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October 18, 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, 27th floor
Toronto, ON M4P 1E4

Dear Ms. Walli:

**Re: Toronto Hydro-Electric System Limited's ("THESL")
Interrogatories on Canadian Distributed Antenna Systems Coalition
("CANDAS") Reply Evidence
OEB File No. EB-2011-0120**

Please find attached THESL's interrogatories on the reply evidence of CANDAS in the above-noted proceeding.

Yours truly,

[original signed by]

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:AA/acc

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

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 reply evidence of the Applicant dated October 11, 2011)

October 18, 2011

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Toronto Hydro-Electric System Limited (“THESL”) makes 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 made in these IRs made to CANDAS or the Applicant should be understood to mean CANDAS as a collective, and/or any one of the member companies.

A. Written Evidence of Tormod Larsen¹

1. *Reference: Larsen reply evidence, p.1, para. 1. 2*

Mr. Larsen discusses the use of DAS and other small-cell and WiFi access alternatives to provide cellular coverage.

- (a) Please list and describe each outdoor DAS network that provides “blanket (outdoor and indoor) and seamless cellular coverage over wide (>10 sq. km) geographic areas” in Canada.
- (b) Please list and describe all outdoor DAS deployments used to improve coverage and/or capacity in conjunction with macrocell deployments in Canada.
- (c) Please list and describe all other outdoor DAS networks deployed in Canada.

2. *Reference: Larsen reply evidence, p. 3, Section B*

Does Mr. Larsen believe that when the Board is assessing allegations of abuse of market power and other related matters, the alternatives being discussed (e.g., macrocells and femtocells) to outdoor DAS are in the same “product market” as DAS when the market is delineated using the approach of the Ontario Energy Board in pages 31 to 34 and following of its NGEIR Decision (i.e., Natural Gas Electricity Review Decision with Reasons dated November 7, 2006 which is provided as Volume II, Exhibit 4 in THESL motion/evidence)? Please explain the reasoning for your response.

¹ As filed October 11, 2011.

3. *Reference: Larsen reply evidence, p. 5, Table 1*

- (a) Please define and describe the phrase “single technology/single band.” In particular, please describe how the phrases “single technology” and “single band” are intended to be understood.
- (b) Please list by manufacturer name and model number each Femtocell Mr. Larsen considered when stating Femtocell “Output Power Per Node” is limited “Up to 250mW.”
- (c) Is it Mr. Larsen’s opinion that that there are not any Femtocells that have a power output greater than or equal to 250mW?
 - i. Where the answer to (c) above is yes or no, please provide the basis for Mr. Larsen’s opinion.
 - ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen’s opinion is based.
- (d) Please list by manufacturer name and model number each Femtocell Mr. Larsen considered when stating “Typical Coverage Range Per Node (in Metres)” on femtocells is “<100m.”
- (e) Is it Mr. Larsen’s opinion that that there are not any outdoor Femtocells that have a maximum coverage range greater than or equal to 100m? Please provide all studies, reports, documents and relevant facts upon which Mr. Larsen’s opinion is based.
- (f) Please define the term “fill-in” as used in the evidence.
- (g) Please define the term “hotspot” areas” as used in the evidence.
- (h) Please list by manufacturer name and model number each Femtocell Mr. Larsen considered when stating Femtocell “Number of Typical Max. Users” is limited to “4-32 users per node.”

- (i) Is it Mr. Larsen's opinion that that there are not any Femtocells that are capable of supporting more than to 32 users?
 - i. Where the answer to (i) above is yes or no, please provide the basis for Mr. Larsen's opinion.
 - ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen's opinion is based.
- (j) Please list by manufacturer name and model number each Pico Cell Mr. Larsen considered when stating Pico Cell "Typical Coverage Range Per Node (in Metres)" is "<200m."
- (k) Is it Mr. Larsen's opinion that that there are not any outdoor Pico Cells that have a maximum coverage range of greater than or equal to 200m?
 - i. Where the answer to (k) above is yes or no, please provide the basis for Mr. Larsen's opinion.
 - ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen's opinion is based.
- (l) Please list by manufacturer name and model number each Pico Cell Mr. Larsen considered when stating Pico Cell "Number of Typical Max. Users" is limited to "16-64 users per node".
- (m) Is it Mr. Larsen's opinion that there are not any Pico Cells that are capable of supporting more than to 64 users?
 - i. Where the answer to (m) above is yes or no, please provide the basis for Mr. Larsen's opinion.
 - ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen's opinion is based.

- (n) Please list by manufacturer name and model number each Micro Cell Mr. Larsen considered when stating Micro Cell “Typical Coverage Range Per Node (in Metres)” is “<500m.”
- (o) Is it Mr. Larsen’s opinion that that there are not any outdoor Micro Cells that have a maximum coverage range of greater than or equal to 500m?
 - i. Where the answer to (o) above is yes or no, please provide the basis for Mr. Larsen’s opinion.
 - ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen’s opinion is based.
- (p) Please list by manufacturer name and model number each Micro Cell Mr. Larsen considered when stating Micro Cell “Number of Typical Max. Users” is limited to “32-200 users per node”.
- (q) Is it Mr. Larsen’s opinion that there are not any Micro Cells are capable of supporting more than to 200 users?
 - i. Where the answer to (q) above is yes or no, please provide the basis for Mr. Larsen’s opinion.
 - ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen’s opinion is based.
- (r) Please indicate whether Mr. Larsen believes there are not any Femtocells that support “hand-in” from macrocell sites into femtocell sites. Please indicate whether Mr. Larsen believes all Femtocells are “hand-out” only.
 - i. Where the answer to (r) above is yes or no, please provide the basis for Mr. Larsen’s opinion.

- ii. Please also provide all studies, reports, documents and other relevant facts upon which Mr. Larsen's opinion is based.

4. Reference: Larsen reply evidence, p. 7, Table 1

The evidence states that "Macrocell sites are typically deployed in a three-sector configuration."

- (a) Please describe a three-sector configuration.
- (b) Please discuss how a three-sector configuration compares to a six-sector configuration in terms of "maximum number of users supported" per macrocell site.

5. Reference: Larsen reply evidence, p. 7, Table 1

Please state whether Public Mobile's macrocell site deployment is based upon a three-sector configuration, six-sector configuration or some other configuration, and provide all studies, reports, analyses and documents upon which your answers are based.

6. Reference: Larsen reply evidence, p. 7, Table 1; p. 13, para. 5.4; Appendix B

At p.7, Mr. Larsen states with respect to Macro Cell sites that "operators are faced with increasing challenges related to site acquisition."

- (a) Please indicate whether or to what extent, public consultation - as described in Section 11 of the City of Toronto Telecommunications Tower and Antenna Protocol (<http://www.toronto.ca/planning/telecommunications.htm#protocol>) – was required for the DAS nodes included in the Toronto DAS Network described in CANDAS' Application.
- (b) Please indicate whether Mr. Larsen, CANDAS and/or its member companies believe operators who intend to deploy Typical Wireless Equipment Attachments Installed on a 35' Common Utility Distribution (LDC) Pole as depicted at p.4 of Appendix B are excluded from the requirement to consult with the LUA and public pursuant to

Section 6 of Industry Canada's procedures as described in Radiocommunication and Broadcasting Antenna Systems (CPC-2-0-03).

7. Reference: Larsen reply evidence, p. 8, Table 1

Mr. Larsen states that WiFi is not "a technology that makes sense on a large scale for a licensed mobile wireless carrier."

- (a) Please provide the basis for Mr. Larsen's statement.
- (b) Please provide all reports, analyses, documents and other facts upon which Mr. Larsen bases this statement.
- (c) Please indicate whether Mr. Larsen has any knowledge of large carriers whether in Canada (e.g., Bell Mobility, Rogers, Telus, etc.), the US (e.g., AT&T, Verizon, Sprint, T Mobile, US Cellular, etc.) or elsewhere using WiFi to manage voice and/or data traffic. If so, please provide particulars regarding that knowledge.

8. Reference: Larsen reply evidence, p. 11, para. 4.6; Appendix "A"

At page 5 of Appendix "A", Mr. Larsen depicts CATV rectifiers/back up power units placed at approximately every 12th utility pole, or 0.5 km.

- (a) Please list and describe all facts supporting the accuracy of Mr. Larsen's assumptions.
- (b) Please provide all reports, analyses, engineering diagrams and/or specifications regarding the distance between and/or placement of CATV rectifiers/back up power units Mr. Larsen reviewed or considered during the preparation of his reply testimony and Appendix "A".

9. Reference: Larsen reply evidence, p. 13, para. 5.4; Appendix "B"

Please identify and describe all material differences between the DAS nodes deployed as part of the incomplete Toronto DAS Network discussed in CANDAS' Application in this proceeding as well as Mr. Larsen's supporting Evidence and the Typical Wireless Equipment Attachments Installed on a 35' Common Utility Distribution (LDC) Pole described in Appendix "B" to Mr. Larsen's Reply Evidence.

B. Written Evidence of Dr. Roger Ware²

10. Reference: Ware reply evidence, p.5 and following, Section III

Section III is entitled "Pole Networks are a Public Good".

- (a) Please provide a precise definition of a "public good" and the relevant academic reference which contains the definition provided.

11. Reference: Ware reply evidence p. 8 para. 12

The evidence explains Dr. Ware's view that "the efficient way to allocate access to THESL poles is to mandate access at just and reasonable rates"

- (a) Is there a risk that a "just and reasonable rates" approach to pricing pole space could result in a rate that is significantly lower than the market rate to access similar space? Would Dr. Ware's view change if the market price for pole space was significantly higher (i.e., more than 100 times higher) than the value that a cost of service rate would yield?

12. Reference: Ware reply evidence, p. 12, para. 19 c)

The evidence states that "As traffic expands, the carrier operating at 1900 MHz must add four times as many new antenna sites as a carrier operating in the 800 MHz band."

² As filed October 11, 2011.

- (a) Please provide the studies or analyses conducted by Dr. Ware or by members of CANDAS which analyze the likely growth in DAS antenna sites over the next decade in order to meet demand for wireless services in THESL's service area.

13. Reference: *Ware reply evidence, p. 12, para. 19 d)*

The evidence states that "In many cases suitable sites might require accessing a rooftop already occupied by a rival carrier, or the construction of a new site for which permission may not be granted or may only be achieved after long delays."

- (a) Please explain the circumstances under which the presence of facilities belonging to one carrier on a rooftop or other site precludes access by other carriers.
- (b) In the experience of Dr. Ware, how frequently do these kinds of circumstances occur? Please explain.

14. Reference: *Ware reply evidence, p. 12, para. 20*

The evidence states that "Moreover, the pole height is ideally suited to the mounting of antenna for carriers restricted to higher frequencies of operation and the need to transmit signals closer to the end-user."

- (a) Please explain the basis for Dr. Ware's opinion.
- (b) Please provide any studies or analyses that Dr. Ware has conducted upon which he bases his conclusion that power poles are the "ideal height" for such carriers.
- (c) Please provide any studies or analyses that Dr. Ware has conducted which document that there do not exist other structures of comparable height to power poles in Public Mobile's service areas.

15. Reference: *Ware reply evidence, p. 12, para. 23*

Does Dr. Ware believe that when the Board is assessing allegations of abuse of market power and other related matters, the alternatives being discussed (e.g., macrocells and femtocells) to outdoor DAS are in the same “product market” as DAS when the market is delineated using the approach of the Ontario Energy Board in pages 31 to 34 of its NGEIR Decision (i.e., Natural Gas Electricity Review Decision with Reasons dated November 7, 2006 which is provided as Volume II, Exhibit 4 in THESL motion/evidence)? Please explain the reasoning for your response.

16. Reference: Ware reply evidence, p. 12, para. 23

The evidence states that “In reality, the alternatives to power poles that are available for siting are much inferior in quality, and will not allow new entrants such as Public Mobile to grow, to offer service to a larger percentage of the Ontario population and to achieve a critical mass competitively in the long run.”

- (a) Please list the “new entrants” that are being referred to in this statement.
- (b) Please provide the basis for Dr. Ware’s opinion.
- (c) Please provide any studies or analyses which Dr. Ware has conducted which demonstrate that in the absence of access to power poles, Public Mobile and other “new entrants” will not grow.
- (d) Please provide any studies or analyses which Dr. Ware has conducted which demonstrate that in the absence of access to power poles Public Mobile and other “new entrants” will not achieve critical mass.
- (e) Please provide any studies or analyses which Dr. Ware has conducted which demonstrate that the services provided by Public Mobile and other “new entrants” are at present inferior to those provided by other carriers, and that this inferiority results from absence of pole-mounted antennas.

17. Reference: Ware reply evidence

Please provide any studies or analyses which Dr. Ware has conducted on:

- (a) U.S. siting markets for wireless facilities.
- (b) Canadian siting markets for wireless facilities.

18. Reference: Appendix 1 (*Curriculum Vitae of Roger Ware*), p. 9

Dr. Ware's CV indicates that he was retained in 2010 "by the Ontario Energy Board as a member of the Market Surveillance Panel, an oversight body on electricity pricing."

- (a) Is Dr. Ware still a member of the Board's Market Surveillance Panel? The Board's website³ suggests that he is.
- (b) If the answer to (a) above is no, when did Dr. Ware cease to be a member of the Board's Market Surveillance Panel, and why?
- (c) As a member of the Board's Market Surveillance Panel, did Dr. Ware ever investigate market activities and the behaviour of specific market participants (for example, if they are suspected of gaming or abusing their market power) and make recommendations related to the results of those investigations?
- (d) Is Dr. Ware aware that CANDAS has alleged at paragraph 2.9 and elsewhere in its Application that distributors could use their market power to unduly discriminate among Canadian carriers?
- (e) Is Dr. Ware's evidence being presented in the context of recommendations that he is making in his role as a member of the Board's Market Surveillance Panel?
- (f) If the answer to part (e) is yes, did the remainder of the Market Surveillance Panel review and approve Dr. Ware's report before it was filed as evidence in this proceeding?

³ <http://www.ontarioenergyboard.ca/OEB/Industry/About+the+OEB/Electricity+Market+Surveillance>

- (g) If the answer to part (e) is no, how does Dr. Ware propose to address parties' legitimate concerns about an actual or apparent bias arising in the Board's decision making process given that the Board is now being asked to consider evidence prepared by one of their own colleagues (another Board Panel member)?
- (h) Is it possible that a Board member may have actual or apparent undue influence over the decision making process of their fellow Board colleagues? Please explain the basis for the response.
- (i) Did Dr. Ware consult with the Board about compliance with its Code of Conduct and conflict of interest policies before he filed evidence on behalf of CANDAS in this proceeding? Please provide details of any such consultation, including the Board's response.

C. Written Evidence of Johanne Lemay⁴

19. *Reference: Lemay reply evidence, p. 3*

The evidence states that “the members of CANDAS were planning to build, from the ground up, a brand new mobile network in the City of Toronto, with the objective of achieving blanket coverage for both voice and data mobile services, with future potential for flexible growth and targeted capacity increases.”

- (a) Setting aside Videotron and CANDAS in Montreal, please list and describe all other outdoor DAS networks deployed in Canada that “provide blanket coverage for both voice and data mobile services” rather than serving as “a complement to a conventional macro cell network.”
- (b) Please list and describe all outdoor DAS networks deployed in Canada that serve as “a complement to a conventional macro cell network.”

⁴ As filed October 11, 2011.

20. Reference: Lemay reply evidence, p. 3

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

- (a) Please define “substitute” as used in the statement.
- (b) Please define and describe all factors relevant to the determination of whether WiFi and femtocells can be considered substitutes to the deployment of outdoor DAS. For example, are relative cost, voice and data capacities, and reliability characteristics relevant?
- (c) Does Ms. Lemay believe that when the Board is assessing allegations of abuse of market power and other related matters, the alternatives being discussed (e.g., macrocells and femtocells) to outdoor DAS are in the same “product market” as DAS when the market is delineated using the approach of the Ontario Energy Board in pages 31 to 34 of its NGEIR Decision (i.e., Natural Gas Electricity Review Decision with Reasons dated November 7, 2006 which is provided as Volume II, Exhibit 4 in THESL motion/evidence)? Please explain the reasoning for your response.

21. Reference: Lemay reply evidence, p. 3

The evidence states that “WiFi and femtocells are efficiently deployed on utility poles, similar to outdoor DAS.”

- (a) Please provide all reports, analyses, documents and facts Ms. Lemay reviewed and relied-upon in making the statement.
- (b) Please discuss all potential deployment options/locations considered by Ms. Lemay when making this statement and provide all economic analyses, financial analyses, engineering analyses, reports and documents demonstrating the relative

efficiency of the various deployment options/locations considered by Ms. Lemay in making this statement.

22. Reference: Lemay reply evidence, p. 9

Ms. Lemay describes that certain of AT&T's residential femtocells "will transfer calls seamlessly from a femtocell to a macro cell tower, but no seamless handover is available in the opposite direction, from the macro cell tower to the femtocell." Is it Ms. Lemay's contention that all femtocells, whether deployed in residential, commercial or public locations are similarly restricted in that they do not permit handover from the macro cell tower to the femtocell?

23. Reference: Lemay reply evidence, p. 10

Ms. Lemay describes femtocells as "complementary to and not as a replacement for a macro cell antenna deployment." Does Ms. Lemay consider outdoor DAS deployments as (a) "complementary to" a macro cell antenna deployment, (b) substitute for a macro cell antenna deployment, or (c) both. Please explain fully.

24. Reference: Lemay reply evidence, p.11

The evidence states that outdoor DAS have evolved as full substitutes for traditional coverage with macro and micro cell deployment and that "such deployments have already taken place in a number of urban and suburban centres."

- (a) Please identify each such Canadian urban centre.
- (b) For the centres listed in response to (a), please provide details including, but not limited to, name of the urban market, geographic area covered, carrier(s) involved, wireless technology involved (2g, 3g, 4g), radio frequencies involved, the number of DAS nodes, and the percent of DAS nodes on utility poles, street lights, street furniture, rooftops, buildings, and special purpose poles, respectively.

- (c) Please discuss whether and to what extent the carrier(s) identified in part (a) above utilize traditional macro cells sites, micro cell sites, picocells, femtocells, and WiFi in their network(s) generally and, specifically, in the areas surrounding the deployment described in part (a).
- (d) Please identify each such Canadian suburban centre and provide details including, but not limited to, name of the suburban market, geographic area covered, carrier(s) involved, wireless technology involved (2g, 3g, 4g), radio frequencies involved, the number of DAS nodes and the percent of DAS nodes on utility poles, street lights, street furniture, rooftops, buildings, and special purpose poles, respectively.
- (e) Please discuss whether and to what extent the carrier(s) identified in part (c) above utilize traditional macro cells sites, micro cell sites, picocells, femtocells, and WiFi in their network(s) generally and, specifically, in the areas surrounding the deployment described in part (c) above.

25. Reference: Lemay reply evidence

Please identify all geographic areas in which Rogers has implemented outdoor DAS for purposes of blanket coverage as that term is used in Ms Lemay's evidence, Mr. Larsen's and Ms. Lemay's responses to interrogatories in this proceeding. For each area identified, please identify the number of DAS nodes and, separately, the percent of DAS nodes on utility poles, street lights, street furniture, rooftops, buildings, and special purpose poles, respectively.

26. Reference: Lemay reply evidence

Please identify all geographic areas in which Rogers has implemented outdoor DAS for purposes of coverage that complements that of a traditional macro cell site based network. For each area identified, please identify the number of DAS nodes and, separately, the percent of DAS nodes on utility poles, street lights, street furniture, rooftops, buildings, and special purpose poles, respectively.

27. Reference: Lemay reply evidence

Identify all geographic areas in which Rogers plans to implement outdoor DAS for purposes of blanket coverage as that term is used in Mr. Larsen' and Ms. Lemay' replies in this proceeding. For each area identified, please identify the number of planned DAS nodes and, separately, the percent of planned DAS nodes that will be placed on utility poles, street lights, street furniture, rooftops, buildings, and special purpose poles, respectively.

28. Reference: Lemay reply evidence

Identify all geographic areas in which Rogers has planned to implement outdoor DAS for purposes of coverage that complements that of a traditional macro cell site based network. For each area identified, please identify the number of planned DAS nodes and, separately, the percent of the planned DAS nodes that will be placed on utility poles, street lights, street furniture, rooftops, buildings, and special purpose poles, respectively.

29. Reference: Lemay reply evidence, p. 15, footnote number 26

Ms. Lemay states that "CPC-2-0-03 Issue 4 (released: June 2007), excludes antenna structures with a height of less than 15m above ground from the public consultation process." Is it Ms. Lemay's opinion that the DAS nodes described in Exhibit D to Mr. Larsen's July 26, 2011 Written Evidence (*AS-BUILT FIBER OPTIC NODE INSTALLATION - 559 1233 JANE ST, 2nd POLE NORTH OF CORNELL AVE, EAST SIDE, POLE # 253TORONTO, CANADA*) are excluded from Industry Canada's public consultation process?

30. Reference: Lemay reply evidence, p. 15, footnote number 26

Ms. Lemay states that "CPC-2-0-03 Issue 4 (released: June 2007), excludes antenna structures with a height of less than 15m above ground from the public consultation process." Is it Ms. Lemay's opinion that the DAS nodes described in Exhibit D to Mr. Larsen's July 26, 2011 Written Evidence (*AS-BUILT FIBER OPTIC NODE*

INSTALLATION - 559 1233 JANE ST, 2nd POLE NORTH OF CORNELL AVE, EAST SIDE, POLE # 253TORONTO, CANADA) are excluded from the public consultation process described in Section 11 of the City of Toronto Telecommunications Tower and Antenna Protocol located at the address noted below?
<http://www.toronto.ca/planning/telecommunications.htm#protocol>

31. Reference: Lemay reply evidence, p. 16, Section 3.2

The evidence states that the Canadian wireless siting market “is not a well functioning competitive market.”

- (a) Please identify the date on which Public Mobile made its decision to switch to its macro cell site strategy.
- (b) Please identify the date on which Public Mobile began to provide services in the city of Toronto based on macro cell sites?
- (c) Please identify the number of locations at which Public Mobile’s macro cell towers/antennas are located, how many property owners are involved, the initial cost involved with each site and the ongoing monthly expense associated with each site.
- (d) 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 currently supported by the macro cell sites deployed by Public Mobile, including all reports, analyses, studies, working papers, memoranda, correspondence, and other documents.
- (e) 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.

- (f) Please discuss the extent to which Public Mobile is currently capacity-constrained in that it is unable to provide call carrying capacity and/or data related services to its current customer base in Toronto.
 - (i) Please describe the extent to which such capacity constraints can be resolved by utilizing a six-sector deployment.
 - (ii) Please discuss the extent to which such capacity constraints can be resolved by utilizing a 4G deployment.
 - (iii) Please discuss the extent to which such capacity constraints can be resolved by utilizing a six-sector 4G deployment.
- (g) 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. Please compare such costs to the costs (both initial costs and on-going monthly expenses) Public Mobile has incurred to build and support its macro site based network.

32. Reference: Lemay reply evidence, p. 16 - 19

The evidence implies that sharing of towers and antenna sites is difficult in and around Toronto. Please separately identify the number of locations at which Public Mobile's macro cell towers/antennas are located as well as the percentage of those locations which are shared with other carriers.

33. Reference: Lemay reply evidence, p. 16 - 19

The evidence implies that there are very few third party entities who lease towers, rooftops and/or other locations at which wireless antennae may be located. Please

separately identify each location at which Public Mobile's currently operational antennae equipment are located and, for each site, please provide the following:

- (a) location address,
- (b) type of location (tower, rooftop, utility pole, streetlight, traffic standard, municipal furniture, other (specify),
- (c) indication as to whether Public Mobile, or an affiliated corporate entity or person, owns the location,
- (d) property owner if other than Public Mobile or an affiliated corporate entity or person,
- (e) antennae height(s),
- (f) equipment installation date(s),
- (g) antennae in service date(s), and
- (h) list of other carriers known to locate antennae equipment at that same location.

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