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Regulatory Affairs

BY COURIER

March 20, 2008

Richard P. Stephenson
Paliare Roland Rosenberg Rothstein LLP
250 University Ave
Toronto ON
M5H 3E5

Dear Mr. Stephenson:

EB-2007-0050 – Hydro One Networks' Section 92 Bruce - Milton Transmission Reinforcement Application – Hydro One Networks' Response to Interrogatory Questions from Power Workers' Union

I am attaching a paper copy of the responses to the interrogatory questions from Power Workers' Union.

A text searchable Acrobat file is being emailed to you and all other Intervenors including the Ontario Energy Board today. The revised response will be available for download from the Hydro One Networks regulatory website.

Sincerely,

ORIGINAL SIGNED BY ANDREW PORAY FOR SUSAN FRANK

Susan Frank

c. Kirsten Walli, Ontario Energy Board
EB-2007-0050 Intervenors (by email)
M. Heinz, Ontario Power Authority (by email)

Power Workers Union INTERROGATORY #1 List 1

Interrogatory

Issue Number: 1.1
Issue: Has the need for the proposed project been established?

Ref.(a): Press Release by Bruce Power in Tiverton, Ontario dated January 10, 2008 in regard to "Reactor Power Increased on Unit 5**"** cited at http://www.brucepower.com/pagecontent.aspx?navuid=1211&dtuid=83632

Ref(b): Exh B/T1/S1/ P.3/lines 13 to 16

Ref (c): Exh B/T1/S1/ P.3/lines 16 to 18

Preamble:

(A) Ref.(a) states:

"…Reactor power on Unit 5 was raised by **three per cent** this week, an increase that is expected to produce enough new electricity to power a city the size of Owen Sound, Ont. Unit 5 becomes the third Bruce B Unit to be uprated following fuel-loading modifications that allow operators to safely raise the reactor power from 90 to 93 per cent. Earlier power hikes on Units 6 and 7 resulted in an approximately **30 megawatt** increases in output…. Reactor power on Unit 8 is expected to be increased by 2009…"

(B) Ref.(b) indicates that Hydro One has updated the current and expected generation capacity in its updated evidence filed November 30, 2007. The updated evidence states that the generation capacity at the Bruce Power Complex currently totals 4,700 MW (compared to 5060MW filed in the original evidence, i.e., four 980MW units at Bruce B and two 750MW units at Bruce A). Ref (b) also indicates a total of 700 MW of existing and committed wind generation through the Provincial Government's renewable energy initiatives by 2009 (compared to the original figure of 725.

(C) Ref.(C) indicates that projected in-service date of Unit 1 and 2 at Bruce A is 2009.

Questions:

Please state in megawatts the 3% increase in reactor power of Unit 5 of Bruce B stated in Ref (a) above

Response

Hydro One is not aware of the specific details of the Bruce Power Press release cited in Ref (a) and is not able to provide the requested increase in reactor power. In the original evidence (see Exhibit B, Tab 1, Schedule 1, page 3, lines 13-15 of the original evidence), the Bruce B units were assumed to have a net capacity of 890 MW. Since the original filing, this evidence has been updated by the OPA based on information provided by Bruce Power. The net capacity of each of the Bruce B units is now assumed to be 850 MW. The determination of the need for the Project is based on Bruce Power's plan to increase the net output of each Bruce B unit to that 850 MW level by 2013 (see Day 1 Technical Conference Presentation Exhibit KT.1, slides 14-16 and Transcript page 15). The Bruce A units are assumed to have a capacity of 750 MW each. The increase of power for Unit 5 noted in Ref (a) would be consistent with the plan to increase the capacity of the Bruce B units.

Power Workers Union INTERROGATORY #2 List 1

Interrogatory

Issue Number: 1.1
Issue: Has the need for the proposed project been established?

Ref.(a): Press Release by Bruce Power in Tiverton, Ontario dated January 10, 2008 in regard to "Reactor Power Increased on Unit 5**"** cited at http://www.brucepower.com/pagecontent.aspx?navuid=1211&dtuid=83632

Ref(b): Exh B/T1/S1/ P.3/lines 13 to 16

Ref (c): Exh B/T1/S1/ P.3/lines 16 to 18

Preamble:

(A) Ref.(a) states:

"…Reactor power on Unit 5 was raised by **three per cent** this week, an increase that is expected to produce enough new electricity to power a city the size of Owen Sound, Ont. Unit 5 becomes the third Bruce B Unit to be updated following fuel-loading modifications that allow operators to safely raise the reactor power from 90 to 93 per cent. Earlier power hikes on Units 6 and 7 resulted in an approximately **30 megawatt** increases in output…. Reactor power on Unit 8 is expected to be increased by 2009…"

(B) Ref.(b) indicates that Hydro One has updated the current and expected generation capacity in its updated evidence filed November 30, 2007. The updated evidence states that the generation capacity at the Bruce Power Complex currently totals 4,700 MW (compared to 5060MW filed in the original evidence, i.e., four 980MW units at Bruce B and two 750MW units at Bruce A). Ref (b) also indicates a total of 700 MW of existing and committed wind generation through the Provincial Government's renewable energy initiatives by 2009 (compared to the original figure of 725.

(C) Ref.(C) indicates that projected in-service date of Unit 1 and 2 at Bruce A is 2009.

Questions:

Please state in megawatts the total increase in reactor power of all Bruce A and B units achieved over the original capacity resulting from fuel-Loading modifications stated in Ref (a)

Response

Hydro One is not aware of the specific details of the Bruce Power Press release cited in Ref (a), and is not able to provide the information concerning reactor power increases of the Bruce units. Please refer to the response to PWU Interrogatory 1 for MW capacities assumed for the Bruce units in determining the need for the Project.

With Bruce A units each with net output of 750 MW, the total generation net capacity at Bruce Power Complex used for planning purposes is 6400 MW.

Power Workers Union INTERROGATORY #3 List 1

Interrogatory

Issue Number: 1.1
Issue: Has the need for the proposed project been established?

Ref.(a): Press Release by Bruce Power in Tiverton, Ontario dated January 10, 2008 in regard to "Reactor Power Increased on Unit 5**"** cited at http://www.brucepower.com/pagecontent.aspx?navuid=1211&dtuid=83632

Ref(b): Exh B/T1/S1/ P.3/lines 13 to 16

Ref (c): Exh B/T1/S1/ P.3/lines 16 to 18

Preamble:

(A) Ref.(a) states:

"…Reactor power on Unit 5 was raised by **three per cent** this week, an increase that is expected to produce enough new electricity to power a city the size of Owen Sound, Ont. Unit 5 becomes the third Bruce B Unit to be uprated following fuel-loading modifications that allow operators to safely raise the reactor power from 90 to 93 per cent. Earlier power hikes on Units 6 and 7 resulted in an approximately **30 megawatt** increases in output…. Reactor power on Unit 8 is expected to be increased by 2009…"

(B) Ref.(b) indicates that Hydro One has updated the current and expected generation capacity in its updated evidence filed November 30, 2007. The updated evidence states that the generation capacity at the Bruce Power Complex currently totals 4,700 MW (compared to 5060MW filed in the original evidence, i.e., four 980MW units at Bruce B and two 750MW units at Bruce A). Ref (b) also indicates a total of 700 MW of existing and committed wind generation through the Provincial Government's renewable energy initiatives by 2009 (compared to the original figure of 725.

(C) Ref.(C) indicates that projected in-service date of Unit 1 and 2 at Bruce A is 2009.

Questions:

Assuming further uprating such as that planned for Unit 8 in 2009 indicated in Ref (a) above is carried out, please state the total generation capacity of all the 8 units at Bruce A and B.

Response

Hydro One is not aware of the specific details of the Bruce Power Press release cited in Ref (a). The determination of the need for the Project includes Bruce Power's plan to increase the net output of each Bruce B unit to 850 MW by 2013. The Bruce A units are assumed to have a net capacity of 750 MW each. For planning purposes, the total net generation capacity at the Bruce Nuclear Plant is assumed to total 6400 MW by 2013.

Power Workers Union INTERROGATORY #4 List 1

Interrogatory

Issue Number: 1.1
Issue: Has the need for the proposed project been established?

Ref.(a): Press Release by Bruce Power in Tiverton, Ontario dated January 10, 2008 in regard to "Reactor Power Increased on Unit 5**"** cited at http://www.brucepower.com/pagecontent.aspx?navuid=1211&dtuid=83632

Ref(b): Exh B/T1/S1/ P.3/lines 13 to 16

Ref (c): Exh B/T1/S1/ P.3/lines 16 to 18

Preamble:

(A) Ref.(a) states:

"…Reactor power on Unit 5 was raised by **three per cent** this week, an increase that is expected to produce enough new electricity to power a city the size of Owen Sound, Ont. Unit 5 becomes the third Bruce B Unit to be uprated following fuel-loading modifications that allow operators to safely raise the reactor power from 90 to 93 per cent. Earlier power hikes on Units 6 and 7 resulted in an approximately **30 megawatt** increases in output…. Reactor power on Unit 8 is expected to be increased by 2009…"

(B) Ref.(b) indicates that Hydro One has updated the current and expected generation capacity in its updated evidence filed November 30, 2007. The updated evidence states that the generation capacity at the Bruce Power Complex currently totals 4,700 MW (compared to 5060MW filed in the original evidence, i.e., four 980MW units at Bruce B and two 750MW units at Bruce A). Ref (b) also indicates a total of 700 MW of existing and committed wind generation through the Provincial Government's renewable energy initiatives by 2009 (compared to the original figure of 725.

(C) Ref.(C) indicates that projected in-service date of Unit 1 and 2 at Bruce A is 2009.

Questions:

Please explain whether or not Hydro One's prefiled evidence and updated evidence has taken into consideration the increase in the total generation capacity of all the 8 units resulting from the increase in the reactor power indicated in Ref (a) and, therefore, the impact on the transmission capacity required out of the Bruce area assumed in Hydro One's current application.

Response

Hydro One is not aware of the specific details of the Bruce Power Press release cited in Ref (a). Increases in Bruce B unit capacity have been taken into account in the determination of need for this Project. Please refer to the response to PWU Interrogatory 3 for MW capacities assumed for the Bruce units.

Power Workers Union INTERROGATORY #5 List 1

Interrogatory

Issue Number: 1.1
Issue: Has the need for the proposed project been established?

Ref.(a): Press Release by Bruce Power in Tiverton, Ontario dated January 10, 2008 in regard to "Reactor Power Increased on Unit 5**"** cited at http://www.brucepower.com/pagecontent.aspx?navuid=1211&dtuid=83632

Ref(b): Exh B/T1/S1/ P.3/lines 13 to 16

Ref (c): Exh B/T1/S1/ P.3/lines 16 to 18

Preamble:

(A) Ref.(a) states:

"…Reactor power on Unit 5 was raised by **three per cent** this week, an increase that is expected to produce enough new electricity to power a city the size of Owen Sound, Ont. Unit 5 becomes the third Bruce B Unit to be updated following fuel-loading modifications that allow operators to safely raise the reactor power from 90 to 93 per cent. Earlier power hikes on Units 6 and 7 resulted in an approximately **30 megawatt** increases in output…. Reactor power on Unit 8 is expected to be increased by 2009…"

(B) Ref.(b) indicates that Hydro One has updated the current and expected generation capacity in its updated evidence filed November 30, 2007. The updated evidence states that the generation capacity at the Bruce Power Complex currently totals 4,700 MW (compared to 5060MW filed in the original evidence, i.e., four 980MW units at Bruce B and two 750MW units at Bruce A). Ref (b) also indicates a total of 700 MW of existing and committed wind generation through the Provincial Government's renewable energy initiatives by 2009 (compared to the original figure of 725.

(C) Ref.(C) indicates that projected in-service date of Unit 1 and 2 at Bruce A is 2009.

Questions:

Please provide explanation of the updated numbers in Ref (b) above compared to those filed in the original prefiled evidence with respect to the generation capacity in the Bruce area.

Response

The following table summarizes the changes to the forecast amount of Bruce area generation between the original and updated versions of the evidence.

	Original Evidence (MW)	Updated Evidence (MW)	Difference (MW)	Cause of Difference
Existing Nuclear Generation	5060	4700	-360	Bruce B Unit capacities revised downward (latest information from Bruce Power)
Future Nuclear Generation	6560	6400	-160	Bruce B future capacities revised from 890 MW (Bruce Power SIA request) to 850 MW by 2013 (latest information from Bruce Power)
Existing and Committed Wind Generation	725	700	-25	Blue Highlands Wind Farm no longer being developed; added existing and committed small wind developments in the Bruce area
Planned Future Wind Generation	1000	1000	0	No change

Power Workers Union INTERROGATORY #6 List 1

Interrogatory

Issue Number: 1.1
Issue: Has the need for the proposed project been established?

Ref.(a): Press Release by Bruce Power in Tiverton, Ontario dated January 10, 2008 in regard to "Reactor Power Increased on Unit 5**"** cited at http://www.brucepower.com/pagecontent.aspx?navuid=1211&dtuid=83632

Ref(b): Exh B/T1/S1/ P.3/lines 13 to 16

Ref (c): Exh B/T1/S1/ P.3/lines 16 to 18

Preamble:

(A) Ref.(a) states:

"…Reactor power on Unit 5 was raised by **three per cent** this week, an increase that is expected to produce enough new electricity to power a city the size of Owen Sound, Ont. Unit 5 becomes the third Bruce B Unit to be updated following fuel-loading modifications that allow operators to safely raise the reactor power from 90 to 93 per cent. Earlier power hikes on Units 6 and 7 resulted in an approximately **30 megawatt** increases in output…. Reactor power on Unit 8 is expected to be increased by 2009…"

(B) Ref.(b) indicates that Hydro One has updated the current and expected generation capacity in its updated evidence filed November 30, 2007. The updated evidence states that the generation capacity at the Bruce Power Complex currently totals 4,700 MW (compared to 5060MW filed in the original evidence, i.e., four 980MW units at Bruce B and two 750MW units at Bruce A). Ref (b) also indicates a total of 700 MW of existing and committed wind generation through the Provincial Government's renewable energy initiatives by 2009 (compared to the original figure of 725.

(C) Ref.(C) indicates that projected in-service date of Unit 1 and 2 at Bruce A is 2009.

Questions:

Please provide an update, if any, with respect to the in-service date of 2009 indicated in Ref (C).

Response

At this time, there is no change in the projected in-service dates of Unit 1 and 2. These units are expected to be connected to the power grid in 2009.

Power Workers Union INTERROGATORY #7 List 1

Interrogatory

Issue Number: 1.4
Issue: Is the project suitably chosen and sufficiently scalable so as to meet all reasonably foreseeable future needs of significantly increased or significantly reduced generation in the Bruce area?

Ref (a): Bruce Power New Build Project Environmental Assessment: Submission to Canadian Nuclear Safety Commission, January 2007, cited at (http://www.brucepower.com/uc/GetDocument.aspx?docid=2339)

Preamble:

Ref (a) indicates that Bruce Power has launched an environmental assessment (EA) into the construction of new reactors and that the Project description submitted in January 2007 was accepted the Canadian Nuclear Safety Commission (CNSC). Further, it is indicated that the Bruce New Build Project would be sited entirely within the existing Bruce Power site, and would involve the construction and operation of several new nuclear reactors; these new reactors would generate up to 4000MW MW of electricity. The approximate inservice date for the Bruce New Build is indicated as 2016.

Questions:

Please explain the contribution, if any, that the applied for Bruce-Milton transmission reinforcement project will make in accommodating the potentially significant increase in generation in the Bruce area if and when the Bruce New Build project in Ref (a) is implemented. In answering this question, please consider different scenarios including, but not limited to, outages in the Bruce A and B units.

Response

The proposed Bruce to Milton project is designed to meet the committed and planned generation additions in the Bruce area. Additional generation in the Bruce Area beyond that outlined in the application, such as the construction of Bruce C units in increments of 1000 MW, would require additional transmission capability beyond the capacity of the proposed new transmission line. At an appropriate time, a planning study would have to be conducted to determine the transmission reinforcement requirements. Such a study has not been conducted to date. The proposed Bruce to Milton project would provide the

flexibility of accommodating Bruce New Build project if a decision is made to proceed with the new build project instead of refurbishing the Bruce B units.

Please also refer to Hydro One's response to Board Staff Interrogatory # 1.8 (iii).

Power Workers Union INTERROGATORY #8 List 1

Interrogatory

Issue Number: 3.1
Issue: Are the proposed near term and interim measures as outlined in the application appropriate?

Ref (a): Exh B/T6/S5/ Appendix 2 (Letter dated December 22, 2006 from OPA)
Ref (b) Exh B/ T 6/S 5/ Appendix 3 (Hydro One letter to the OPA dated January 17, 2007)

Preamble

Ref (a) indicates that the OPA recommended that Hydro One implement certain near-term measures (uprating existing 230 kV circuits from Hanover to Orangeville, and installing static or dynamic shunt capacitors), and interim measures (installing generation rejection for the Bruce generation, and possibly, installing series compensation facilities on the Bruce to Longwood and Longwood to Nanticoke 500 kV circuits) in recognition of the fact that the new 500 kV transmission line could not be built by 2009, when additional generation is added to the area.

In Ref (b), Hydro One indicated its commitment to proceed with these [Near term and Interim] measures, other than series compensation which is pending the results of a due diligence study to be undertaken by the OPA.

Questions:

Is Generation Rejection a general practice in the design of transmission systems? Please Explain

Response

Generation rejection is not a general practice in the design of transmission systems.

Other than the Bruce Special Protection System, there is only one other special protection system in Ontario whose failure could have a widespread adverse effect on the power system. Although there are several generation schemes in Ontario to mitigate localized congestion, a failure of any of these schemes will not have a widespread adverse effect on the power system.

As with other forms of special protection systems (SPS), generation rejection "shall be used judiciously and when employed, shall be installed, consistent with good system design and operating policy" [NPCC A-2 at page 2]. The decision to employ an SPS takes into account the complexity of the scheme, the consequences of correct or incorrect operation, and its benefits.

Please also refer to OEB Staff response 3.2.

Power Workers Union INTERROGATORY #9 List 1

Interrogatory

Issue Number: 3.1
Issue: Are the proposed near term and interim measures as outlined in the application appropriate?

Ref (a): Exh B/T6/S5/ Appendix 2 (Letter dated December 22, 2006 from OPA)
Ref (b) Exh B/ T 6/S 5/ Appendix 3 (Hydro One letter to the OPA dated January 17, 2007)

Preamble

Ref (a) indicates that the OPA recommended that Hydro One implement certain near-term measures (uprating existing 230 kV circuits from Hanover to Orangeville, and installing static or dynamic shunt capacitors), and interim measures (installing generation rejection for the Bruce generation, and possibly, installing series compensation facilities on the Bruce to Longwood and Longwood to Nanticoke 500 kV circuits) in recognition of the fact that the new 500 kV transmission line could not be built by 2009, when additional generation is added to the area.

In Ref (b), Hydro One indicated its commitment to proceed with these [Near term and Interim] measures, other than series compensation which is pending the results of a due diligence study to be undertaken by the OPA.

Questions:

What are, if any, the safety, reliability, and security risks of generation rejection that are particularly relevant to nuclear generation?

Response

The CANDU nuclear units may "poison out" and be unavailable for an extended period of time if they cannot be quickly reconnected back to the power system following a sudden disconnection. When disconnection does occur, the nuclear units rely on several protection and safety systems to function correctly to control the output of the reactor and ensure ongoing safe operation. When employing generation rejection, the nuclear units become exposed to sudden disconnection following transmission system faults or contingencies. This would not occur had generation rejection not been employed and thus creates an additional risk to the safe operation of the unit and the power system as a whole.

This is one reason why generation rejection is not considered acceptable to satisfy long-term need requirements. Please refer to response to Board Staff Interrogatory 3.2 for additional information.

Power Workers Union INTERROGATORY #10 List 1

Interrogatory

Issue Number: 3.1

Issue: Are the proposed near term and interim measures as outlined in the application appropriate?

Ref (a): Exh B/T6/S5/ Appendix 2 (Letter dated December 22, 2006 from OPA)
Ref (b) Exh B/ T 6/S 5/ Appendix 3 (Hydro One letter to the OPA dated January 17, 2007)

Preamble

Ref (a) indicates that the OPA recommended that Hydro One implement certain near-term measures (uprating existing 230 kV circuits from Hanover to Orangeville, and installing static or dynamic shunt capacitors), and interim measures (installing generation rejection for the Bruce generation, and possibly, installing series compensation facilities on the Bruce to Longwood and Longwood to Nanticoke 500 kV circuits) in recognition of the fact that the new 500 kV transmission line could not be built by 2009, when additional generation is added to the area.

In Ref (b), Hydro One indicated its commitment to proceed with these [Near term and Interim] measures, other than series compensation which is pending the results of a due diligence study to be undertaken by the OPA.

Questions:

What are, if any, the safety, reliability and security risks posed by the use of the proposed near term and interim measures for periods longer than those proposed in Hydro One's application?

Response

Please refer to response Board Staff Interrogatory 3.2.