EB-2011-0120

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 the **Canadian Distributed Antenna Systems Coalition** for certain orders under the *Ontario Energy Board Act*, 1998.

INTERROGATORIES OF
TORONTO HYDRO-ELECTRIC SYSTEM LIMITED
(on the evidence of the Applicant, CANDAS)

August 9, 2011

BORDEN LADNER GERVAIS LLP
Barristers and Solicitors
Scotia Plaza
40 King Street West
Toronto, Ontario M5H 3Y4

J. Mark Rodger

Tel.: 416-367-6190
Fax: 416-361-7088
E-mail: mrodger@blgcanada.com

Counsel to Toronto Hydro-Electric System Limited

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Toronto Hydro-Electric System Limited ("THESL") submits the following interrogatories of the Canadian Distributed Antenna Systems Coalition ("CANDAS"). CANDAS is a coalition of three Canadian member companies: ExteNet, Public Mobile and DAScom. Any reference in these IRs made to CANDAS or the Applicant should be understood to mean CANDAS as a collective, and/or any one of the CANDAS member companies.

I. Application[1]

1. *Reference: p. 4 and 21, paras. 2.8, 2.9 and 7.10*

At p. 2.8, CANDAS states that: "Moreover, Canadian carriers who require access to power poles to enable their wireless networks are now effectively precluded from entering the market. This is either because they are unable to obtain pole access at all, or because the terms and conditions of such access are completely indeterminate or subject to such uncertainties as to prelude the requisite capital investments. If left unchecked, the ability of electricity distributors to use their monopoly power to unduly discriminate among Canadian carriers by unilaterally deciding who may have access to regulated assets and who may not, will materially and adversely affect the development of a competitive wireless industry in Ontario." (emphasis added)

Later, paragraph 7.10, CANDAS states that "As a result of the continuing delays in permit processing and the uncertainty as to when the Toronto DAS Network would be 100 percent completed, Public Mobile decided to launch its new Toronto service using "temporary" Macro Cell Sites. Accordingly, Public Mobile, ExteNet and DAScom agreed to terminate arrangements for the committed use of the Toronto DAS Network by Public Mobile. Although Public Mobile is still interested in utilizing DAS technology for portions of its network in Toronto, it will not commit to do so unless and until it receives credible assurances, including assurances that THESL will grant timely and long-term pole access for node and fibre attachments."

[1] As filed April 21, 2011.

(a) Please describe in greater detail all of the other alternatives available to Canadian carriers - such as Public Mobile - to the Toronto DAS Network solution proposed by ExteNet and DAScom.

(b) From the evidence of CANDAS, it appears that Public Mobile is currently using a "Macro Cell Site" alternative to the Toronto DAS Network. Please provide particulars on how a Macro Cell Site approach can be used to provide service to Canadian carriers.

(c) Who are the vendors from whom Canadian carriers - such as Public Mobile - that can purchase "Macro Cell Site" service? Rogers? Bell? Telus? American Tower? Crown Castle? Please identify any others.

(d) What is the total cost being paid by Public Mobile for use of the Macro Cell Site alternative for coverage in the exact service area that is proposed to be covered by the Toronto DAS Network?

(e) What is the difference in total cost between Public Mobile's "Macro Cell Site" alternative currently being used by Public Mobile and the forecasted costs of the Toronto DAS Network proposed by ExteNet and DAScom?

(f) Please specify and provide the relevant particulars regarding Public Mobile's likely use of a DAS network, how many nodes it would require within its current business planning period, where those nodes would be located, and what proportion of its traffic volumes would be handled through such a network.

2. *Reference: p. 9, para. 3.11*

CANDAS states "That the parties' settlement on this issue was reached after "considerable discussion" and resulted in universal access by all Canadian carriers (with only the Bell Canada carve out) is significant. As appears from the THESL Letter, THESL now takes the position that the CCTA Order does not apply to wireless attachments because there was no discussion about such attachments during the CCTA

Proceeding and the Board never "turned its mind" to this issue. To suggest that wireless attachments are not within the scope of the CCTA Order because the issue was not debated in the CCTA Proceeding ignores the fact that the parties in that proceeding had already agreed, as part of the settlement, that access should be given to all Canadian carriers and not just to wireline carriers. Accordingly, there was no need for further discussion of this issue during the CCTA Proceeding. Moreover, to now suggest that the Board never turned its mind to the issue is to suggest that the Board and Board counsel did not apprehend that the definition of "Canadian carrier" included wireless carriers. Such a suggestion would be quite remarkable."

(a) Are wireless attachments explicitly discussed anywhere in the CCTA Decision?

(b) In the CCTA Decision, the Board was focused specifically on attachments made within the 2ft communications space on distribution poles. Please confirm whether all of the proposed Toronto DAS Network distribution pole attachments fit strictly within the 2ft communications space. Alternatively, please identify those components associated with the Toronto DAS Network that require attachment to the utility pole outside of the 2ft communications space.

(c) In the CCTA Decision, the Board determined that 2.5 attachments per pole was reasonable in the context of its Decision. In respect of the Toronto DAS Network, could 2.5 wireless distribution pole attachments be made to each distribution pole within the 2ft communications space? Please provide the relevant particulars regarding the response.

(d) At paragraph 3.15, CANDAS notes that "The Board ultimately decided the pole charge issue in a way that did not distinguish among various types of attachments." Are there any notable differences between wireline and wireless attachments? Did the Board explore these differences in the CCTA Decision? If so, please provide the relevant particulars, including specific references to the CCTA Decision.

3. *Reference: p. 12 and 14, paras. 4.1 and 5.9*

CANDAS states at paragraph 4.1 that "CANDAS was formed for the purpose of promoting the ongoing improvement of wireless communications services in Canada, by creating an environment conducive to the rapid deployment of DAS networks in those areas where DAS technology offers technical, economic and environmental advantages that cannot be realized through traditional macro cell site infrastructure."

CANDAS states at paragraph 5.9 that "In the United States, DAS networks have been successfully deployed in most major cities. Such networks typically utilize hydro and telephone poles." (emphasis added)

(a) Has ExteNet, Public Mobile, or DAScom considered, either together or individually, any other alternatives to siting, and deployed its proposed Toronto DAS Network other than using distribution utility poles?

(b) If the answer to (a) is yes, please describe each of the other alternatives that have been considered and please provide all attachment agreements in the possession of any of the CANDAS group of companies relating to each of these alternatives.

(c) If the answer to (a) is no - why hasn't CANDAS explored other alternatives? Please provide the relevant particulars.

(d) Is CANDAS aware of outdoor DAS networks in the United States that have been deployed using assets other than distribution utility poles? Please elaborate on the specific examples of which CANDAS is aware, including providing details on what asset the wireless antenna is attached to.

4. *Reference: p. 12 and 14, paras. 4.1, 4.2, 6.1 and 6.2*

CANDAS states that it is a coalition of Canadian companies engaged in the telecommunications industry sector. Specifically, CANDAS explains at paragraph 4.1 that: "The members of CANDAS – Public Mobile Inc. ("Public Mobile"), ExteNet

Systems (Canada), Inc. ("ExteNet") and DAScom Inc. ("DAScom") – collaborated, with others, in a project to establish a new wireless network in the City of Toronto using DAS technology."

Toronto Hydro understands that Public Mobile is registered with the CRTC as a Canadian carrier. It appears to Toronto Hydro that ExteNet is the principal proponent of the Toronto DAS Network, that DAScom and Cogeco are underlying suppliers, and that Public Mobile is a potential user of the Toronto DAS Network. Specifically, CANDAS states at p. 6.2: "ExteNet, working with two underlying suppliers, DAScom and Cogeco Data Services Inc. ("Cogeco"), undertook to design, develop and implement the Toronto DAS Network, initially for use by Public Mobile in launching its new wireless services. ExteNet is a Canadian corporation that is registered with the CRTC as a reseller of telecommunications services. ExteNet and its parent company have significant experience in the design and construction of DAS networks."

(a) Is ExteNet a Canadian carrier within the meaning of the CCTA Decision? Please explain and provide the relevant particulars.

(b) Is DAScom a Canadian carrier within the meaning of the CCTA Decision? Please explain and provide the relevant particulars.

(c) On what legal basis does ExteNet and DAScom seek to rely on the CCTA Decision?

(d) Please identify the parties that are the "others" referred to at para. 4.2, and what their respective roles were in the collaboration with the members of CANDAS.

(e) Regarding paragraph 4.2, were any of the "others" involved in site procurement for wireless facilities? If so, please indicate their respective roles and which sites were procured through them.

(f) Please provide the relevant particulars of all entities which were considered as possible participants in the process for the acquisition of sites for wireless

facilities in the Toronto DAS Network project. For those entities that did not participate in the project, please explain the reason(s) why.

5. *Reference: p. 12, para. 5.1 (also, Larsen Written Evidence, p. 5-6)*

CANDAS states that a DAS network comprises three main elements, including "multiple telecommunications "nodes", incorporating small, low elevations antennas and low-power radio units".

(a) Please provide the manufacturer's name and model number for each antenna in use, or planned for use, by CANDAS, whether in Toronto, Montreal, New York, San Francisco, Las Vegas, Boston, Providence or elsewhere.

(b) Regarding the response to (a), please provide the relevant particulars, including full descriptions of the propagation characteristics of each installation and supporting documents, including, but not limited to, requirements for placement density.

(c) Please provide the manufacturer's name and model number of each radio unit currently used, or planned for use, by CANDAS, whether in Toronto, Montreal, New York, San Francisco, Las Vegas, Boston, Providence or elsewhere.

(d) Regarding the response to (c), please the relevant provide particulars, including full descriptions of the propagation characteristics of each installation and supporting documents, including, but not limited to, requirements for placement density.

6. *Reference: p. 12, para. 5.1*

CANDAS states that a DAS network comprises three main elements, including "one or more central hub facilities housing the wireless carriers' equipment that propagates and receives communication signals to and from the nodes utilizing the wireless carriers' licensed radio frequency spectrum."

(a) Please identify (including manufacturer and model) and describe, with the relevant particulars, all "central hub facilities housing the wireless carriers' equipment that propagates and receives communication signals" which are currently used, or planned for use, by CANDAS, whether in Toronto, Montreal, New York, San Francisco, Las Vegas, Boston, Providence or elsewhere.

7. *Reference, p. 12, para. 5.2*

CANDAS states that "The wireless and wireline components of a DAS network are equally essential to the operation of the network. One cannot function without the other. The antennas and radio units must be proximate to and interconnected with the fibre optic cabling which, as with other wireline systems, is most effectively deployed by aerial suspension from support structures in public rights-of-way or established utility easements. Therefore, it makes sense - economically, environmentally and operationally - to attach wireless equipment on the same support structures from which the fibre optic cabling is suspended."

(a) Please identify, and provide the relevant particulars regarding, within CANDAS' targeted geographic market in Toronto, the location of fiber optic facilities (placed by any party including CANDAS) that could be used to support wireless antenna systems, whether DAS or traditional macro site based systems.

(b) Please provide the relevant particulars in support of the statement that "it makes sense - economically, environmentally and operationally - to attach wireless equipment on the same support structures from which the fibre optic cabling is suspended", including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(c) Please provide particulars in support of the statement that "antennas and radio units must be proximate to and interconnected with the fibre optic cabling", including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents that demonstrate fibre optic cable is

required to support DAS and that copper, coaxial or wireless applications are insufficient or inferior.

(d) Regarding the response to (c), please also provide the minimum, average and maximum bandwidth requirements for each of the last 12 months for each node which is currently deployed for use by CANDAS, whether in Toronto, Montreal, New York, San Francisco, Las Vegas, Boston, providence or elsewhere.

8. *Reference: p. 13, para 5.3 (also, Larsen Written Evidence, p. 5)*

CANDAS states that "optimal and effective design and deployment of DAS networks require that node antennas be attached at elevations that correspond roughly to the heights of utilities and street light poles (9-14 meters), as opposed to higher elevations of towers and the roof tops of multi-story buildings (greater than 15 meters). Ideally, cabling and equipment should also be located at the street intersections and along traffic corridors to enable unimpeded transmission of wireless signals in the areas traversed by mobile users and into the most heavily traveled areas of surrounding buildings."

(a) Please provide the particulars in support of this statement that "optimal and effective design and deployment of DAS networks require that node antennas be attached at elevations that correspond roughly to the heights of utility and street poles (9-14 meters)", including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(a) Please identify each circumstance in which CANDAS and/or one of its member companies has mounted, attached, deployed, leased or otherwise utilizes a node antenna of the type discussed, whether in Toronto, Montreal, New York, San Francisco, Las Vegas, Boston, Providence or elsewhere:

i. on utility or streetlight poles; and

ii. at locations other than utility or street light poles.

(b) For each such circumstance identified in response to (b), please provide the relevant particulars, including the following, as applicable:

i. physical location;

ii. antenna manufacturer, make and model number;

iii. antenna manufacturer's mounting requirements and installation guides;

iv. description of structure to which antenna is attached;

v. height at which antenna is mounted;

vi. engineering diagram, schematic and/or technical drawing describing the antenna's installation;

vii. description of all other equipment installed at that location to support or connect to the antenna including, but not limited to, radio units, power or back-up power equipment, fibre optical cable, or other wireline cable related equipment;

viii. indication as to whether the location is owned or leased by CANDAS or one of its member companies;

ix. CANDAS and/or member company installation costs;

x. make ready fees and other non recurring installation charges assessed by leasing entity, if any;

xi. monthly lease costs, if any; and,

xii. a copy of the applicable lease agreement, if any.

9. *Reference: p. 14, para. 5.9*

CANDAS states that DAS networks have been deployed in most major cities in the United States and that such networks typically utilize hydro or telephone poles.

(a) Please provide the relevant particulars in support of this statement, including reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

10. *Reference: p. 14, para. 5.10*

CANDAS states that "DAS technology facilitates a more competitive market because it is particularly attractive to new entrants who wish to launch new services quickly."

(a) In what way does DAS technology do this?

i. is it the case that new entrants can effectively "piggyback" on a DAS system once it is in place?

ii. what is the capacity of a DAS system? If the answer to part i. is yes, please also explain capacity in terms of how many new entrants can effectively "piggyback" on a DAS system once it is in place?

(b) Please provide any other particulars in support of this statement, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

11. *Reference: p. 15 and 21, paras. 6.1, 6.2 and 7.10*

CANDAS states at paragraph 6.2 that ExteNet is "working with two underlying suppliers" (DAScom and Cogeco) to "design, develop and implement the Toronto DAS Network, initially for use by Public Mobile in launching its new wireless services."

(a) If successful in developing the Toronto DAS Network, who would own the wireless attachments that are proposed to be affixed to the distribution utility poles? ExteNet? DAScom? Cogeco?

(b) Could the owner of the Toronto DAS Network sell use of the Network to other Canadian carrier customers? How many others?

(c) Is Public Mobile a customer that would pay to use the Toronto DAS Network?

(d) If Public Mobile is a customer that would pay to use the Toronto DAS Network, how much would Public Mobile pay for use of the Toronto DAS Network? How much of this fee is associated with the regulated access charge under the CCTA Decision?

12. *Reference: p. 15, para. 6.3*

CANDAS states that the plan for the Toronto DAS Network involved constructing approximately 790 node sites.

(a) Please identify the planned location for each of the 790 node sites.

(b) Please provide a map or other information detailing the total coverage area supported by the 790 node sites included in the Toronto DAS Network. Please state the total square kilometres intended to be covered by the 790 node sites included in the Toronto DAS Network as well as the average number of nodes per square kilometre.

(c) Please provide a map or other information detailing the total coverage area of each of the 790 node sites included in the Toronto DAS Network.

(d) Has CANDAS determined that an alternative to each of the 790 node sites is either technically or economically infeasible?

(e) If CANDAS' position is that it has determined that an alternative to each of the 790 node sites is either technically or economically infeasible, please provide the particulars of such determination for each site, including all reports, analyses, studies, letters, email, other correspondence and documents upon which such determination was made.

13. *Reference: p. 16, para. 6.6*

CANDAS states that without access to existing power and lighting poles 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.

(a) Please provide coverage characteristics, broadband capabilities monthly/annual costs, and/or per subscriber costs of DAS to traditional wireless macro site based systems.

(b) Please provide any other particulars in support of this statement, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

14. *Reference: p. 18, para. 6.10*

CANDAS states that "On July 20, 2009, ExteNet and Public Mobile met with David O'Brien…to discuss the Toronto DAS Network project, including Public Mobile's new wireless network. Mr. O'Brien expressed his support for the new wireless network."

(a) Please provide anything in writing that CANDAS has to support this statement.

15. *Reference: p. 2, para. 1(e)*

Part of the Relief sought by CANDAS is an Order amending the licenses of all distributors requiring them to include, in their Conditions of Service, the terms and conditions of access to power poled by Canadian carriers, including the terms and conditions of access for the purpose of deploying the wireless and wireline components of DAS etc, etc. CANDAS has filed no evidence on the terms and conditions it believes should be imposed by the OEB.

(a) Please confirm that CANDAS is no longer pursuing this relief contained in paragraph (e), page 2 of the Application, given that it has provided no evidence in support of this relief.

16. *Reference: page 28, para 10.9*

17. The Application indicates that in 2005, the Board made the CCTA Order and that "The CCTA Order does not distinguish between Canadian carriers that seek to attach wireline equipment and those that seek to attach wireless equipment". CANDAS acknowledges that the Board's Decision (attached at Tab 6 of the Application) resulted from the CCTA hearing, and the issues and scope for that hearing resulted from the October 19, 2004 Settlement Agreement between the parties (attached at Tab 5 of the Application). The Settlement Agreement included a definition of an "Attachment", which was accepted by the Board.

(a) Please confirm that in section 1.5 of Appendix B at page 10 of the Settlement Agreement, " Attachment" is defined as follows:

> "Attachment means any material, apparatus, equipment or facility owned by the Licensee which the Owner has Approved for Affixing to poles or other equipment of the Owner or In-span, including, but without limiting the generality of the foregoing:
>
> -Licensee-owned cable not directly attached to a pole, but Over Lashed to a cable or Support Strand not owned by the Licensee;
>
> -Service Drops Affixed directly to the Owner's poles;
>
> -Service Drops Affixed In-span to a Support Strand supported by poles of the Owner; and
>
> -Attachments owned by the Licensee but emanating from a cable not owned by the Licensee.

[Attachment excludes wireless transmitters and power line carriers.]

NOT AGREED. “

II. Written Evidence of George Vineyard[2]

18. ExteNetExteNet *Reference: p. 4, Q. 5*

Mr. Vineyard states that "ExteNet Systems has entered into approximately 80 attachment agreements with over 35 utilities, most of which involve attachment to power poles."

(a) Please provide a copy of each such attachment agreement.

(b) Please provide the highest, lowest and average monthly pole rental rates. Please separately provide the upfront charges, make ready fees and any other non-recurring charges associated with each sites covered by the 80 attachment agreements.

(c) Please also identify the number of agreements that ExteNet Systems, or any other member of CANDAS, has entered into which allow for the attachment of DAS antennas and other equipment to facilities other than power poles or lampposts.

19. *Reference: p. 4 and 6, Q. 5 and 6 (also paragraph 6.2 of the Application)*

CANDAS states that "ExteNet and its parent company have significant experience in the design and construction of DAS networks."

Mr. Vineyard states that "…ExteNet Systems has entered into approximately 80 attachment agreements with over 35 utilities, most of which involvement attachment to power poles." And "Given that attachment rates are a matter of public record….."

(a) When (and in what jurisdiction) was ExteNet Systems' first transaction involving a wireless attachment?

(b) Aside from the proposed Toronto DAS Network, what other DAS networks does ExteNet Systems operate in North America?

[2] As filed July 26, 2011.

i. please indicate with reference to the nearest city, state or province, the jurisdiction in which each DAS network is located;

ii. for each of these networks, please indicate what percentage of all of the wireless attachments that constitute that network rely on distribution utility poles to attach to, and what percentage rely on attachments to other types of infrastructure (traffic lighting pole, side of building, rooftop, macro cell tower, stand alone tower, billboards, signage, etc.); and

iii. for each DAS network, please describe the specific other infrastructure being used by ExteNet for its wireless attachments.

(c) In respect of these 80 attachment agreements, what percentage of ExteNet Systems wireless attachments are mounted strictly within the 2ft communications space of the distribution poles, what percentage are mounted in part within the 2ft communications space and in part outside of that space, and what percentage are mounted entirely outside of the 2ft communications space, and finally what percentage would be classified as pole top antennas?

(d) Please provide all wireless attachment pricing information paid by ExteNet Systems over the past five years in respect of each of the networks noted in your response to the questions above.

20. *Reference: p. 6 and 9, Q. 6 and 10*

Mr. Vineyard states that "ExteNet acknowledges and accepts that telecommunications attachments to electricity distribution poles should be accommodated and carried out in a manner that: (i) is fully compliant with all applicable safety regulations; (ii) does not interfere with the primary function of the pole owner, i.e., the reliable delivery of power to electricity customers; and (iii) does not impose incremental costs or burdens on rate-payers that are not recovered in rates (e.g. by requiring construction of additional pole

lines or imposing obligations to perform make-ready work, including pole replacements, where the attachers do not pay the full cost of the required work).

Mr. Vineyard also states that "The principal method for avoiding the imposition of costs on utility ratepayers should be the establishment of appropriate rates or rate formulas designed to allow the utility to capture any and all costs that are attributable or properly allocable to the attachments in questions."

(a) In respect of safety regulations, are ExteNet's employees fully qualified to work safely within the vicinity of distribution power lines operating at 50kV or less? If not, who would do this work?

(b) In respect of costs, is it your position that a rate of $22.35 per year per pole captures the scope of utility costs reflected in the above quotes with respect to DAS and DAS related attachments as contemplated by ExteNet?

(c) Do you agree that the true market value derived from the ability to attach wireless equipment to utility poles is the best metric to ensure that electricity ratepayers, who ultimately have paid for the utility poles through rates over the past century, capture the incremental economic benefits associated with the attachment revenues? If not, please explain why.

21. *Reference: p. 8, Q. 9*

In his response to the question: "What are reasonable terms and conditions for assuring full compliance with all applicable safety regulations and protecting the reliability of the hydro's primary services, while also accommodating, to the extent feasible, the legitimate needs of the telecommunications carriers?", Mr. Vineyard does not provide specifics regarding the DAS-related equipment that CANDAS proposed to attach to utility poles.

(a) Please provide a complete, detailed listing of all DAS-related equipment that is proposed to be attached to utility poles, including for each separate piece of equipment: dimensions, weight(s), manner of attachment, above grade height of

attachment, power supply requirements, rated power consumption, and expected equipment useful life.

22. *Reference: p. 9, Q. 10*

The evidence alludes to the 2005 CCTA decision when Mr. Vineyard states that "current rates for attachments established by the Board". The CCTA decision was specific about the 2 ft communication space for attachments.

(a) Please confirm that the CANDAS Application is limited to wireless attachments that can all be contained within the communication space as defined in the CCTA decision.

(b) If ExteNet believes that there is additional space outside of the communication space where wireless attachments may be placed, please provide the legal basis for that position from the CCTA decision.

23. *Reference: p. 9, Q. 10*

Mr. Vineyard states that "The principal method for avoiding the imposition of costs on utility ratepayers should be the establishment of appropriate rates or rate formulas designed to allow the utility to capture any and all costs that are attributable or properly allocable to the attachments in question."

(a) Please specifically identify by category "any and all costs that are attributable or properly allocable to the attachments in question" that would be recoverable by utilities from wireless attachers.

(b) In the event that the communications space on an existing pole with substantial remaining life is fully occupied, thus necessitating replacement of the pole line for the purpose of erecting DAS equipment, please confirm whether CANDAS proposes that DAS attachers reimburse the utility for the entire amount of:

i. the stranded asset value of the existing pole line?;

ii. the costs (both direct and administrative) of relocating other existing attachments; and/or

iii. the incremental maintenance costs (such as tree trimming) attributable to the larger pole size.

24. *Reference: p. 9, Q. 11*

In his response to the question: "What are the reasonable terms and conditions relating to indemnification, limitations of liability, insurance and security for certain obligations?", Mr. Vineyard does not address what personnel CANDAS proposes to rely on to install DAS equipment.

(a) Please provide this missing information.

(b) If CANDAS proposes that its members install DAS equipment, are the staff of its members certified linepersons? If so, please provide the qualifications of staff who would be installing and maintaining this equipment, including the number of trained linepersons available to install the equipment, the details of their certification and expected scope of duties.

(c) If CANDAS proposes that utility staff install that equipment, please indicate whether:

i. CANDAS has confirmed with all utilities that their staff are available to undertake this work;

ii. CANDAS proposes that existing utility staff be diverted from electricity distribution work in order to install DAS equipment; and/or

iii. CANDAS proposes that DAS installations take priority over other electrical distribution and customer demand work.

25. *Reference: p. 10, Q. 12*

On these pages, Mr. Vineyard provides an overview on the US federal statutory and State regime on the issue of access or the conditions for the denial of access. Specifically, on page 11, he states "…ExteNet Systems has seldom, if ever, encountered a situation in the United States in which it could not attach its facilities by reason of insufficient capacity."

(a) Are there any differences between the regulation of telecommunications attachments in the United States and in Canada that the Board should be aware of, or is CANDAS suggesting that regulation in Canada in the United states is effectively identical?

(b) Please provide specifics of any Federal or State law that has adopted the definition of "communications space" as adopted by the OEB in the CCTA decision.

(c) Does the statement "insufficient capacity" make reference to the 2ft communications space specification contained within the CCTA Decision?

26. *Reference: p. 12, Q. 12*

Mr. Vineyard states that "The FCC Report and Order relating to pole attachments is now in effect, although electric industry members have requested reconsideration by the FCC and sough relief in the courts".

(a) Please provide case references, file and court docket numbers for the reviews and appeals referred to in your answer in order to allow the Board and parties to understand the nature of these reviews that are referenced.

(b) Is ExteNet's position that the underlying business case or hurdle rate for its enterprise in Ontario is entirely dependent on the ability to attach its wireless technology to: (i) LDC poles; or (ii) LDC poles at a rate of $22.35 per pole per year? Please explain and provide the relevant particulars.

27. *Reference: p. 12, Q. 13*

Mr. Vineyard states that "Without the relief that CANDAS is seeking in this proceeding, ExteNet will have no option but to withdraw entirely from the market for outdoor DAS network services in Ontario. In doing so ExteNet would realize the loss of its entire investment in the Toronto DAS Network…".

(a) Prior to making its investment in Toronto, please describe the due diligence undertaken by ExteNet to assess whether its business model (wireless attachments to LDC poles) was compliant with Ontario law, including past decisions of the Ontario Energy Board?

(b) Regarding the response to (a), please provide the relevant particulars in support, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents. Specifically, please describe and provide supporting documents in respect of discussions or other communications ExteNet had with any Province of Ontario officials, OEB staff, or any legal opinions rendered in this regard, etc.

28. *Reference: p. 12, Q. 14*

Mr. Vineyard states that "If the Board grants the relief that CANDAS is seeking as described above, it will mean that ExteNet and DAScom, along with other potential providers of DAS network infrastructure and services, will have the opportunity to obtain contracts from wireless carriers….."

Please confirm that a DAS application is a one time backbone service which is thereafter resold to resellers. That is, after the first installation of a DAS network application, is it the case that there is no opportunity for other backbone providers to also attach? In other words, please confirm that the first to attach, for all intents and purposes, becomes the monopoly provider of DAS?

III. Written Evidence of Tormod Larsen[3]

29. Much of Mr. Larsen's evidence appears to be in the nature of argument and opinion.

(a) Does CANAS intend to qualify Mr. Larsen as an expert in this proceeding? If so, on what basis?

(b) If CANDAS does not intend to qualify Mr. Larsen as an expert in this proceeding, are his views simply intended to reflect the views and opinion of the Applicant?

30. *Reference: p. 5, Q. 4*

Mr. Larsen states that a "typical configuration of a DAS node site" includes, among other elements, a "60cm tall canister antenna with a diameter equal to or slightly larger than the pole…."

(a) In such a "typical configuration", is it the case that a utility pole will support only one such antenna at any given time?

(b) If CANDAS' position is that a utility pole will support more than one such antenna at any given time (in a "typical configuration"), please provide the particulars in support of this position, including pictures and diagrams as well as other supporting documents, as is relevant to the response.

31. *Reference: p. 5, Q. 4*

Mr. Larsen states that "It is also a fact that with the antenna on the top of the pole it is farther away from power lines, fibre and other equipment improving the operational environment for everyone."

(a) Please provide evidence from the Canadian and US electricity industry to support this statement, including the affect of placement of equipment on the ability of staff to climb poles, and work around pole-top antennae.

[3] As filed July 26, 2011.

32. *Reference: p. 8, Q. 6*

Mr. Larsen states that "DAS technology has been used for years in tunnels, canyons, indoors, and other hard to reach areas".

(a) given the flexibility in the deployment inferred by this quote and to the extent that the response to this question is not provided by the response to question 5, please identify a comprehensive range of attachment alternatives, beyond utility poles, that may be possible for deployment of DAS technology.

33. *Reference: p. 12, Q. 9*

Mr. Larsen states that "there are no real practical alternatives to electrical utility infrastructure for large scale outdoor DAS deployment."

(a) What is meant by "large scale outdoor DAS deployment"?

(b) What other alternatives did ExteNet and CANDAS consider for the City of Toronto?

34. *Reference: p. 13, Q. 9 (also Page 6 of Exhibit B)*

Mr. Larsen states that "In the case of the Toronto DAS Network, alternative solutions (e.g. placement of antennas on buildings), even if workable sites had been available, would have required literally hundreds of agreements with private property owners to permit placing the node equipment on their structures and providing the needed fibre connectivity would require taking fibre connections through many streets and sidewalks."

(a) Does this statement imply that a new, dedicated, overhead fibre optic system is necessary to support DAS?

(b) Page 6 of Exhibit B: this photo appears to be of an antenna mounted on top of a pole. Please explain how this installation was feasible, and would be feasible for a Toronto DAS Network.

35. *Reference: p. 13, Q. 9*

Mr. Larsen appears to be making the point that if LDC poles are not available to DAS networks and you had to pursue alternative options, then "The estimated impact on construction costs could exceed $200,000/node site just to provide such connectivity, with the total running into many millions of dollars which would render the project economically unfeasible."

(a) Please provide all calculations related how the $200,000/node estimate was generated.

(b) Mr. Larsen's evidence provides that construction costs "could exceed" $200,000/node site. In addition to this upper end of the range, please provide a low end cost estimate per node site and an average cost estimate per node site if you had to pursue alternative options.

(c) What is the all-in construction cost estimate per node site if CANDAS was to utilize LDC utility poles?

(d) Is it Mr. Larsen's position that, setting aside the issue of costs, it is possible to deploy a DAS network in downtown Toronto using alternative outdoor locations other than utility poles? Please explain.

(e) Is it Mr. Larsen's position that $200,000 per node site is a fair and accurate proxy for the avoided costs enjoyed by DAS providers like ExteNet, if DAS networks are attached to LDC poles instead of the other alternatives he describes in this section?

(f) Please provide all other relevant particulars in support of this statement, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

36. *Reference: Exhibit "B", slide 2*

This Exhibit states that "ExteNet uses both outdoor and indoor Distributed Antenna Systems (DAS) Networks" and that "over 2000 outdoor DAS Nodes in Operation or under construction in Canada".

(a) How many outdoor DAS Nodes are in operation or under construction in Canada? How many in the United States?

(b) Please identify and explain any substantive technical differences, if any, in deploying indoor versus outdoor DAS Networks.

(c) Is it possible to deploy a DAS network in downtown Toronto using an indoor DAS network?

(d) Are you aware of any US cities that deploy indoor DAS networks for concentrated areas (downtown core, specific shopping areas, large office towers, etc)? Please explain.

37. *Reference Ex. B, slide 6 and Ex. C, slide 2*

(Slide entitled "DAS – The wireless solution for modern cities" and slide entitled "Las Vegas – DAS Nodes")

(a) The photographs on these slides shows antennae and remote radio units on street lighting pole (Exhibit B) vs. a standalone pole adjacent to a street lighting pole (Exhibit C). What are the total dimensions (width and height) of each component of this equipment?

(b) Does this installation fit entirely within the 2ft communications space?

(c) Why did ExteNet use a stand alone pole in Las Vegas rather than attaching to the adjacent street lighting pole?

38. *Reference: Ex. C, Second last slide entitled "Toronto DAS –Sidearm Installations"*

(a) Does this installation fit entirely within the 2ft communications space on the distribution pole?

39. *Reference: Exhibit "D" (DAScom As-Built Fibre Optic Node Installation)*

(a) To the extent that any of the planned Toronto DAS Network node installations were intended to be materially different than that which is presented in Exhibit "D", please provide detailed drawings of the proposed node installations and in a form similar to the information contained in Exhibit "D".

IV. Written Evidence of Bob Boron[4]

40. Please provide a detailed curriculum vitae, including a listing of all appearances before regulatory or judicial entities.

41. *Reference: p. 2, Q. 1*

Mr. Boron states that he is "a Co-Founder and President of Jade Tower Inc. , a company focused on owning and managing wireless communication (cellular) towers and antenna sites…."

(a) Given Mr. Boron's experience, please provide a breakdown of market prices that exist for the different types of communication towers and antenna site alternatives utilized for wireless attachments (tops of buildings, sides of buildings, stand alone towers, utility poles, traffic lights, billboards, signage, attachments inside buildings, etc.).

42. *Reference: p. 3, Q. 3*

Mr. Boron states that to the extent that "THESL is suggesting that the board-approved attachment rate is too low for wireless attachments", then he disagrees.

(a) Please explain the basis for, and provide the relevant particulars in support of this statement, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

43. *Reference: p. 3. Q. 4*

Mr. Boron states that "to the extent that there is no alternative but to attach DAS to existing power poles, access to such power poles does constituted a monopoly-controlled resource."

[4] As filed July 26, 2011.

(a) Is it Mr. Boron's evidence that there are no alternatives for DAS but to attach to existing power poles?

(b) If the answer to (a) is yes, then please provide the relevant particulars in support of this position, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(c) If the answer to (a) is no, then please explain the alternatives options that exist, including providing the relevant particulars of same.

(d) Please define the term "monopoly-controlled" as it is used in this context.

44. *Reference: p. 3, Q. 5*

Mr. Boron states that "It would be strange indeed if power poles were classified as essential facilities for cable companies and wireline attachers, but not for wireless attachers."

(a) Please define the term "essential facilities" as it is used in this context.

(b) Please explain the extent to which it is Mr. Boron's and/or Public Mobile's view that THESL's poles are "essential facilities" within the context of Public Mobile's provisioning of wireless services in and around Toronto.

45. *Reference: p. 4, Q. 7*

Mr. Boron states that: "all available capacity must be distributed equitably, in a non-discriminatory and transparent fashion - to all classes of users. THESL cannot decide to grant access to wireline attachers and cable companies, but not wireless attachers, on the basis of professed but unsubstantiated capacity issues."

(a) Does CANDAS propose:

i. that "all available capacity" consists of the entire communications space?

ii. that "all available capacity" consist of the unoccupied communications space?

(b) How does Mr. Boron/CANDAS propose applying this principle to the situation where multiple, competing suppliers for a DAS Network may exist within the City of Toronto?

(c) If all communications space on a pole is currently occupied, does CANDAS propose that that space be reallocated among more users (now including DAS attachers) with the result that one or more current occupants are displaced from the pole?

(d) What method does CANDAS propose for the rationing of available pole communications space among "all classes of users"?

(e) Please provide examples of permit applications that were denied for "professed but unsubstantiated capacity issues".

V. Written Evidence of Brian O'Shaughnessy[5]

46. Please provide a detailed curriculum vitae, including a listing of all appearances before regulatory or judicial entities.

47. *Reference: p. 3, Q. 3*

Mr. O'Shaughnessy states that "Public Mobile's objective in participating in CANDAS and in this proceeding is the creation of a level playing field with our competitors who do have access to power poles in Ontario."

(a) Please identify each of the entities that are considered to be Public Mobile's "competitors".

(b) Please indicate whether and to what extent these competitors use access to utility poles for purposes of constructing, maintaining and/or operating an outdoor DAS in Toronto.

(c) Please explain how a level playing field can be established with respect to the deployment of a DAS Network within the City of Toronto. What consideration for establishing a level playing need to be taken into account where there are potentially multiple competing suppliers of DAS Networks for the identical geographic area within the City of Toronto (e.g. the downtown core)?

(d) Please identify the difference in compensation paid for wireless attachments associated with tower structures, traffic lights, signage, roof tops, other alternatives Mr. O'Shaughnessy is aware of, and distribution utility poles.

48. *Reference: p. 7, Q. 10*

Mr. O'Shaughnessy states that "The Toronto DAS Network, as originally conceived, would have comprised a one-time build of approximately 700 to 800 nodes to provide the

[5] As filed July 26, 2011.

capacity to meet the needs of Public Mobile's customers for four to five years. Public Mobile also entered into agreements with ExteNet to build a DAS network on the Island of Montreal, in partnership with Hydro Québec and the Municipality of Montreal."

(a) Was it Public Mobile's intent to utilize each of the "700 to 800 nodes" included in the Toronto DAS Network as originally conceived or was it Public Mobile's intent to utilize only sub-set of the "700 to 800 nodes"?

(b) Please specifically identify all nodes Public Mobile intended to utilize and the particulars regarding same.

(c) Please provide copies of all said agreements between Public Mobile and ExteNet.

(d) Please provide copies of the all said partnership agreements involving Hydro Quebec and/or the Municipality of Montreal.

(e) Are any other parties involved in the development of this network? If so, please provide details of their roles and any understandings and agreements that have been reached.

(f) Please explain how many nodes beyond 800 would be needed by Public Mobile between the years of 5 and the "long term pole access" (as referred to on page 3) that is being sought.

49. *Reference: p. 8, Q. 11*

Mr. O'Shaughnessy states that "It is likely that all wireless carriers will move towards a DAS-type architecture in the future."

(a) Please provide any studies, analyses or reports which would support this statement.

50. *Reference: p. 8, Q. 12*

Mr. O'Shaughnessy describes a process by which Public Mobile first moved to temporary macro sites, and then from those macro sites to permanents structures. In particular, he states that "Public Mobile decided to switch to traditional Macro Cell Site strategy, installing antennas on building rooftops and special-purpose towers…It is now incurring the cost of upgrading each temporary Cell Site to a permanent structure." and that "…Public Mobile has incurred the increased cost of building rooftop Macro Cell Sites as mentioned earlier."

(a) Please identify the precise date on which Public Mobile made this decision to switch to its Macro Cell Site strategy.

(b) Please provide the location of each of the "Macro Cell Sites", and please indicate whether and to what extent each site is located on a roof top, balcony, special-purpose structure or other location (specify if other).

(c) Regarding the response to (b), please also provide the coverage area for each site and describe the propagation characteristics of the antennas used at each site.

(d) Please identify the date on which Public Mobile began to utilize the traditional Macro Cell Sites.

(e) Please provide copies of the agreements entered into by Public Mobile associated with the said Macro Cell Site strategy including pricing paid by Public Mobile for these attachments.

(f) Please provide the particulars that demonstrate whether and to what extent the coverage area intended to be supported by the Toronto DAS Network (as originally conceived) differs from the coverage area supported by the Macro Cell Sites, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents

(g) Please provide the particulars that describe the costs that Public Mobile incurred to install the Macro Cell Sites, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(h) Please provide the particulars that describe the costs Public Mobile incurred to upgrade "each temporary Cell Site to a permanent structure", including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(i) Please describe the extent to which each of the permanent antenna towers, sites or structures discussed are shared with other wireless providers in Toronto.

(j) Please provide the location of each permanent structure and indicate whether the site is located on a roof top, balcony, special purpose structure or other location (specify if other).

(k) Regarding the response to (i), please provide the coverage area for each site and describe the propagation characteristics of the antennas used at each site.

(l) Please provide the particulars that demonstrate whether and to what extent the coverage area intended to be supported by the Toronto DAS Network as originally conceived differs from the coverage area supported by the permanent structures, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents

(m) Please provide the particulars that demonstrate whether and to what extent the call carrying and data capacities intended to be supported by the Toronto DAS Network (as originally conceived) differs from the call carrying and data capacities supported by the permanent structures – please include with such particulars all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(n) Regarding the response to (l), please also identify and describe the extent to which Public Mobile is currently capacity-constrained in that it is unable to provide call carrying and/or data related services to it current customer base in Toronto.

(o) Please provide the particulars that describe the costs (both initial costs and on-going monthly expenses) Public Mobile would have incurred for its part in the construction of the Toronto DAS Network had it been completed (as originally conceived), including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

51. *Reference: p. 9, Q. 12*

Mr. O'Shaughnessy states that "The loss of the Toronto DAS network opportunity, delayed Public Mobile's Toronto market launch by six months (to May 2010), resulting in a related loss of market share."

(a) Please provide the particulars that describe "the loss of market share" referred to here, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(b) Please provide Public Mobile's current market share in Toronto and/or the market relevant to Mr. O'Shaughnessy's statement.

(c) Absent completion of the Toronto DAS Network, is it Public Mobiles intention to withdraw from the Toronto wireless market?

(d) If the answer to (c) is yes, please provide the particulars in support of this position, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

52. *Reference: p. 10, Q. 15*

Mr. O'Shaughnessy states that "There is one issue – the technical attachment requirements – that I would like to address however. This issue has to do with what appears to be the current THESL restriction on communications attachments to a two-foot communication zone below the power pole. Permitting antennas to be installed at the top of a utility pole would facilitate better node coverage in terms of both range and quality, thereby reducing the total number of nodes required to provide service to customers."

(a) Please explain why the two-foot communications zone is problematic for wireless attachments such as the DAS Network?

VI. Written Evidence of Johanne Lemay[6]

53. Please provide a detailed curriculum vitae, including a listing of all appearances before regulatory or judicial entities.

54. Please identify, and provide curriculum vitae for any individuals that were involved in the preparation of this report.

55. *Reference: section 3, p. 21*

Ms. Lemay states that "DAS deployment is environmentally friendly and has lower visual impact than traditional towers."

(a) Please provide the particulars in support of this statement, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

(b) Please also provide the particulars that compare the environmental and visual impact of existing traditional wireless towers that are shared by multiple wireless carriers to the development of new DAS when none previously existed, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.

56. *Reference: section 3, p. 21*

Ms. Lemay states that "DAS can also provide a speedier deployment, compared to the development of large macro antenna sites, especially when access to existing infrastructure such as utility poles or lampposts is provided as part of the build-out. These deployments can be accomplished in a matter of months (for example 9 months) versus delays of more than 1 year that are increasingly becoming the norm to deploy macro wireless sites."

[6] As filed July 26, 2011.

(a) Please support the statement about the ability of DAS to be deployed in 9 months, by providing evidence of the average pole replacement time for those locations where it was necessary to replace the electricity pole to accommodate the DAS equipment.

57. *Reference: section 4, p. 26*

Ms. Lemay states that DAScom "contemplated the deployment of 730 DAS nodes throughout the city of which approximately 90% would be on hydro poles."

(a) Please provide the relevant particulars in support, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents regarding the specific infrastructure (non-hydro poles or otherwise) to which the remaining 10% of DAS nodes were to be attached.

(b) Regarding the response to (a), please include the location and elevation of the attachments.

58. *Reference: section 4, p. 27*

Ms. Lemay states that "based on our analysis of Industry Canada's Spectrum Direct database, many of these antenna sites support mobile communications. In addition, although the information available does not indicate the type of support infrastructure that is being used for these antennas, roughly 300 of these antennas are located at heights compatible with installations on utility poles (from 5 to 7.5 meters)."

(a) Please indicate whether CANDAS has placed, caused to be placed, owns, operates or maintains outdoor DAS with antenna heights measuring between 5 and 7.5 meters.

Regarding the response to (a), please identify the total number of installations considered when responding to this inquiry as well as the total number of installations where antenna heights measure between 5 and 7.5 meters.