36, line 13 is not intended to  
9 address Alcatel-Lucent's "cube technology" as the question implies. With respect to  
10 Alcatel-Lucent's second generation of metro femtocells, the answer is no.

11

12 c) The Alcatel-Lucent 9360 series of Small Cell equipment is currently available. See,  
13 for example, Alcatel-Lucent's product website at the follow address:

14 [http://www.alcatel-](http://www.alcatel-lucent.com/wps/portal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4w3dnTRL8h2VAQADYR9IA!!?LMSG_CABINET=Solution_Product_Catalog&LMSG_CONTENT_FILE=Products/Product_Detail_000575.xml&LMSG_PARENT=null#tabAnchor4)  
15 [lucent.com/wps/portal/!ut/p/kcxml/04\\_Sj9SPykssy0xPLMnMz0vM0Y\\_QjzKLd4w3d](http://www.alcatel-lucent.com/wps/portal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4w3dnTRL8h2VAQADYR9IA!!?LMSG_CABINET=Solution_Product_Catalog&LMSG_CONTENT_FILE=Products/Product_Detail_000575.xml&LMSG_PARENT=null#tabAnchor4)  
16 [nTRL8h2VAQADYR9IA!!?LMSG\\_CABINET=Solution\\_Product\\_Catalog&LMSG\\_](http://www.alcatel-lucent.com/wps/portal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4w3dnTRL8h2VAQADYR9IA!!?LMSG_CABINET=Solution_Product_Catalog&LMSG_CONTENT_FILE=Products/Product_Detail_000575.xml&LMSG_PARENT=null#tabAnchor4)  
17 [CONTENT\\_FILE=Products/Product\\_Detail\\_000575.xml&LMSG\\_PARENT=null#ta](http://www.alcatel-lucent.com/wps/portal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4w3dnTRL8h2VAQADYR9IA!!?LMSG_CABINET=Solution_Product_Catalog&LMSG_CONTENT_FILE=Products/Product_Detail_000575.xml&LMSG_PARENT=null#tabAnchor4)  
18 [bAnchor4](http://www.alcatel-lucent.com/wps/portal/!ut/p/kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4w3dnTRL8h2VAQADYR9IA!!?LMSG_CABINET=Solution_Product_Catalog&LMSG_CONTENT_FILE=Products/Product_Detail_000575.xml&LMSG_PARENT=null#tabAnchor4).

19

20 d) See response to (c) above. See also Alcatel-Lucent's press releases for publically  
21 available descriptions of various network trials and commercial deployments.

22

23 e) Alcatel-Lucent reports that an outdoor range of 150-300 meters is expected for inner  
24 city deployments and that in rural settings footprints can be boosted to 2 km. Hence,

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- 1       it is unlikely that ranges between 300 meters and 2 km would be achievable in an  
2       inner city environment regardless of femtocell placement.  
3  
4   f) Potentially, depending upon the availability and nature of alternative siting locations,  
5       access to necessary broadband backhaul, power and other factors.



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1 **INTERROGATORY 42:**

2 **Reference(s):** Starkey, Section IV, page 46, lines 15 to 21

3

4 Mr. Starkey states:

5 ...in October of 2010 Crown Castle, one of the United  
6 States' largest independent owners and operators of shared  
7 wireless infrastructure, announced it was constructing a  
8 DAS for the Colonial Williamsburg Foundation which  
9 "utilizes existing infrastructure for antenna placement,  
10 including rooftops, the cupolas of historic buildings" and  
11 stealth flagpoles.

- 12 a) Describe the scale of the Colonial Williamsburg Foundation DAS deployment in terms  
13 of the geographic area covered and the number of wireless and wireline nodes.
- 14 b) Is utility pole infrastructure (including hydro poles, lampposts and streetlights)  
15 available in Colonial Williamsburg? Why not? Please provide an answer for each of  
16 the three types of utility poles listed in the question.

17

18 **RESPONSE:**

- 19 a) Crown Castle was engaged to develop a multiple operator DAS throughout colonial  
20 Williamsburg's historic area, local hotel properties and Merchants Square in addition  
21 to the college of William and Mary. Mr. Starkey was unable to find publicly  
22 available information on the precise number of nodes deployed, the precise  
23 geographic area covered, or the extent to which utility poles, lampposts, streetlights  
24 and traffic signals are available for DAS antennas and supporting electronics.

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- 1     b) See response to (a) above.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 1:**

2 **Reference(s):** Yatchew, page 2, lines 19 to 24

3

4 Dr. Yatchew states:

5 “In 2004 I coauthored testimony specifically on the pricing of attachment space for joint  
6 use poles. This testimony was filed before the Ontario Energy Board. A similar analysis  
7 was filed before the New Brunswick Board of Commissioners of Public Utilities in 2005.  
8 In 2008, I coauthored a study on the subject for the Canadian Electricity Association.  
9 Since that time, I have also participated in processes and negotiations relating to  
10 attachments to utility poles.”

11 (a) List and describe Dr. Yatchew's experience with the telecommunications industry in  
12 general and the wireless telecommunications sector in particular. Include deployment  
13 experience, white papers, standardization work or other relevant engagements in wireless  
14 network design or deployments.

15

16 **RESPONSE:**

17 I have in the past, and for several years, provided detailed econometric forecasts and  
18 general market assessments of the cellular phone industry for Bell Mobility. Those  
19 analyses involved, amongst other things, considerations of the impacts of prices and  
20 technological change on subscribership and market share. I am not an engineer and have  
21 not been involved in the design or deployment of wireless telecommunications systems.

22

23 I have been involved extensively in considering economic and regulatory issues relating  
24 to the attachment of communication facilities to power poles. This work has included  
25 analyses that formed part of the evidence in the 2004-2005 OEB CCTA proceeding and a

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 subsequent proceeding before the New Brunswick Public Utilities Commission in 2006.  
2 I have advised Fortis-BC and Thunder Bay Hydro in attachment negotiations with  
3 telecom carriers. I have co-authored a study for the Canadian Electricity Association on  
4 pole attachment pricing. I am currently acting as the sole representative of a Canadian  
5 provincial utility in an external review of pole attachments by a national  
6 telecommunications carrier to that utility's infrastructure. Thus my experience with the  
7 telecommunication industry has been largely at the interface with the electricity industry,  
8 the very issues that we are faced with at this proceeding.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 2:**

2 **Reference(s):** **Yatchew, page 4, lines 7-8; page 11, lines 8 -10; and page 13,**  
3 **lines 21-22**

4

5 Dr. Yatchew states:

6 page 4, lines 7-8: “Wireless systems should not be subsumed under the Decision as they  
7 are fundamentally different from wireline attachments.”

8 page 11, lines 8 -10: “As I will explain further below, and as is documented elsewhere in  
9 the evidence, wireless attachments are fundamentally different from wireline attachments  
10 such as those supporting traditional cable televisions lines and fiber optic cable.”

11 page 13, lines 21-22: “Furthermore, as outlined above and supported extensively in other  
12 evidence before this Board, wireless systems are fundamentally different from  
13 traditional wireline systems.”

14 (a) “Systems” and “attachments” appear to be used synonymously in the first above-  
15 noted citation.

16 (i) Define “wireless systems” as referred to in the above-noted citations and  
17 elsewhere in Dr. Yatchew’s affidavit.

18 (ii) Define “wireline systems” as referred to in the third above-noted citation and  
19 elsewhere in Dr. Yatchew’s affidavit.

20 (iii) Define “wireless attachments” as referred to in the second above-noted  
21 citation and elsewhere in Dr. Yatchew’s affidavit.

22 (iv) Define “wireline attachments” as referred to in the first above-noted citation  
23 and elsewhere in Dr. Yatchew’s affidavit.

24 (b) List each of the assumptions of fact underlying Dr. Yatchew’s statement at page 11,  
25 lines 8-10, that “wireless attachments are fundamentally different from wireline

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 attachments.”

2 (i) For each such fact,

3 A. Confirm whether Dr. Yatchew had personal knowledge of such fact  
4 prior to accepting THESL’s retainer in this matter.

5 B. If Dr. Yatchew had no personal knowledge, identify the basis of Dr.  
6 Yatchew’s belief in the truth of such fact.

7 (c) List each of the assumptions of fact underlying Dr. Yatchew’s statement at page 13,  
8 lines 21-22, that “wireless systems are fundamentally different from traditional wireline  
9 systems.”

10 (i) For each such fact,

11 A. Confirm whether Dr. Yatchew had personal knowledge of such fact  
12 prior to accepting THESL’s retainer in this matter.

13 B. If Dr. Yatchew had no such personal knowledge, identify the basis of  
14 Dr. Yatchew’s belief in the truth of such fact.

15  
16 **RESPONSE:**

17 a) In each of the noted references, the discussion relates to the applicability of the OEB  
18 CCTA 2005 decision to the attachments that CANDAS wishes to put on THESL  
19 poles.

20  
21 For purposes of this proceeding, I therefore take wireless attachments to be  
22 principally antennas and supporting equipment. These do not include the wireline  
23 systems – fibre and power – to which they attach.

24  
25 A wireless system is a broader concept which requires connection to fibre and power,

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1       and wireless system design must assure availability of each. However, the wireless  
2       provider need not be the owner or operator of either the fibre or power wireline  
3       systems to which it attaches.

4

5       b) The fundamental difference between wireline and wireless is embodied in the words  
6       themselves: the former requires a continuous physical connection to the end user; the  
7       latter, does not.

8

9       For the purposes of this proceeding, the central fact that distinguishes wireline  
10      attachments from wireless attachments is that cables require continuous connected  
11      corridors through which they must pass. Wireless providers can transmit and receive  
12      their wireless signals from a finite and relatively small number of points. These  
13      points can be and are located in varying locations.

14

15      I confirm that I had knowledge of this prior to being retained by Toronto Hydro for  
16      this proceeding.

17

18      c) Since wireless attachments are fundamentally different from wireline attachments and  
19      wireless attachments comprise a component of wireline systems, wireless systems  
20      and wireline systems must be different.

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1 **INTERROGATORY 4:**

2 **Reference(s):** Yatchew, page 4, lines 20-25

3

4 Dr. Yatchew states:

5 “It is difficult to reconcile CANDAS evidence that DAS systems are extremely flexible,  
6 adaptable and can be deployed in a broad spectrum of indoor and outdoor environments,  
7 with their assertion that there is no alternative but to attach to utility poles. It would seem  
8 that, particularly in urban environments, multiple structures are available for supporting  
9 wireless facilities, which do not have the same safety issues associated with power pole  
10 attachments.

11 (a) Elaborate on the extent to which the conclusion that “multiple structures are available  
12 for supporting wireless facilities” is applicable to a context of:

13 (i) Increasing demand on all mobile wireless networks;

14 (ii) A new entrant wireless carrier with relatively fewer spectrum frequency assets  
15 than established incumbent carriers.

16

17 **RESPONSE:**

18 a)

19 (i) Increasing demand on wireless networks has been met in a variety of ways.

20 For the purposes of the present proceeding, the critical point is that the siting  
21 market has provided for support structures to meet this growth. Moreover,  
22 this has been accomplished without dependency on poles for antenna  
23 placement.



## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

- 1           (ii) The siting market can be accessed by both entrants and incumbents. It is  
2           unclear why an entrant with fewer spectrum assets should be subsidized by  
3           electricity rate payers through access to support structures at other than market  
4           rates. If a subsidy is required for the survival of a new entrant or a nascent  
5           technology, then it would seem that the subsidy should come from the telecom  
6           sector.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 6:**

2 **Reference(s):** Yatchew, page 5, lines 10-12

3

4 Dr. Yatchew states:

5 “There is an extensive siting market and a well established process for the placement of  
6 wireless antenna facilities.”

7 (a) Describe Dr. Yatchew’s understanding of the elements of the “well established  
8 process for the placement of wireless antenna facilities” referred to in the above-noted  
9 citation. Include any and all third-party approvals or consultation requirements, as  
10 applicable, in Dr. Yatchew’s opinion. Include the typical timeframes associated with  
11 each element of the well established process.

12 (b) To the extent that different elements, third-party approvals or consultations and  
13 timeframes are associated with the acquisition or lease of different types of wireless  
14 antenna sites, clearly reflect these differences in Dr. Yatchew’s answer.

15

16 **RESPONSE:**

17 There are multiple owners of siting facilities in Ontario through which wireless providers  
18 can obtain access to sites. Furthermore there are commercial companies operating in  
19 Ontario offering siting services. The process is facilitated through Industry Canada, its  
20 tools for locating and using existing sites and its protocols for establishing new ones.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 7:**

2 **Reference(s):** Yatchew, page 5, lines 15-17

3

4 Dr. Yatchew states:

5 “Nor is it in the public interest to transfer a resource from the public domain to a small  
6 group of private entities without consideration of alternative uses for that resource and of  
7 its market value.”

8 (a) In the context of the issues in this proceeding, what is the “resource” and how it  
9 would be “transferred” as a result of the outcome of this proceeding?

10 (b) In Dr. Yatchew’s opinion, would it be in the public interest to:

11 (i) Transfer the resource to public entities but not to a “small group of private  
12 entities”;

13 (ii) Transfer the resource to any third party as long as it is governed solely by  
14 market forces;

15 (iii) All of the above?

16

17 **RESPONSE:**

18 a) The “resource” is space on utility poles. Mandatory access to pole space for the  
19 applicants would result in an involuntary transfer, at least for the duration of the lease.

20

21 b) Access to pole space for non-power company uses needs to be evaluated on a case-  
22 by-case basis. In some instances, for example, when poles are a bona fide essential  
23 facility for a particular type of attachment, that entity would generally be accorded  
24 access assuming that space is available. Governmental attachers would also have  
25 priority.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 9:**

2 **Reference(s):** Yatchew, page 8

3

4 Dr. Yatchew is asked:

5 “What are some of the key trends in the communications industry which can impact  
6 demand for space?”

7 In response to the question posed to Dr. Yatchew, at page 8 of his Affidavit, Dr. Yatchew  
8 discusses

- 9       • Increases in demand for high-speed Internet (broadband) telecommunications  
10       services in general
- 11       • Recent entry of new entrant wireless service providers as a result of Industry  
12       Canada’s 2008 spectrum auction
- 13       • Appearance of so-called “smart-phones” in the mobile wireless communications  
14       market
- 15       • Convergence of voice, video and data services via Internet Protocol (IP)  
16       technology.

17 (a) Describe Dr. Yatchew’s understanding of the degree of competitiveness of the  
18 residential highspeed Internet access market in Canada in terms of the degree of  
19 penetration, the quality of such services, and revenue market share. Cite all relevant  
20 sources.

21 (b) Describe Dr. Yatchew’s understanding of the degree of competitiveness of the mobile  
22 wireless communications market in Canada in terms of the degree of penetration, the  
23 quality of such services, and revenue market share. Cite all relevant sources.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

**RESPONSE:**

A useful reference is the CRTC Communications Monitoring Report, July 2011, henceforth the “CRTC Report”. Available at:  
<http://www.crtc.gc.ca/eng/publications/reports/policymonitoring/2011/cmr2011.pdf> .

a) Nationally, the availability of high-speed broadband internet access is approximately 96% according to the latest available data. For urban areas,(and the CANDAS application seeks attachment to THESL poles which is an urban utility), the figure is 100%. (CRTC Report, page 137).

Broadband prices are substantially lower than those in the U.S. Some more distant countries exhibit lower prices than those in Canada. (CRTC Report, page 168.)

Average fixed broadband speeds are higher in Canada than in the U.S. and in a number of other countries. (CRTC Report, page 172.)

b) Wireless network access is available to 99% of Canadians. (CRTC Report, page 155.)

Wireless prices are comparable to, or lower than those in the U.S., depending on the level of service. Again, some more distant countries exhibit lower prices than those in Canada. (CRTC Report, page 168.)

Average mobile broadband speeds are much higher than in the U.S., higher than in France, Australia and Italy; and, lower than in the U.K. and Germany. (CRTC Report, page 173.)

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1        Mobile internet prices are substantially lower than those in the U.S. Some more  
2        distant countries exhibit lower prices than those in Canada. (CRTC Report, page  
3        168.)

4  
5        The Canadian wireless industry does not appear to be overly concentrated relative to  
6        other countries. (CRTC Report, page 173.)

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 11:**

2 **Reference(s):** Yatchew, page 10, lines 15-17

3

4 Dr. Yatchew states:

5 “The need to regulate cable attachments rested on the argument that attachers could be  
6 denied access, or lacking cost-effective alternatives, could be charged excessively high  
7 rates by pole or conduit owners.”

8 (a) To which regulatory authorities in particular is Dr. Yatchew referring in the above-  
9 noted citation.

10 (b) Describe other grounds, if any, upon which access to “populations of poles or  
11 networks of underground conduits” has been mandated.

12

13 **RESPONSE:**

14 a) For present purposes, the Ontario Energy Board mandates access to power poles for  
15 wireline cable and telephone attachments. Other regulators in other jurisdictions have  
16 mandated similar access.

17

18 b) The fundamental grounds are that poles are an essential facility for cable and wires.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 12:**

2 **Reference(s):** **Yatchew, page 7, lines 8-9; page 11, lines 8-14**

3

4 Dr. Yatchew states:

5 Page 7, lines 8-9: “Second, unlike wireline facilities, utility poles are not essential  
6 facilities for wireless services.”

7 Page 11, lines 8-14: “As I will explain further below, and as is documented elsewhere in  
8 the evidence, wireless attachments are fundamentally different from wireline attachments  
9 such as those supporting traditional cable television lines and fibre optic cable. Wireless  
10 attachments can be placed in a variety of locations, so long as they are sufficiently  
11 elevated. Indeed, the cellular phone industry has grown and prospered with very little in  
12 the way of wireless attachments to power or other utility poles. Power poles are therefore  
13 not an essential facility for the wireless industry.”

14 (a) Dr Yatchew states on page 11 of his Affidavit that there are fundamental differences  
15 between wireline and wireless facilities and one key point is that they have common  
16 shared support structures. As described in Mr. Starkey's evidence, Industry Canada has  
17 mandated the use of shared and collocated wireless facilities. Is it Dr. Yatchew's opinion  
18 that support structures for wireless carriers cannot be shared?

19 (b) Dr. Yatchew states that “utility poles are not essential facilities for wireless services”  
20 and that “power poles are ... not an essential facility for the wireless industry.”

21 (i) Confirm that fundamentally speaking, the basis of the foregoing opinion is that  
22 “[w]ireless attachments can be placed in a variety of locations, so long as they are  
23 sufficiently elevated.”

24 (ii) Identify other grounds, if any, upon which Dr. Yatchew bases this opinion.



## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1   **RESPONSE:**

2   a) Support structures can be shared and are shared.

3

4   b)

5       (i) I do not confirm this proposition.

6       (ii) The most important threshold economic criterion in this case is whether THESL is  
7           a monopoly provider of sites for placement of wireless facilities. The presence of  
8           numerous sites in the Toronto area, owned by different parties, demonstrates that  
9           THESL is not a monopoly provider of such sites.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 15:**

2 **Reference(s):** Yatchew, page 13, line 17

3

4 Dr. Yatchew states:

5 “Markets have responded effectively to meet the needs of various wireless market  
6 participants.”

7 (a) Define the “markets” referred to in the above-noted citation.

8 (b) Define the needs referred to in the above-noted citation.

9 (c) Provide evidence that “markets” in Canada have responded.

10

11 **RESPONSE:**

12 a) The evolution of the wireless industry has been supported by numerous markets  
13 providing human resources, financial resources, devices that are required at various  
14 stages of the production and delivery chain, software, research and development, and  
15 support structures such as towers. Even spectrum has been allocated using market  
16 forces.

17

18 b) Each of the above markets fulfill certain needs of the industry.

19

20 c) The successful development of the wireless industry in Canada, combined with the  
21 fact that markets have been relied upon extensively is evidence that markets have  
22 responded.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 16:**

2 **Reference(s):** **Yatchew, page 4, lines 25-27; page 16, lines 9-14**

3

4 Dr. Yatchew states:

5 Page 4, lines 25-27: "It is my understanding that the Canadian Electricity Association is  
6 putting extensive technical evidence before this Board which documents alternative  
7 support options."

8 Page 16, lines 9-14: "A detailed study prepared by LCC International Inc., and filed  
9 before this Board by the Canadian Electricity Association provides examples of sites  
10 which are currently in use. These include private and public buildings of various kinds,  
11 street furniture, towers, flagpoles and structures that are specifically erected for the  
12 purpose of accommodating wireless communications. The affidavit of Mr. M. Starkey,  
13 filed before this Board on behalf of THESL also contains evidence of alternatives for  
14 attachment."

15 (a) Dr. Yatchew states that he relies upon the LCC International, Inc. report and the  
16 Affidavit of Mr. Starkey filed with the Board in this matter for his conclusion that the  
17 "wireless facilities that are required by DAS networks have numerous alternative siting  
18 options."

19 (i) Identify the different siting options.

20 (ii) Clarify whether it is Dr. Yatchew's understanding that each siting option is  
21 interchangeable with any other siting option, regardless of the cell size of the  
22 wireless deployment being contemplated.

23 (b) Clarify whether Dr. Yatchew has any independent understanding of the alternative  
24 siting options for wireless carriers other than the information contained in the LCC  
25 International, Inc. report and the Affidavit of Mr. Starkey.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 (i) If so, identify the basis of any understanding that Dr. Yatchew has,  
2 independent of the information contained in the LCC International, Inc. report and  
3 the Affidavit of Mr. Starkey.

4

5 **RESPONSE:**

6 a) I have relied, in part, on the LCC report and on Mr. Starkey's Affidavit.

7

8 Siting options have been identified in the above quote, viz. "These include private  
9 and public buildings of various kinds, street furniture, towers, flagpoles and structures  
10 that are specifically erected for the purpose of accommodating wireless  
11 communications." I do not expect that each site is a perfect substitute for every other  
12 in each and every circumstance. However, the availability – both actual and potential  
13 – of alternatives suggests that varying siting needs of wireless companies can be  
14 satisfied.

15

16 b) My understanding of the existence of varying siting options long preceded the  
17 aforementioned reports or contacts with their authors.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

### **INTERROGATORY 19:**

**Reference(s):** Yatchew, pages 18-19, lines 28-29

Dr. Yatchew states:

“Q. Is there a risk of regulatory failure if the OEB were to intervene?

A. Yes, there are significant risks.”

(a) Are there benefits that would be forgone if the OEB were not to intervene?

(b) Does Dr. Yatchew believe that the telecommunications market in Toronto will be more or less competitive if wireless carriers' access to THESL poles is granted?

### **RESPONSE:**

a) I expect that private benefits to CANDAS, arising out of attachment at highly subsidized rates to THESL poles, would be forgone.

b) There is a natural experiment that can, to some extent, inform the answer to this question. In Montreal, DAS access to poles has evidently been approved. In Toronto, it has not. The prices and offerings that Public Mobile has put forth in each of these two cities appear to be very similar. Access to poles in Montreal does not appear to have led to lower rates offered by Public Mobile. This would seem to suggest that there is no appreciable impact to date on competitiveness.

In the longer run, the success and competitiveness of an industry depends on the technologies that are chosen. It is unclear that the subsidy of a specific technology (in this case DAS) would yield preferable outcomes. Subsidies to support specific telecommunications technologies are best made from within the telecommunications sector itself.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 20:**

2 **Reference(s):** **Yatchew, page 29, lines 23-24**

3

4 Dr. Yatchew states:

5 “Wireline attachers are fundamentally different from wireless entities as the latter do not  
6 require continuous corridors for placement of their wireless facilities.”

7 (a) Confirm whether Dr. Yatchew relies on the LCC International, Inc. report for his  
8 understanding that wireless entities “do not require continuous corridors for placement of  
9 their wireless facilities.”

10 (i) If so, provide the specific excerpts from the LCC International, Inc. report  
11 upon which Dr. Yatchew relies in this regard.

12 (b) Advise whether Dr. Yatchew relies on any other sources for his understanding that  
13 wireless entities “do not require continuous corridors for placement of their wireless  
14 facilities.”

15 (i) If so, provide the all relevant references and specific excerpts upon which Dr.  
16 Yatchew relies.

17 (c) Advise whether Dr. Yatchew has any personal knowledge or experience relevant to  
18 the requirements or desirable features of the deployment of wireless facilities.

19 (i) If so, answer the following questions. If Dr. Yatchew has no prior knowledge  
20 or experience concerning the placement of equipment on utility poles, Dr.

21 Yatchew need not answer the following questions:

22 A. Explain how the unique contiguous nature of a pole route’s design  
23 differs from the required contiguous nature of a Greenfield wireless  
24 network design to provide for basic mobile service coverage in a given  
25 area.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 B. Can fibre cables be strung overhead, from building rooftop, to towers,  
2 to billboards or alternate structures on anything other than utility poles?

3 C. Indicate whether Dr. Yatchew would agree that the installation of  
4 wireless equipment on utility poles within 10 feet of the fibre optic cable  
5 is more commercially viable than attempting to attach to buildings,  
6 rooftops, towers or other structures, which will inevitably require fibre  
7 lateral engineering and construction from the pole line to the building?

8 D. Would the cost, increased administrative burdens, disruptive nature of  
9 underground construction, road and sidewalk restoration and other factors  
10 and costs in building a fibre network to reach an alternative location  
11 represent a barrier to entry to wireless carriers if wireless carriers were  
12 refused access to utility poles?

13 E. If not, provide an economic and operational assessment that  
14 demonstrates specifically what barriers to entry exist for wireline carriers  
15 that do not exist for wireless carriers having to use alternate structures.  
16

### **RESPONSE:**

17  
18 a) The LCC study is helpful and informative.  
19

20 Moreover, it is reassuring that my conclusion, that “Wireline attachers are  
21 fundamentally different from wireless entities as the latter do not require continuous  
22 corridors for placement of their wireless facilities.”, which I arrived at long before the  
23 present proceeding, is confirmed by the engineering expertise underlying this  
24 document.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 b) I arrived at this conclusion earlier in the course of reviewing various issues associated  
2 with attachments to power poles.

3  
4 c) Please see below.

5 A. The development of a true “Greenfield” setting, such as a new residential,  
6 commercial or industrial development, would entail the provision of a number  
7 of physically connected networks: power, water supply, sewage, natural gas if  
8 available, and cables/fibre for the provision of telecom services. (Presently, it  
9 is common to put all of these systems underground.) A wireless network  
10 would then be super-imposed on the existing wireline systems by placing  
11 wireless components at judicious locations and connecting them to wireline  
12 systems.

13 B. Wireline systems are attached to structures other than poles, indeed the  
14 provision of centrally generated electricity to our homes would be impossible  
15 otherwise. Fibre can also be attached to structures other than poles. However,  
16 the main supply lines for wireline services are overwhelmingly run along  
17 support structures such as poles, or through underground conduits.

18 C. Each siting option, no doubt has advantages and disadvantages.

19 D. To the extent that up-front costs -- for example those associated with  
20 obtaining access to wireline systems -- represent a barrier to entry, such costs  
21 are incurred by all participants in the provision of wireless services. That  
22 Public Mobile and other new entrants were able to launch their services in a  
23 timely fashion in both Toronto and Montreal, suggests that these costs do not  
24 represent an especially adverse barrier to entry.



## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

- 1           E. Perhaps the most stringent barrier to entry for a wireline service provider that  
2           wishes to construct a new network of above-ground support structures is that  
3           government approvals would most likely not be granted in areas where such  
4           structures already exist.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 22:**

2 **Reference(s):** Yatchew, page 31, lines 1-2

3

4 Dr. Yatchew states:

5 “I would not conclude that DAS deployment on poles has occurred of necessity, that is,  
6 that distributed antenna systems have no alternative but to attach to utility poles.”

7 (a) What is the basis for this view?

8 (b) Would Dr. Yatchew's conclusion change if physical alternatives exist, but such  
9 alternatives were not viable from a regulatory, economic or technological perspective?

10

11 **RESPONSE:**

12 a) Economists tend to believe that prices are important determinants of economic  
13 behaviour. I would therefore not be surprised if DAS deployment on utility poles,  
14 where it does occur, is driven largely by price.

15

16 b) The conclusion would depend upon the specific regulatory, economic or  
17 technological factors that make alternatives “not viable”. The presence of DAS  
18 facilities on structures other than utility poles would suggest that regulatory,  
19 economic and technological challenges are not insurmountable.

## **RESPONSES TO CANADIAN DISTRIBUTED ANTENNA SYSTEMS COALITION INTERROGATORIES**

1 **INTERROGATORY 23:**

2 **Reference(s):** Yatchew, page 31, lines 3-7

3

4 Dr. Yatchew states:

5 “The decision has been made in some jurisdictions to facilitate attachment of wireless  
6 facilities to utility poles (electricity and telephone) at favourable prices. As a  
7 consequence, in those areas DAS developers have not needed to adapt their designs so  
8 that they can be attached elsewhere, nor would there have been a need to seek other  
9 locations.”

10 (a) Identify the relevant jurisdictions and decisions.

11

12 **RESPONSE:**

13 In those areas where the FCC retains jurisdiction over pole attachments, DAS developers  
14 have the advantage of mandated access and attachment rates that are far below market  
15 rates. See “Report and Order and Order on Reconsideration” issued by the FCC on April  
16 7, 2011.