

March 10, 2008

BY COURIER (10 COPIES) AND EMAIL

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, Suite 2700
Toronto, Ontario M4P 1E4
Fax: (416) 440-7656
Email: boardsec@oeb.gov.on.ca

Dear Ms. Walli:

**Re: Pollution Probe – Written Interrogatories – Part 4
EB-2007-0050 – Hydro One – Bruce-Milton Transmission
Reinforcement Project**

Pursuant to the Board's oral decision on February 21, 2008 and Procedural Order No. 5, please find enclosed Pollution Probe's fourth set of written interrogatories to Hydro One for this matter.

Yours truly,



Basil Alexander

BA/ba

Encl.

cc: Applicant and Intervenors per Procedural Order #5

Pollution Probe's Interrogatories for Hydro One – Part 4

March 10, 2008

Interrogatory No. 24

Ref. Exh. B/T 1/S 1/page 3 of 5

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

There is a reference, starting on line 13, to 700 MW of wind generation expected to be in service by 2009:

- a) If this MW figure reflects something other than nameplate ratings, please describe what it reflects and how it was determined.
- b) What capacity value will be attributed to this 700 MW for purposes of determining generation supply adequacy?
- c) What annual MWH generation is expected from this 700 MW of wind generation, and how does this generation break down between summer and winter, and between on-peak and off-peak periods?
- d) Please include an explanation as to how summer, winter, on-peak, and off-peak are defined.

Interrogatory No. 25

Ref. Exh. B/T 1/S 1/page 4 of 5

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

There is a reference, starting on line 2, to 1,000 MW of additional wind generation expected to be in service in the Bruce area:

- a) If this MW figure reflects something other than nameplate ratings, please describe what it reflects and how it was determined.
- b) What capacity value will be attributed to this 1,000 MW for purposes of determining generation supply adequacy?

- c) What annual MWH generation is expected from this 1,000 MW of wind generation, and how does this generation break down between summer and winter, and between on-peak and off-peak periods?

Interrogatory No. 26

Ref. Exh. B/T 6/S 5/Appendix 5

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

On page 8, there is a reference to rules, criteria, standards, and guidelines established by the IESO, NPCC, and NERC. Please provide a copy of or electronic references to all such rules, criteria, standards, and guidelines that affect electric transmission system planning, operation, and reliability.

Interrogatory No. 27

Ref. Exh. B/T 3/S 1

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

Please identify the electric transmission load flow model or models used by the OPA, IESO, and/or Hydro One to evaluate the need for transmission system reinforcement and used by the OPA, IESO, and/or Hydro One to evaluate the alternatives referenced. Please include the version number of any such model.

Interrogatory No. 28

Ref. Exh. B/T 6/S 2

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

Please provide saved cases in PTI-format, compatible with Siemens PSS/E version 30, for the most recent load flow studies performed by or for Hydro One, the OPA, and/or the

IESO in studying the need for the proposed transmission line (including those studies that examine the existing system with and without the proposed transmission line and other proposed system enhancements).

Interrogatory No. 29

Ref. Exh. B/T 6/S 5/Appendix 5

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

- a) Please identify and discuss any reliability-based limitations considered by the OPA, the IESO, and/or Hydro One regarding how many electric transmission circuits may be placed within a common right-of-way corridor.
- b) Please identify and discuss any reliability-based limitations considered by the OPA, the IESO, and/or Hydro One regarding how many electric transmission circuits may be placed on a common set of transmission towers.
- c) Please identify and discuss any reliability-based limitations considered by the OPA, the IESO, and/or Hydro One regarding how much electric generating capacity, in relation to system peak load or other metric, may be installed at one location

Interrogatory No. 30

Ref. Technical Conference Panel One (Oct 15, 2007) slide presentation, slide 11 of 43.

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

The referenced material describes the existing transmission system's capability as being limited by required voltage performance following contingencies.

- a) Please describe the system's required voltage performance and provide a copy of or a reference to such requirements.
- b) Please describe or provide a reference to a description of the contingencies that cause the system to violate its required voltage performance.

- c) Please describe or provide a reference to a description of the magnitude and location of the voltage violations that occur with each of the contingencies described in part (b) above.
- d) Please describe the generation dispatch and system import assumptions that were used in determining the voltage violations.
- e) Please provide saved case(s) in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in determining these voltage violations.

Interrogatory No. 31

Ref. Attachment 1, which reflects an exchange of e-mails from 2006 between Jack Gibbons, Amir Shalaby (OPA VP of System Planning), and others.

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

The referenced e-mails from late 2006 discuss assumptions regarding the retirement dates for the Bruce B generating units. Has the OPA's forecast for these retirement dates changed since then? If yes, what is the current forecast?

Filed: March 10, 2008
EB-2007-0050
Pollution Probe Int. No. 31
Attachment 1

Jack Gibbons

From: Amir Shalaby [Amir.Shalaby@powerauthority.on.ca]
Sent: December 5, 2006 7:05 PM
To: jgibbons@pollutionprobe.org
Cc: Claire Willison; Emay Cowx
Subject: Re: Bruce Area Available Generation

Assume that one unit is taken out late 2016, and one every year after.
Thanks
Amir

This e-mail message and any files transmitted with it are intended only for the named recipient(s) above and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. If you are not the intended recipient(s), any dissemination, distribution or copying of this e-mail message or any files transmitted with it is strictly prohibited. If you have received this message in error, or are not the named recipient(s), please notify the sender immediately and delete this e-mail message.

-----Original Message-----

From: Jack Gibbons <jgibbons@pollutionprobe.org>
To: Amir Shalaby
Sent: Tue Dec 05 14:38:09 2006
Subject: RE: Bruce Area Available Generation

Hi Amir,

I am not asking you to endorse the OCAA's assumptions or scenarios.

However for me to make the graph, I need to know your best estimates of when each of the Bruce B units will come to the end of their expected economic lives. If you could provide us with that information, we would appreciate it.

Thanks,

Jack

Jack Gibbons
Chair, Ontario Clean Air Alliance
625 Church Street, Suite 402
Toronto M4Y 2G1

Tel: 416-926-1907 ext. 240
Fax: 416-926-1601
Email: info@cleanairalliance.org
Web sites: www.cleanairalliance.org
www.electricitychoices.org
www.gocleanandgreen.org

From: Amir Shalaby [<mailto:Amir.Shalaby@powerauthority.on.ca>]
Sent: December 5, 2006 2:32 PM
To: jgibbons@pollutionprobe.org; Bob Chow

06/12/2006

Subject: Re: Bruce Area Available Generation

Jack,

What you are proposing is NOT our assumption or plan.

You can make whatever assumptions you wish to make to illustrate your point. There is no specific knowledge that we have that you do not. Just subtract the unit capabilities from the output of the complex, at an illustrative end of life scenario,

My concern is that ascribe whatever data or graphs we provide as OPA assumptions, and they are not.

If I understand the point you want to make, it can be demonstrated by an illustrative scenario

I hope this works for you

Amir

This e-mail message and any files transmitted with it are intended only for the named recipient(s) above and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. If you are not the intended recipient(s), any dissemination, distribution or copying of this e-mail message or any files transmitted with it is strictly prohibited. If you have received this message in error, or are not the named recipient(s), please notify the sender immediately and delete this e-mail message.

-----Original Message-----

From: Jack Gibbons <jgibbons@pollutionprobe.org>

To: Bob Chow

CC: Amir Shalaby

Sent: Tue Dec 05 14:10:23 2006

Subject: FW: Bruce Area Available Generation

Hi Bob,

Further to Amir's response below, could you please extend Figure 2.27's time lines to 2024 (Discussion Paper #5) assuming that none of the Bruce B units are refurbished when they come to the end of their economic lives.

I need this information for the response we are preparing for the OPA with respect to its recent series of discussion papers. As you know, our responses are due on December 15th.

Thanks,

Jack

Jack Gibbons
Chair, Ontario Clean Air Alliance
625 Church Street, Suite 402
Toronto M4Y 2G1

Tel: 416-926-1907 ext. 240

Fax: 416-926-1601

Email: info@cleanairalliance.org

Web sites: www.cleanairalliance.org
www.electricitychoices.org
www.gocleanandgreen.org

From: Amir Shalaby [<mailto:Amir.Shalaby@powerauthority.on.ca>]

Sent: November 28, 2006 11:44 AM

To: jgibbons@pollutionprobe.org; Bob Chow

Cc: Bob Gibbons; KStewart@wwfcanada.org; markw@pembina.org; dpoch@eelaw.ca

Subject: Re: Bruce Area Available Generation

06/12/2006

Let me clarify. The fact that Bruce B comes up for end of life around 2015 to 2020 time period is information that has been discussed in a general way. What is confidential is what specific assessments are underway, and more specific dates. For the purposes of showing the need for transmission, an illustrative set of assumptions are sufficient to make the point. As you all know, end of life plans depend on a lot of factors that are better assessed in time, so a set of assumptions to illustrate the role of transmission post 2015 can be done. The overriding need for transmission is that interim measures are not sustainable for anything but a short period, and with a durable long term solution clearly in sight.

I hope this clarifies.
Amir

This e-mail message and any files transmitted with it are intended only for the named recipient(s) above and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. If you are not the intended recipient(s), any dissemination, distribution or copying of this e-mail message or any files transmitted with it is strictly prohibited. If you have received this message in error, or are not the named recipient(s), please notify the sender immediately and delete this e-mail message.

-----Original Message-----

From: Jack Gibbons <jgibbons@pollutionprobe.org>

To: Bob Chow

CC: Amir Shalaby; Bob Gibbons; 'Keith Stewart' <KStewart@wwfcanada.org>; 'mark winfield' <markw@pembina.org>; 'David Poch' <dpoch@eclaw.ca>

Sent: Tue Nov 28 11:28:49 2006

Subject: RE: Bruce Area Available Generation

Hi Bob,

Amir gave me the information orally at your consultation re: when the Bruce B units are going out of service. So please provide me with an expanded version of the figure so that the facts will be transparent. You simply can't go before the OEB and ask for permission to build a \$600 million transmission line without saying when you expect the Bruce B units to go out of service.

Jack

Jack Gibbons
Chair, Ontario Clean Air Alliance
625 Church Street, Suite 402
Toronto M4Y 2G1

Tel: 416-926-1907 ext. 240

Fax: 416-926-1601

Email: info@cleanairalliance.org

Web sites: www.cleanairalliance.org
www.electricitychoices.org
www.gocleanandgreen.org

From: Bob Chow [<mailto:Bob.Chow@powerauthority.on.ca>]

Sent: November 28, 2006 8:57 AM

To: Jack Gibbons

Cc: Amir Shalaby; Bob Gibbons; Bob Chow

Subject: RE: Bruce Area Available Generation

06/12/2006

Hi Jack,

With respect to your first request for extending Figure 2.27, I can't provide the information as the retirement schedule for the Bruce Power units at Bruce is confidential. Slide 19 presented at the workshop for the Integration paper provides the aggregate declining Capacity of Ontario's existing nuclear units without additional refurbishment.

For your second request, we don't have that information. The IESO has some related information on its website: a) hourly generator output and capability report for the current month, and b) monthly summary back to May 2002.

Bob Chow

This e-mail message and any files transmitted with it are intended only for the named recipient(s) above and may contain information that is privileged, confidential and/or exempt from disclosure under applicable law. If you are not the intended recipient(s), any dissemination, distribution or copying of this e-mail message or any files transmitted with it is strictly prohibited. If you have received this message in error, or are not the named recipient(s), please notify the sender immediately and delete this e-mail message.

From: Jack Gibbons [<mailto:jgibbons@pollutionprobe.org>]
Sent: November 24, 2006 11:20 AM
To: Bob Chow
Cc: Amir Shalaby
Subject: Bruce Area Available Generation

Hi Bob,

Further to my request at this week's OPA consultation meeting, could you please provide me with an expanded version of "Figure 2.27 Bruce Area Available Generation" of Discussion Paper #5.

Specifically, could you please extend Figure 2.27's time lines to 2024 assuming that none of the Bruce B units are refurbished when they come to the end of their economic lives.

Also, could you please tell me the maximum annual peak day generation of the Bruce Nuclear Station for each year since Bruce B came into service.

Thank you.

Jack

06/12/2006

Interrogatory No. 32

Ref. Exh. B/T 6/S 5, Appendix 5

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

On page 48 of Appendix 5, reference is made to reinforcing the London to Middleport or Nanticoke path by building a second 500 kV line along it.

- a) Please describe whether this London alternative would provide for adding a double circuit 500 kV line, adding a single 500 kV line with one circuit, or some other configuration.
- b) What would the London alternative cost compared to the proposed Bruce-Milton line? Please provide cost estimate workpapers.
- c) What would the transfer capability away from Bruce be with the London alternative?
- d) Please provide saved case(s) in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in studying the London alternative.

Interrogatory No. 33

Ref. Exh. B/T 6/S 4 is the Ontario Reliability Outlook – March 2007. On page 3, it states: “Without new transmission facilities, the IESO will eventually be forced to operate existing facilities near their maximum capabilities, with little margin for unexpected events and requiring complex arrangements to do routine maintenance on critical facilities.”

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

- a) What are the critical facilities as far as the transmission facilities out of the Bruce complex are concerned?
- b) What does routine maintenance include on 500 kV and on 230 kV transmission facilities?
- c) How frequently is this maintenance typically performed?
- d) Which of these routine maintenance items can be accomplished using live-line techniques on properly-designed facilities?

- e) Please describe the types of “complex arrangements” that would be required in order to permit maintenance if the proposed transmission lines are not installed.
- f) Please describe the live line maintenance that is performed to maintain 500 kV transmission lines and/or to maintain 230 kV transmission facilities in the Province.

Interrogatory No. 34

Ref. Exh. B/T 6/S 4 is the Ontario Reliability Outlook – March 2007. On page 3, it states: “Without new transmission facilities, the IESO will eventually be forced to operate existing facilities near their maximum capabilities, with little margin for unexpected events and requiring complex arrangements to do routine maintenance on critical facilities.”

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

For the double circuit 500 kV transmission lines in the Province:

- a) Please provide the sustained outage rate per kilometer per year for overhead transmission circuits.
- b) Please provide a breakdown of the causes of sustained outages for overhead transmission lines.
- c) Please provide the average restoration time for overhead transmission lines experiencing a sustained outage.
- d) Please provide the momentary outage rate per kilometer per year for overhead transmission circuits.
- e) Please provide a breakdown of the causes of momentary outages for overhead transmission lines.
- f) Please provide the definitions of sustained outage and momentary outage used in the data supplied in response to the above.
- g) What percentage of the sustained outages affecting a 500 kV transmission circuit on a double circuit transmission line causes both circuits on the line to experience sustained outages?
- h) What percentage of the momentary outages affecting a 500 kV transmission circuit on a double circuit transmission line causes both circuits on the line to experience momentary outages?

Interrogatory No. 35

Ref. Exh. B/T 6/S 4 is the Ontario Reliability Outlook – March 2007. On page 3, it states: “Without new transmission facilities, the IESO will eventually be forced to operate existing facilities near their maximum capabilities, with little margin for unexpected events and requiring complex arrangements to do routine maintenance on critical facilities.”

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

For all the 500 kV transmission lines in the Province:

- a) Please provide the sustained outage rate per kilometer per year for overhead transmission circuits.
- b) Please provide a breakdown of the causes of sustained outages for overhead transmission lines.
- c) Please provide the average restoration time for overhead transmission lines experiencing a sustained outage.
- d) Please provide the momentary outage rate per kilometer per year for overhead transmission circuits.
- e) Please provide a breakdown of the causes of momentary outages for overhead transmission lines.
- f) Please provide the definitions of sustained outage and momentary outage used in the data supplied in response to the above.

Interrogatory No. 36

Ref. Exh. B/T 6/S 4 is the Ontario Reliability Outlook – March 2007. On page 3, it states: “Without new transmission facilities, the IESO will eventually be forced to operate existing facilities near their maximum capabilities, with little margin for unexpected events and requiring complex arrangements to do routine maintenance on critical facilities.”

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

For the double circuit 230 kV transmission lines in the Province:

- a) Please provide the sustained outage rate per kilometer per year for overhead transmission circuits.

- b) Please provide a breakdown of the causes of sustained outages for overhead transmission lines.
- c) Please provide the average restoration time for overhead transmission lines experiencing a sustained outage.
- d) Please provide the momentary outage rate per kilometer per year for overhead transmission circuits.
- e) Please provide a breakdown of the causes of momentary outages for overhead transmission lines.
- f) Please provide the definitions of sustained outage and momentary outage used in the data supplied in response to the above.
- g) What percentage of the sustained outages affecting a 230 kV transmission circuit on a double circuit transmission line causes both circuits on the line to experience sustained outages?
- h) What percentage of the momentary outages affecting a 230 kV transmission circuit on a double circuit transmission line causes both circuits on the line to experience momentary outages?

Interrogatory No. 37

Ref. Exh. B/T 6/S 4 is the Ontario Reliability Outlook – March 2007. On page 3, it states: “Without new transmission facilities, the IESO will eventually be forced to operate existing facilities near their maximum capabilities, with little margin for unexpected events and requiring complex arrangements to do routine maintenance on critical facilities.”

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

For all the 230 kV transmission lines in the Province:

- a) Please provide the sustained outage rate per kilometer per year for overhead transmission circuits.
- b) Please provide a breakdown of the causes of sustained outages for overhead transmission lines.
- c) Please provide the average restoration time for overhead transmission lines experiencing a sustained outage.
- d) Please provide the momentary outage rate per kilometer per year for overhead transmission circuits.
- e) Please provide a breakdown of the causes of momentary outages for overhead transmission lines.
- f) Please provide the definitions of sustained outage and momentary outage used in the data supplied in response to the above.

Interrogatory No. 38

Ref. Exh. B/T 6/S 5 Appendix 6 is Discussion Paper 7 Integrating the Elements. On Page 39 is a bar graph of the MW of installed nuclear capacity for each year from 2007 through 2027.

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

For each year from 2007 through 2027, please provide the total nuclear capacity in MW and a breakdown of that capacity by nuclear unit, along with a description of whether such unit is considered to “existing”, “refurbished”, or “new”.

Interrogatory No. 39

Ref. Technical Conference Panel One (Oct 15, 2007) slide presentation, slide 31 of 43.

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

The slide shows eight options considered, including the proposed transmission line from Bruce to Milton, and five screening categories:

- a) For each of the options listed, please provide a description of the facilities included in each option.
- b) For each of the options listed, please provide a description of the total transmission capability in MW away from Bruce with no contingencies.
- c) For each of the options listed, please provide a description of the total transmission capability in MW away from Bruce with the worst single contingency, and a description of that contingency.
- d) For the capacity determinations addressed in (b) and (c) above, please describe and provide the assumptions for generation dispatch and system imports that were used in these determinations.
- e) For each of the options listed, please describe the effects on other transmission paths that were considered.
- f) For each of the options listed, please provide total cost for the option, a cost breakdown for the option, and cost workpapers.
- g) For each of the options listed, please describe the land use characteristics that were considered.

- h) For each of the options listed, please describe the effect on system losses, compared to the existing system and compared to the other alternatives considered.

Interrogatory No. 40

Ref. Technical Conference Panel One (Oct 15, 2007) slide presentation, slide 38 of 43.

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

The slide addresses near-term measures to add transmission capacity.

- a) Please provide a description of the facilities included in each measure.
- b) Please provide a description of the cost of each of the facilities included in each measure, a cost breakdown, and cost workpapers.
- c) Please provide a description of the increase in system capacity that each installation provides.
- d) Please provide the capacity of the transmission system away from Bruce with these measures installed on the existing system with no contingencies, and without these measures installed with no contingencies.
- e) Please provide the capacity of the transmission system away from Bruce with these measures installed on the existing system with the worst single contingency, and provide a description of that contingency.

Interrogatory No. 41

Ref. Technical Conference Panel One (Oct 15, 2007) slide presentation, slide 40 of 43.

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

This slide addresses interim measures to add transmission capacity.

- a) Please provide a description of the facilities included in each measure.
- b) Please provide a description of the cost of each of the facilities included in each measure, a cost breakdown, and cost workpapers.
- c) Please provide a description of the increase in system capacity that each installation provides.

- d) Please provide the capacity of the transmission system away from Bruce with these measures installed on the existing system with no contingencies, and without these measures installed with no contingencies (assume that near-term measures described in Interrogatory 36 are in service).
- e) Please provide the capacity of the transmission system away from Bruce with these measures installed on the existing system with the worst single contingency, and provide a description of that contingency.
- f) The slide states that the installation of series capacitors is still under consideration. Please describe what progress has been made on such consideration since last October and provide a copy of any study results, analyses, reports, etc. that are available as a result.
- g) The slide states that the installation of series capacitors requires extensive changes to the Bruce transmission system. Please describe these expensive changes and provide a copy of any analyses, reports, etc. that address these changes.

Interrogatory No. 42

Ref. Exh. B/T 1/S 1. On page 2, Table 1 lists generation resources, loads, and interconnection capacities in SW Ontario.

Issue Number 1.0

1.0 Issue: Project Need and Justification

Request

- a) For each of the generation resources listed, please provide:
 - i. the name of each generating unit that is included in each generation resource listed;
 - ii. each generating unit's in-service date;
 - iii. each generating unit's projected shut-down date (if any);
 - iv. each generating unit's summer peak generating capacity;
 - v. each generating unit's winter peak generating capacity;
 - vi. each generating unit's minimum generating level
 - vii. each generating unit's primary fuel;
 - viii. each generating unit's net generation in each of the last three years; and
 - ix. each generating unit's per-MWH fuel and variable operating cost in each of the last three years.
- b) For each of the loads listed, please provide the summer peak load and the winter peak load in each of the past three years, and please also provide the annual energy consumed by each of the loads in each of the past three years.
- c) For each of the interconnections listed:

- i. please provide net summer MW and MWH supplied over the interconnection and the direction of the net supply;
- ii. please provide net winter MW and MWH supplied over the interconnection and the direction of the net supply; and
- iii. please explain how winter and summer are defined.
- d) What level of generation reserve margin is considered adequate to provide reliable supply in the Province?
- e) Please provide a copy of any planning criteria used in the Province to plan for reliable electric generation supply.

Interrogatory No. 43

Ref. The System Impact Assessment Report For the Proposed Installation of Series Capacitors in the 500kV Circuits between the Bruce Complex & Nanticoke GS, CAA ID No. 2005-200, as referenced in Hydro One Networks' letter of November 26, 2007 to C. Pappas with attachment (see Attachment 1).

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

On page 5, the report discusses a load flow analysis of the system with all eight Bruce nuclear units and all committed wind generation projects.

- a) The report states: "Analysis has shown that regardless of the level of series compensation installed, it would not be possible to accommodate all eight Bruce units and all of the committed wind-turbine projects without having to employ generation rejection in response to a double-circuit contingency involving the 500kV circuits B560V & B561M."
 - i. Please describe and list the series compensation assumptions studied in order to reach this conclusion.
 - ii. Please estimate by substation the cost of installing the series compensation facilities that were assumed in the studies referenced in part i above.
 - iii. Please describe and list the "near-term measures" referenced in slide 38 of 43 of Panel One of the Technical Conference of October 15, 2007 that were included in the studies performed to reach this conclusion.
 - iv. Please provide saved cases in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in studying the series compensation assumptions studied in order to reach this conclusion.

- b) The report lists two alternatives, the second of which has two sub-options, for adding new transmission facilities required to accommodate all eight Bruce units.
- i. Please provide the estimated cost of Alternative 1, a new 500kV single circuit between Longwood TS and Middleport TS and all related facilities, and workpapers documenting the calculation of those costs.
 - ii. Please provide the estimated cost of Alternative 2, option i, a new 500kV double circuit between the Bruce Complex and Milton TS and all related facilities, and workpapers documenting the calculation of those costs.
 - iii. Please provide the estimated cost of Alternative 2, option ii, a new 500kV double circuit between the Bruce Complex and Essa TS and all related facilities, and workpapers documenting the calculation of those costs.
 - iv. Please provide a saved case in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in studying Alternative 1.
 - v. Please provide a saved case in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in studying Alternative 2, option i.
 - vi. Please provide a saved case in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in studying Alternative 2, option ii.

Hydro One Networks Inc.

8th Floor, South Tower
483 Bay Street
Toronto, Ontario M5G 2P5
www.HydroOne.com

Tel: (416) 345-5913
Fax: (416) 345-5866
glen.macdonald@HydroOne.com

Filed: March 10, 2008
EB-2007-0050
Pollution Probe Int. No. 43
Attachment 1



Glen MacDonald

Senior Advisor – Regulatory Research and Administration
Regulatory Affairs

BY REGULAR MAIL AND EMAIL

November 26, 2007

Mr. Chris Pappas
RR 2
Meaford, ON.
N4L 1W6

Dear Mr. Pappas:

EB-2007-0050 – Hydro One Networks' Section 92 Bruce to Milton Transmission Reinforcement Application – Response to Your November 16, 2007 Email

I am responding to your email request of Nov. 16, 2007. Hydro One Networks' understands that the suggested discussion with Mr. Falvo of the IESO, which you reference in the transcript of the Technical Conference, did not in fact occur. As such, although your request is outside of the time periods set by the Board for the Technical Conference or for the future interrogatory process, Hydro One asked the IESO, and they have agreed, to provide the links to the information you have requested on the IESO's website.

Please see the attached table.

We trust this is satisfactory.

Sincerely,

ORIGINAL SIGNED BY GLEN MACDONALD

Glen MacDonald

c. Ms. Kirsten Walli, Ontario Energy Board
EB-2007-0050 intervenors (by email only)

Attach.

Document Access	Other Access	Links to Assessments, Reports & Manuals
IESO Public Website	Pre-filed evidence	Connection Assessments
		1. Bruce to Milton SIA http://www.ieso.ca/imoweb/pubs/caa/SIAFinalReport_%202006-250.pdf EB-2007-0050 exhibit B-6-2 Bruce to Milton Diagrams http://www.ieso.ca/imoweb/pubs/caa/Diagrams_2006-250.pdf EB-2007-0050 exhibit B-6-2
IESO Public Website		2. Series Compensation SIA http://www.ieso.ca/imoweb/pubs/caa/caa_SIAReport_2005-200.pdf Series Compensation Appendix 1 http://www.ieso.ca/imoweb/pubs/caa/caa_SI%20Diagrams%20Part%201_2005-200.pdf Series Compensation Addendum http://www.ieso.ca/imoweb/pubs/caa/caa_SIAAddendum_2005-200.pdf Series Compensation Appendix 2 http://www.ieso.ca/imoweb/pubs/caa/caa_SIADiagrams%20Part%202-2005-200.pdf
IESO Public Website	Pre-filed evidence	IESO Outlooks and References
		3. Ontario Reliability Outlook – March 2007 EB-2007-0050 exhibit B-6-4 Pages 3, 9, and 12 http://www.ieso.ca/imoweb/pubs/marketReports/ORO_Report-2007-2-1.pdf
IESO Public Website	-	4. Ontario Reliability Outlook – June 2006 Pages 3-4, 13-15, and 17 http://www.ieso.ca/imoweb/pubs/marketReports/ORO_Report-2006-1-2.pdf

Document Access	Other Access	Links to Assessments, Reports & Manuals
IESO Public Website	-	5. Ontario Reliability Outlook - February 2006 Pages 3, 8, 11, and 14 http://www.ieso.ca/imoweb/pubs/marketReports/ORO_Report-2006-1-1.pdf
IESO Public Website	-	6. IESO 10-Year Outlook – January 2006 to December 2015, - August 15, 2005 Pages 27-28, 35, 40-41, 43-48, 51-52, 57, 60-61, and 73 http://www.ieso.ca/imoweb/pubs/marketReports/10YearOutlook_2005jul.pdf

Interrogatory No. 44

Ref. The System Impact Assessment Report For the Proposed Installation of Series Capacitors in the 500kV Circuits between the Bruce Complex & Nanticoke GS, CAA ID No. 2005-200, as referenced in Hydro One Networks' letter of November 26, 2007 to C. Pappas with attachment (see Pollution Probe Interrogatory No. 43, Attachment 1).

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

On page 6 of the report, reference is made to the use of thyristor controlled series capacitors ("TCSCs") as a mitigating measure regarding sub-synchronous resonance.

- a) What consideration has been given to the use of TCSCs on the electric system in Ontario?
- b) Please provide a copy of any reports, analyses, conclusions etc. related to such consideration.
- c) Please describe whether the use of TCSCs is considered desirable or undesirable, and please also explain why.

Interrogatory No. 45

Ref. The Addendum to The System Impact Assessment Report For the Proposed Installation of Series Capacitors in the 500kV Circuits between the Bruce Complex & Nanticoke GS, CAA ID No. 2005-200, as referenced in Hydro One Networks' letter of November 26, 2007 to C. Pappas with attachment (see Pollution Probe Interrogatory No. 43, Attachment 1).

Issue Number 2.0

2.0 Issue: Project Alternatives

Request

On page 4 of the addendum, reference is made to increasing the clearances over circuits B4V & B5V between Hanover TS and Orangeville TS so as to allow the maximum conductor operating temperature to be increased from 104°C to 127°C and thus increasing its LTE rating. Please provide the estimated cost of increasing the clearances on these circuits and provide workpapers documenting the calculation of these costs.

Interrogatory No. 46**Ref.** Exh. B/T 6/S 5, Appendix 2**Issue Number 2.0****2.0 Issue:** Project Alternatives**Request**

- a) On page 3, it states that 30% series compensation may be used as a stop-gap measure to expand transmission capability to accommodate eight Bruce units if approvals for the new 500 kV line are delayed.
 - i. Please provide a copy of any studies, analyses, results, or reports produced as a result of the IESO's, the OPA's, and/or Hydro One's assessment of series compensation.
 - ii. Please provide a saved case in PTI-format, compatible with Siemen's PSS/E version 30, for the load flow studies performed by or for Hydro One, the OPA, and/or the IESO in studying the use of 30% series compensation.
- b) On page 3, it states that interim measures, such as generation rejection and series compensation are not alternatives to the long-term solution since they increase the risk to the security and reliability of the power system.
 - i. Please provide a copy of any studies, analyses, results, or reports produced as a result of the IESO's, the OPA's and/or Hydro One's assessment of generation rejection.
 - ii. Please describe how the use of series compensation increases the risk to the security and reliability of the power system, and please also provide a copy of any letters, reports, studies, analyses, etc. which support this opinion.
 - iii. Please describe how the use of generation rejection increases the risk to the security and reliability of the power system, and please also provide a copy of any letters, reports, studies, analyses, etc. which support this opinion.
- c) On page 3, it states that Hydro One has expressed concern regarding the system and equipment risks of using series compensation. Please provide a copy of the document(s) in which these concerns are expressed.
- d) On page 3, it states that the OPA will retain third party experts to undertake a due diligence study to assess the suitability and risks associated with the use of series compensation for this application.
 - i. Please describe the status of this due diligence study.
 - ii. Please provide a copy of any reports, analyses, recommendations etc. that have been prepared as a result of or are related to this due diligence study.

- e) On page 3, it states that the use of generation rejection is subject to NPCC approval.
- i. Has NPCC ever rejected a request to use generation rejection in the Province? If yes, please provide a copy of the request(s) and the NPCC response(s) regarding the request(s).
 - ii. Has NPCC ever rejected a request to use generation rejection for generation located in the Bruce Complex? If yes, please provide a copy of the request(s) and the NPCC response(s) regarding the request(s).
 - iii. Please describe if generation rejection has ever been used for generation located in the Bruce Complex. If yes, please provide a copy of the request and the NPCC response regarding each such use of generation rejection.