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February 13, 2014

Via Email

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge St.
Toronto, ON
M4P 1E4

Dear Ms. Walli:

Re: EB 2013-0234 – Section 29 Application
Toronto Hydro- Electric System Limited (THESL)
Interrogatories of the Vulnerable Energy Consumers Coalition (VECC)

On behalf of the Vulnerable Energy Consumers Coalition (VECC) we have attached their interrogatories re: the above-noted proceeding. We have also directed a copy of the same to the Applicant as well as all interested parties. .

Yours truly,

Michael Janigan
Counsel for VECC

cc:
THESL - Amanda Klein regulatoryaffairs@torontohydro.com
THESL – Rob Barrass – regulatoryaffairs@torontohydro.com
EB 2013-0234 – List of Intervenors

INTERROGATORIES FOR TORONTO HYDRO-ELECTRIC SYSTEM LIMITED

FROM THE Vulnerable Energy Consumers Coalition (VECC)

EB-2013-0234 – Section 29 Application

February 13, 2013

ISSUE 1/VECC/1

(Reference: evidence of Dr. Church)

At paragraph 96, Dr. Church states:

"The purpose of outdoor small cell and outdoor DAS deployments is to enhance the provision of wireless services by improving the capacity and coverage of the cellular wireless networks used to provide those downstream wireless services."

Is Dr. Church aware of any wireless service providers who rely entirely on small cell and distributed antenna systems, without also operating a traditional macrocell network?

ISSUE 1/VECC/2

(Reference: evidence of Dr. Church)

At paragraph 101, Dr. Church states:

"A basic but easily appreciated difficulty with continuing to deploy cell towers and obtrusive antennas arises from civic opposition to such deployment on largely aesthetic grounds (although there are also concerns about radiation levels from cellular facilities)... footnote omitted"

(a) Does Dr. Church anticipate that concerns regarding radiation levels would also apply to antennas used in small cell and distributed antenna systems?
(b) Does Dr. Church anticipate that antennas associated with small cell and distributed antenna systems might give rise to any aesthetic concerns, albeit less than with traditional towers or masts?

ISSUE 1/VECC/3

(Reference: evidence of Dr. Church)

At paragraph 107, Dr. Church states:

"In the future, wireless networks might utilise utility poles, but likely only in the context of particular technologies (DAS and small cells) that will be part of a series of solutions that wireless service providers use to meet capacity and coverage challenges."

(a) Would Dr. Church include Wi-Fi deployment in this list of technologies?

(b) Does the deployment of Wi-Fi also require deployment of antennas?

ISSUE 1/VECC/4

(Reference: Evidence of Dr. Jackson)

At page 24 of his evidence, Dr. Jackson states:

"Radio waves tend to travel in straight lines—so providing coverage
in small valleys or behind hills may require building extra cells to fill in coverage."

Please comment on the effects of attaching antennas on the sides of residential one and two-story houses, below roof level. Please include the consequences on coverage areas, interference, and power require

ISSUE 2/VECC/5

(Reference: Evidence of Dr. Jackson)

At page 29, Dr. Jackson lists several advantages of placing small cells on or inside buildings. For each of these advantages, please explain the extent to which the advantage would apply to small cells placed on or inside residential houses, with a view to providing outdoor coverage.

ISSUE 2/VECC/6

(Reference: Evidence of Dr. Jackson)

At page 31 of his evidence, Dr. Jackson refers to a paper by Ghosh et al, stating:

"Ghosh and his co-authors address the use of small cells on utility poles (they use the term street poles). They noted two main benefits of small cells on utility poles: (1) proximity to pedestrians in areas where people tend to congregate and (2) negotiating with a single property owner.48 They also identify difficulties with using utility poles, the most important of which were the cost of backhaul and the difficulties in supplying power; esthetic impacts were a third issue. [Footnote omitted]"

(a) If an antenna, intended to provide outdoor coverage, were mounted on the side of a residential home, in Dr. Jackson`s view, what measures would have to be taken to ensure secure backhaul. In particular, comment on any privacy issues.

(b) Could Dr. Jackson please comment on the aesthetics of placing small cell antennas on the outside of residential houses?

(c) Could Dr. Jackson please comment on any problems that the house occupants or their neighbors might perceive to arise, due to electromagnetic radiation from the antenna?

(d) Could Dr. Jackson please comment on the costs and time delays arising from the need to negotiate individual agreements with the required number of residential house owners?

(e) Could Dr. Jackson please comment on any privacy issues that might arise if an antenna were fixed to an outside or inside wall of a private residence so as to provide outdoor coverage, and cables were placed inside the house to provide backhaul, via an Internet connection or any other means, if any.

ISSUE 4/VECC/7

(Reference: Evidence of Dr. Jackson)

At paragraph 114 and elsewhere in his evidence, Dr. Church states that there may be alternative siting structures available for small cell antennas, other than utility pole attachments.

Please provide a complete list of such alternative siting structures, in the cases of:

(a) indoor coverage

(b) outdoor coverage in downtown cores, e.g. PA-1 in Toronto

(c) outdoor coverage in commercial districts, e.g. CL zone in Toronto

(d) outdoor coverage in residential neighborhoods, e.g. RD zone in Toronto

(e) employment areas, e.g. EH zone in Toronto.

ISSUE 4/VECC/8

(Reference: Evidence of Dr. Jackson)

In Table 2 at page 33, Dr. Jackson shows the advantages and disadvantages of various antenna sitings.

1. As regards siting antennas inside residences, please estimate the effective outdoor range, or area of outside coverage, of antennas inside residences, as compared to antennas mounted on external walls next to the windows.

2. Please include as a separate case, the siting of an antenna put in window, as mentioned at page 33.

Please discuss any special problems in obtaining a homeowner`s agreement to put an antenna in a window of his house

ISSUE 4/VECC/9

(Evidence of Dr. Church)

For each of the alternatives specified in the answer to VECC/5 above, please provide Dr. Church`s best estimate of the cross-price elasticity with utility pole attachments, i.e. the impact on the demand for the alternative of a small but significant increase in the price (or rental rate) of pole attachments. If Dr. Church does not have a quantitative estimate, please provide his best qualitative estimate, including supporting details.

ISSUE 6/VECC/10

(Reference: Pre-filed Evidence)

At paragraph 7 of its evidence, THESL states that approximately 117,000 of its poles are available for wireless attachments. Please update this number, including any new poles currently planned.

ISSUE 6/VECC/11

(Reference: Pre-filed Evidence)

At paragraph 1, THESL states that it has approximately 175,000 poles. At paragraph 9, THESL states that approximately 40,000 poles are street lighting poles. At paragraph 7, THESL states that approximately 117,000 of its poles are available for wireless attachment.

(a) Please confirm that 18,000 poles are not street lighting poles, but are nonetheless not available for wireless attachment.

(b) Please explain why they are not available.

ISSUE 6/VECC/12

(Reference: Pre-filed Evidence)

At paragraph 2, THESL states that some of its street lighting poles can, if modified or replaced, accommodate wireless attachments.

(a)Please provide a range for the costs per pole of such modification or replacement.

(b) Please provide similar estimates for THESI`s poles, if different from THESL.

ISSUE 6/VECC/13

(Reference: Pre-filed Evidence)

At paragraph 11, THESL states that at the time of its application, there were 130 wireless attachments on its poles and 61 on THESI`s poles, further breaking these down into cellular and Wi-Fi. Please update these numbers,

ISSUE 6/VECC/14

(Reference: Pre-filed Evidence)

At paragraph 13, THESL states that since the Board`s Preliminary Decision and Order, there have been 19 permit applications, giving some detail on the applications. Please update the numbers in paragraph 13.

ISSUE 6/VECC/15

(Reference: Pre-filed Evidence)

At paragraph 15, THESL states that its direct and indirect costs for pole attachments are higher than the $22.35 currently authorized by the Board.

(a) Please provide THESL`s best estimate of the cost of pole attachments. Please provide a detailed description of the methodology used by THESL to calculate these costs.
(b) Please list those cost elements that are included.
(c) Please describe THESL`s definitions and identification and inclusion of fixed costs and common costs.
(d) Please provide any related studies or analyses.
(e) If THESL does not have an estimate of its costs for pole attachments, please provide the basis for THESL`s statement that its direct and indirect costs are higher than $22.35. Please provide any related studies or analyses.

ISSUE 6/VECC/16

(Reference: Evidence of Dr. Church)

At paragraph 12 and elsewhere in his evidence, Dr. Church uses the expression `marginal cost`.

(a) Please define what is meant by this expression as applied to pole attachments.

(b) In particular, please specify what Dr. Church considers to be the unit of output to be costed

(c) Please specify what cost elements would be included, and what cost elements would be excluded, from this definition.

ISSUE 6/VECC/17

(Reference: Evidence of Dr. Church)

At paragraph 118, Dr. Church suggests that off-loading traffic to fixed line networks is a substitute to attaching antennas to utility poles.

Please explain the extent to which this is an efficient substitute for:

(a) outdoor coverage in commercial districts and

(b) outdoor coverage in residential neighborhoods.

ISSUE 6/VECC/18

(Reference: Evidence of Dr. Church)

At paragraph 119, Dr. Church discusses indoor deployment of small cells and DAS.

Please explain the extent to which this is an efficient substitute for pole attachments for:

(a) outdoor coverage in commercial districts and

(b) outdoor coverage in residential neighborhoods.

ISSUE 6/VECC/19

At paragraph 120, Dr. Church suggests that wireless service providers can increase capacity through increased spectrum availability and sharing.

1. Please provide Dr. Church's best estimate as to the amount by which these methods could increase capacity for an incumbent wireless service provider:

(a) in theory and

(b) in practice.

2. Please discuss the extent to which spectrum is available to a new entrant.

3. Please describe the incentives for incumbents to share spectrum with new entrants.

ISSUE 6/VECC/20

(Reference: Evidence of Dr. Church)

At paragraph 121, Dr. Church suggests that the deployment of MIMO is one way to expand capacity. Please discuss the aesthetic and health concerns that might be raised by the deployment of MIMO in residential neighborhoods.

ISSUE 6/VECC/21

(Reference: Evidence of Dr. Church)

At paragraph 122, Dr. Church discusses pricing, traffic shaping, and compression as methods to increase capacity.

Please provide Dr. Church`s best estimate as to the amount by which these methods could increase capacity:

(a) in theory and

(b) in practice.

ISSUE 6/VECC/22

(Reference: Evidence of Dr. Church)

At paragraph 123, Dr. Church discusses cell splitting and spectrally efficient technology.

Please provide Dr. Church`s best estimate as to the amount by which these methods could increase capacity:

(a) in theory and

(b) in practice.

ISSUE 6/VECC/23

(Reference: Evidence of Dr. Church)

At paragraph 124, Dr. Church discusses Industry Canada`s roaming and sit sharing mandates.

In Dr. Church`s view, does Industry Canada`s site sharing mandate apply to antenna sits located on utility poles or on the sides of buildings?

ISSUE 6/VECC/24

(Reference: Evidence of Dr. Church)

At paragraph 148 and following, Dr. Church discusses the use of utility poles by Public Mobile and by Videotron to deploy distributed antenna systems in Montreal.

(a) Please provide the prices paid by Public Mobile and by Videotron for these pole attachments.
(b) Please describe the process by which these prices were established, whether agreements negotiated between parties, commercial arbitration, or regulatory intervention.

ISSUE 6/VECC/25

(Reference: Evidence of Dr. Church)

At paragraph 182, Dr. Church states:

"...if THESL attempts to price pole access at very high levels, this is likely to reduce the demand for poles to the limited set of circumstances where even the incumbent wireless firms lack effective economic substitutes. Even if wireless service providers could not avoid using THESL poles entirely, they would appear to certainly have the flexibility to greatly reduce their reliance on this infrastructure...."

(a) Please provide Dr. Church`s best estimate of the own-price elasticity of demand for pole attachments.
(b) Please provide any supporting studies and analyses.

ISSUE 8/VECC/26

(Reference: Evidence of Dr. Church)

At paragraphs 43 and following, Dr. Church describes the doctrine of essential facilities, as found in antitrust or competition law.

1 .In Dr. Church`s opinion, does this doctrine require that the same firm that is dominant in the upstream market, also be present in the downstream market?

2. If yes, explain how the doctrine applies to THESL and THESI in the market for pole attachments?

ISSUE 11/VECC/27

Reference: Evidence of Dr. Church

At paragraph 83, Dr. Church states:

> There are two effects from the exercise of market power in the upstream market. The first is a transfer of profits from downstream firms to the upstream supplier on infra-marginal units— the units that the downstream firms continue to purchase even though price has risen.

In Dr. Church`s opinion:

(a)Does such a transfer of profits constitute a concern for the Board?

(b) Is it consistent with regulating in the public interest?

ISSUE 9/VECC/28

(Reference: Evidence of Dr. Church)

At paragraph 206, Dr. Church states:

> "Moreover, on distributional grounds the OEB might determine that some of the burden of financial viability for THESL should be borne by those making and benefiting from wireless attachments instead of THESL ratepayers."

See also Dr. Church`s evidence at paragraphs 216 and 217, recommending such a contribution on distributional grounds, i.e. independent of efficiency considerations.

1. Confirm that, in Dr. Church`s opinion, if the Board were to forbear from regulating the prices for attachments to THESL and THESI`s poles, revenues from such attachments should nevertheless make a contribution toward recovering the utility`s revenue requirement.
2. What criteria would Dr. Church recommend for determining how large such a contribution should be, on purely distributional grounds?

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