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July 4, 2008

File 15668

**VIA COURIER AND EMAIL**

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(1934 - 2006)

Dear Ms. Walli:

**RE: Transmission Reinforcement Project - Bruce-Milton Project  
EB-2007-0050**

As you are aware, we act as counsel to Power Workers' Union in connection with these proceedings. Enclosed please find Submissions submitted on behalf of Power Workers' Union, and filed pursuant to the Board's Procedural Order and Practice Direction.

Ten hard copies of these interrogatories have been forwarded to the Board via courier delivery, and hard copies have been mailed to participants who have not registered email addresses.

An electronic copy in searchable PDF format has been emailed to the Board as well as all parties with registered email addresses. The Submissions have been submitted to the Board via *RESS* filing.

We trust this is satisfactory.

Yours very truly,

**PALIARE ROLAND ROSENBERG ROTHSTEIN LLP**

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[Doc 694900](#)



**EB-2007-0050**

**IN THE MATTER OF the Ontario Energy Board Act 1998,  
S.O.1998, c.15, (Schedule B) (the “Act”);**

**AND IN THE MATTER OF an Application by Hydro One  
Networks Inc. pursuant to section 92 of the Act, for an Order or  
Orders granting leave to construct a transmission  
reinforcement project between the Bruce Power Facility and  
Milton Switching Station, all in the Province of Ontario.**

**Submissions of the Power Workers’ Union (“PWU”)**

**INTRODUCTION**

1. The PWU represents a large portion of the employees working in Ontario’s electricity industry and has utmost interest in regulatory proceedings that impact the electricity industry and the provision of reliable, secure, safe and reasonably priced electricity for customers.
  
2. Consistent with this interest, the PWU supports Hydro One Network Inc.’s (HONI or the “Applicant”) application for leave-to-construct approximately 180 kilometres of double-circuit 500 Kilovolt (“kV”) electricity transmission line adjacent to the existing transmission corridor (500 kV and/or 230 kV) extending from the Bruce Power Facility in Kincardine Township to HONI’s Milton Switching Station in the town of Milton (the “Bruce-Milton project”). HONI’s application was originally filed on March 29, 2007 and an amended application was filed on November 30, 2007. It is the Applicant’s position that the project, estimated to cost \$635 million, is required to meet the increased need for transmission capacity associated with the development of wind power in the Bruce area and the return to service of nuclear units at the Bruce Power Facility.

3. The PWU commends the Ontario Energy Board (OEB or the “Board”) and their supporting staff in their success in striking a balance between efficiency and fairness throughout the process in accommodating needs of all involved, providing access to information sought by participants, guiding participants through the process, while maintaining a reasonable schedule and allowing for fair participation by all involved.

4. The PWU supports the submissions-in-chief made by the Applicant in support of its application. These submissions do not seek to repeat those comprehensive submissions. Rather, the PWU seeks to focus on particular issues which, in its view, are critical to the Board’s disposition of the application.

5. The PWU submits that there are three broad principles that provide context to the Board’s decision on this application:

- a. The distinct roles and jurisdiction of the various entities having authority over the Ontario electricity system in general, and over the specific matters dealt with in this application in particular;
- b. The relationship between the current proceeding dealing with HONI’s proposed Bruce-Milton project and the Board’s proceeding dealing with the Ontario Power Authority’s (“OPA”) Integrated Power System Plan (“IPSP”).
- c. The significance of government energy policy and directives in transmission planning vis-à-vis pure economic considerations.

6. When these principles are understood and applied, the PWU submits that much of the contentious evidence that consumed significant hearing time is rendered essentially irrelevant. The PWU submits that there is a straightforward



approach available to the Board to resolve the key issues in this proceeding which the Board, can, and should, take.

## **I. PROJECT NEED AND JUSTIFICATION**

7. The PWU submits that the Board's consideration and determination of the need and justification for the Bruce-Milton project, as established by the Applicant, cannot be undertaken without consideration of the distinct roles played by the various entities with regard to Ontario's power system, in particular:

- a. the Government of Ontario;
- b. the OPA;
- c. the IESO; and
- d. the OEB.

It is clear from the application that, in fact, it is the nature of the distinct roles played by these actors and their varying authority and powers set out in legislation, government directives, and regulatory instruments (e.g. the Transmission System Code) that render the proposed Bruce-Milton project a non-discretionary "must do" project for HONI, the need for which has been determined in forums beyond HONI's control. In this respect, it is important that the Board is cognizant of the fact that its own role, while important, is not an open-ended or unfettered one. The Board must respect the limits of its own jurisdiction and recognize the jurisdiction of the entities that directly or indirectly establish the need for the Bruce-Milton project.

8. Similarly, it is important that the Board recognize that HONI, in this application, is complying with the requirements of the Board's Transmission System Code ("TSC") and with the requirements of various other regulatory

agencies. As HONI's pre-filed evidence indicates<sup>1</sup>, the need for the proposed facilities is based on these requirements, including: maintaining acceptable voltage levels; operating equipment within established ratings; and, maintaining system stability under both normal operations and recognized transmission system contingency conditions. These requirements include those of the Northeast Power Coordinating Council ("NPCC"), North American Electric Reliability Corporation ("NERC"), and the OEB.

9. Under the *Electricity Act, 1998* (the "Act"), the OPA has the responsibility for long-term power system planning in Ontario. Under the Act, the Government of Ontario, through the auspices of the Minister of Energy, has the authority to, and has issued a series of Directives which not only require the OPA to plan for a specified mix of future generation and conservation and demand management resources and transmission enhancement but which also give the OPA the authority to execute and deliver specific components of the plan without any approval role for the Board. In fact, the Government and the OPA have exercised these statutory powers, and the manner in which they have done so has established the framework for this Application.

10. In particular, the Minister has issued the following Directives:

- a. By a Directive dated November 7, 2005<sup>2</sup>, the OPA was directed to "assume the responsibility for exercising all powers and performing all duties of the Crown, including powers and duties to be exercised and performed through the OEFC, as an agent of the Crown, (as buyer)", in respect of the contracts entered into as a result of the RES I procurement process, for 300 MW of renewable energy supply. The Directive further states that "the OPA is also hereby authorized and directed to execute

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<sup>1</sup> Exhibit B, Tab 1, Schedule 3

and deliver such agreements or ancillary documents, deeds and instruments in connection with, pertaining to, or arising out of, the assumption of the above noted agreements.”

- b. By a directive dated November 16, 2005<sup>3</sup>, the OPA was directed to enter into contracts with the proponents selected under the RES II procurement process for 1,000 MW of renewable resources.
- c. By a Directive dated March 21, 2006<sup>4</sup> the OPA was directed to develop a standard offer program for renewable energy projects in the Province, although as clarified in this proceeding the OPA has, in light of the system constraints in the Bruce area, decided not to issue further contracts for generation development in this area until there is sufficient transmission capacity available or there are other means to manage the limited transmission capacity.
- d. By a Directive dated June 13, 2006 the Minister established the goals that the OPA must plan to meet in its first IPSP<sup>5</sup>. That direction reflects clear policy choices made by the responsible government of the day. Among other things, those policy choices include:
  - i. The replacement of coal fired generation with generation from cleaner sources, in particular renewable resources including wind generation; meeting a target for 2010 of increasing the installed capacity of new renewable sources by 2,700 MW from the 2003 base, and increase the total capacity of renewable energy sources used in Ontario to 15,700 MW by 2025;

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<sup>2</sup> Exhibit B, Tab 6, Schedule 5, Appendix 8

<sup>3</sup> Exhibit B, Tab 6, Schedule 5, Appendix 9

<sup>4</sup> Exhibit B, Tab 6, Schedule 5, Appendix 11

<sup>5</sup> Exhibit B, Tab 6, Schedule 5, Appendix 7

- ii. Planning for nuclear capacity to meet base-load electricity requirements but limit the installed in-service capacity to 14,000 MW;
- iii. The strengthening of the transmission system of the province, in order to:
  - (1) Enable the achievement of the Minister's supply mix goals;
  - (2) Facilitate the development and use of renewable resources, including wind in parts of the province where the most significant development opportunities exist; and
  - (3) Promote system efficiency and congestion reduction and facilitate the integration of new supply, all in a manner consistent with the need to cost effectively maintain system reliability.

11. As the Board is well aware, it has a limited jurisdiction over the proposed IPSP produced by the OPA as a result of the Minister's Directive. The Board is undertaking a proceeding to review the proposed IPSP in discharge of that authority.

12. On the other hand, the Minister's pre-IPSP procurement directives are not subject to the review of the Board in any respect. In particular, the Board has no authority or role to play in assessing any aspect of the RES I, RES II or SOP Directives (the "pre-IPSP Directives"). Specifically:

- a. The Board has no jurisdiction to review the wisdom of the policy choices or economic prudence of the Minister in issuing the pre-IPSP Directives;

- b. The Board has no jurisdiction to review the judgments made by the OPA as to the manner in which the OPA seeks to perform its obligations under the pre-IPSP Directives, including:
  - i. The proportions of different types of renewable generation resources (i.e. hydraulic, wind, solar, etc) selected by the OPA to fulfill the pre-IPSP Directive requirements; or
  - ii. The locations in the province selected by the OPA as the appropriate sites for particular amounts of particular types of generation resources needed to fulfill the pre-IPSP Directives.

13. In other words, if the OPA decides that in order to fulfill pre-IPSP Directives it is appropriate to procure 1700 MW (or any other amount) in the Bruce area, the OEB has no jurisdiction to second guess the Minister's or the OPA's policy or economic wisdom of that decision.

14. The OPA's Analysis of Need<sup>6</sup> and a letter dated March 23, 2007<sup>7</sup> advising HONI to seek the necessary approvals for a new 500kV line to increase the transmission transfer capability from the Bruce to the GTA, indicate that there is a need to increase the long-term transmission capacity out of the Bruce area as quickly as possible both to permit full deployment of the committed generating resources and to enable the development of planned new renewable energy resources in the Bruce area consistent with the Government policies and directives. The OPA has determined that the present transmission system has the capability to transmit about 5,000 MW of generation from the Bruce area, which falls short by 3,100 MW when total existing, committed and planned generation in the Bruce area is taken into account.

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<sup>6</sup> Exhibit B, Tab 6, Schedule 5, Appendix 1

<sup>7</sup> Exhibit B, Tab 6, Schedule 5, Appendix 4

15. The PWU submits that opponents of the proposed Bruce-Milton Project make assumptions and calculations with respect to the transmission capacity required for the Bruce area that disregard the weight of the Ontario government's policy and Directives to the OPA, and the OPA's legal obligation to implement the Minister's Directives. In fact, as the cross-examination of the expert witness for Saugeen Ojibway Nations ("SON") by HONI revealed, it is clear that there is confusion and lack of clarity on the part of SON's expert witness with respect to the authority for the electricity system in Ontario and the weight of government Directives, and a lack of understanding of the limits of the Board's authority with respect to the OPA's authority relating to the pre-IPSP procurement of resources:

**MR. NETTLETON:** Do you know whether, sir, the IPSP proceeding is required to exempt out or exclude out ministerial directives?

**MR. RUSSELL:** I had not assumed that they had, but this ministerial directive does not bind that -- the discretion and latitude of the Board by very much, the language that I am seeing here. There's a great deal of latitude and flexibility left to the Board in the IPSP process to work within the broad outlines of this directive.

**MR. NETTLETON:** In any event, you didn't take any steps to inform yourself whether or not the IPSP process is one that can include or exclude the provisions of ministerial directives?

**MR. RUSSELL:** I had assumed that the ministerial directives were binding.

**MR. NETTLETON:** Were binding?

**MR. RUSSELL:** Yes.

**MR. NETTLETON:** So that they wouldn't be matters given consideration in the IPSP process?

**MR. RUSSELL:** The specific guidelines I had not assumed were subject to change by the Board, but within the guidelines it seems to me there is a great deal of latitude left to the Board by this letter.<sup>8</sup>

16. The PWU submits that, in assessing the "need" for the proposed new line, the Board must take the amount of generation to be placed in the Bruce area

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<sup>8</sup> Transcript, Vol.14, June 11, 2008, Page 132

essentially as a given. The PWU of course recognizes that in so far as the amount of generation in the Bruce area includes a forecast of future generation, the Board can and should evaluate the reasonableness of the forecast, while granting the appropriate deference to the expertise of the planning authority. That does not mean, however, that the Board has authority to review the type, quantity or location of generation to be procured by the OPA prior to the Board's approval of the IPSP and Procurement Processes. If the OPA says that it will fulfill its legal obligations under the pre-IPSP Directives by, *inter alia*, procuring 1700 MW of wind generation in the Bruce area, this Board has no authority to second guess that judgment, or to second guess whether the OPA will do what it says.

17. Moreover, the PWU submits that the assessment of "need" which must be undertaken by the Board necessarily requires determining whether 100% of the generation output can otherwise be conveyed by the existing infrastructure, or alternate proposals. If the answer obtained at the conclusion of that analysis is "no", then the need for the line has been established.

18. Critically, the uncontradicted record before the Board is that there is no dispute that there is no alternative proposed other than HONI's proposed new line, that is capable of meeting the transmission need created by the existing, committed and planned nuclear and wind generation. The PWU submits that the Board need proceed no farther than this in resolving the "need" question in favour of the proposed new line.

19. Insofar as the amount of generation coming from the Bruce area has not been determined by the various pre-IPSP Directives, the PWU recognizes the Board's mandate to consider the reasonableness of the generation forecast for the Bruce area in the context of the Directives, the capacity of the existing

transmission system in the area, as well as the viability of alternative projects with respect to impacts on rates and system reliability. In this respect, the PWU notes that opponents of the Project argue that a new line is not needed based on a set of assumptions they propose with respect to:

- a. the generation forecast;
- b. the appropriateness of using installed (nameplate) capacity for the purpose of transmission system planning;
- c. current versus historic capacity of the transmission system in the Bruce area; and
- d. the cost of locked-in energy.

#### **A. The Generation Forecast**

20. Opponents of the Bruce-Milton line argue that the proposed Bruce-Milton line is not needed partly because the OPA's generation forecast for the Bruce area is based on an assumption of a refurbishment of the Bruce B nuclear units and a projection of a potential 1,000 MW wind resources in the area. They argue that the refurbishment of the Bruce B units and the 1,000 MW potential wind are not "certain" and therefore the decision to plan for transmission capacity based on these assumptions is not realistic at this time and that this decision therefore should wait until the planned generation plays out in the IPSP review.

21. In its summary of evidence, Page 4, #a, for example, Pollution Probe states:

**"There is no need to rush approval of the proposed new line now prior to a more deliberate review of the OPA's Integrated Power System Plan. It may be prudent to speedily consider implementation of "interim" reinforcement measures, but not approving the proposed new line now on a fast-track basis will not hinder achievement of the Province's energy goals. Review of the IPSP will instead allow for more careful analysis of the likelihood of**



**Bruce B refurbishment and the options for wind resources in areas outside of the Bruce region."**

22. Mr. Russell, expert witness for SON, puts forth a similar argument with respect to both the 1,000 MW potential wind resources assumed in the current application and the refurbishment of Bruce B units. With respect to the former, Mr. Russell states:

**"As I understand the situation, this wind will be addressed in the IPSP, the amounts and locations. It will be facilitated by decisions made in the IPSP.**

**The general approach, as I understand it - and I am not very far into the IPSP - is that there's going to be a competitive acquisition, an RFP, from renewable resources.**

**So to the extent wind generators are spread throughout the province and want to bid, there's got to be some way to adjust their bid to reflect the differing costs of transmission upgrades associated with them. So that process has to play its way out..."<sup>9</sup>**

23. With respect to the refurbishment of the Bruce B units, Mr. Russell testified:

**MR. RUSSELL: Well, I understand that there is a directive, that up to 14,000 megawatts of nuclear generation will be addressed in the supply mix directive, as a part of the IPSP. Not more particular, but I understand up to 14,000 is part of the directive.**

**It seems to me that if something substantially less than the 14,000 megawatts is -- comes out of the IPSP proceeding, that that will affect the competition for building and refurbishing existing nukes and building new nukes. It can affect how much of it is going to appear at Bruce and continue to exist at Bruce.**

**So until that process plays out -- and I also understand that parties beyond the province of Ontario have some say in this -- it seems to me until that process plays out, we can't say with assurance that the assumed amounts of nuclear generation will be at Bruce for the long-term. If it's not, of course, we may be building transmission for facilities which ultimately do not continue to operate or are not built.**

**MR. PAPE: So you have taken, in your report you have said that those two aspects of the assumptions that Hydro has accepted as the basis for need - - that is the future wind, 1,000 megawatts and the refurbishment of Bruce B -- are not a proper foundation for establishing need for the new line.**

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<sup>9</sup> Transcript, Vol.14, P. 27

**You have provided some technical explanations in paragraphs 11 and 12 and some graphs at pages 11 and 12, and then, again, a discussion on page 15 where you explain the risks and the costs associated with constructing the line in the face of the uncertainties that you have been discussing –**

**MR. RUSSELL: Yes.**<sup>10</sup>

24. Similarly Mr. Russell testified that:

**MR. NETTLETON: My understanding, Mr. Russell, is that your evidence is that it's not reasonable to make assumptions relating to the refurbishment of Bruce B units, that a wait-and-see approach should be adopted?**

**MR. RUSSELL: That is more accurate, yes, yes, until it becomes more certain.”**<sup>11</sup>

25. The PWU submits that the “certainty” standard proposed by the opponents of the Application is unknown in law, and inappropriate in fact. By definition, the Board is considering circumstances which will occur in the future, where uncertainties are inevitable. This Board regularly makes important decisions premised on the basis of forecasts of future events (eg. forecasts of future throughput, in the case of gas and electricity LDCs; or forecasts of future generation output, in the case of the Board’s regulation of OPG’s prescribed assets). In such cases, the Board recognizes that the actual volumes may be higher or lower than the forecast, but proceeds when it is satisfied that the forecast is a reasonable one.

26. The PWU submits that there are two essentially interrelated questions that the Board should address in determining the relevance of the arguments by the opponents with respect to the validity of the OPA generation forecast:

- a. How does the current proceeding relate to the IPSP proceeding? Specifically, should/could the Board consider the current application as one that is predicated on the outcome of the IPSP proceeding?

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<sup>10</sup> Transcript, Vol. 14, p. 30, lines 4-28 and p. 31, lines 1-7

- b. To the extent that the Board considers the reasonableness of future generation forecast relevant to this application, how reasonable are the assumptions behind the nuclear and wind generation forecasts and also what is the significance of the energy policy of the Ontario government as reflected in Ministerial directives.

27. With respect to the first, the PWU submits that the Bruce-Milton project should neither be made conditional on the outcomes of the IPSP nor be regarded as a review of the IPSP, or a consideration of what the Board might consider to be a socially optimal configuration of the electricity system in order to meet the needs of Ontario electricity consumers. While this Application is a leave-to-construct application like any other, it is also unique in that its non-discretionary nature and urgency derive from government directives and the specific advice of the OPA to HONI. The OPA's March 23, 2007 letter to HONI has specifically advised that the Bruce-Milton project cannot wait for the approval of the IPSP:

**"...We believe that it is crucial that implementation work on the Bruce to Milton transmission line project proceed as quickly as possible. This project was included in the OPA's preliminary IPSP. Although this project is consistent with the IPSP, we don't believe that it can await the outcome of the IPSP proceeding if it is to meet the earliest possible in-service date, which Hydro One staff have indicated is December 1, 2011."**<sup>12</sup>

The PWU submits that HONI is fulfilling its obligation to commence the process of seeking approval for the project as quickly as possible as advised by the authority that is responsible for long-term power system planning in Ontario.

28. With respect to the reasonableness of the generation forecast for the Bruce area, it is important to distinguish between the assumptions made about the refurbishment of Bruce B units on the one hand, and the assumptions behind the 1,000 MW potential wind forecast for the Bruce area, on the other.

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<sup>11</sup> Transcript, Vol 14 , p.151 lines 7-12

<sup>12</sup> OPA Letter to HONI dated March 23, 2007, Exhibit B, Tab 6, Schedule 5, Appendix 4, Page 3

**(a) Bruce B Refurbishment**

29. The PWU submits that, on the basis of the evidence on the record, there is no rationale for assuming that the Bruce B units will not be refurbished or, that at minimum the nuclear generation capacity at Bruce will not be maintained through new nuclear generation (e.g. Bruce C) as part of the government's overall energy plan. In this respect, the Board should consider the following.

30. First, as stated earlier, the Minister's June 13, 2006 directive<sup>13</sup> instructs the OPA to plan for nuclear capacity to meet base-load electricity requirements but to limit the installed in-service capacity to 14,000 MW. The PWU submits that there has been a misunderstanding on the part of some parties with respect to whether the 14,000 MW figure is a ceiling or a floor. This became apparent, for example, during the cross examination of Mr. Russell, SON's expert witness, by HONI<sup>14</sup> and by the PWU<sup>15</sup>. What became clear was that Mr. Russell not only reads the 14,000 MW to mean a ceiling but also that he assumes, as the following excerpt shows, that the IPSP could end up with approved nuclear generation capacity of less than 14,000 MW with implications on the amount of nuclear capacity in the Bruce area, and by analogy, on whether the refurbishment of the Bruce B units will be on the table or not:

**MR. NETTLETON:** But what the OPA and what Hydro One have assumed, for purposes of this application, is that the level of generation out of the Bruce generated from nuclear facilities remains the same. It's either refurbished or its –

**MR. RUSSELL:** I think they framed it in terms of 6- to 7,000 megawatts would continue indefinitely, but they also had assumed that the province-wide nuclear installed capability would be 14,000, so -- in the IPSP.

**So you have really got to -- you've got a little lack of logic here, because if the plan turns out to be less than 14,000, particularly by a substantial**

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<sup>13</sup> Exhibit B, Tab 6, Schedule 5

<sup>14</sup> Transcript Vol. 14, June 11, 2008, pages 151-152

<sup>15</sup> Transcript Vol. 14, June 11, 2008, pages 217-218

amount, I think it's illogical to assume that all of it would come out of other sites.

**MR. NETTLETON:** Sir, you're suggesting that the plan is that something less than 14,000 --

**MR. RUSSELL:** Is a possibility, yes.

**MR. NETTLETON:** Even though the minister has directed the plan to be one that -- nuclear capacity to meet base load electricity requirements, but limit installed in-service capacity over the life of the plan to 14,000?

**MR. RUSSELL:** Yes. It's a ceiling. The 14,000 is a ceiling, as I read these words. I have also seen it characterized as "up to 14,000". You seem to be converting it to a floor in your question. Are we communicating or --<sup>16</sup>

31. The PWU pointed out during the cross-examination of Mr. Russell that depending upon the forecast level of baseload demand, the 14, 000 MW figure could be both a floor as well as a ceiling, given the direction that future nuclear capacity be sufficient to meet future base-load requirements.

32. To the extent that any doubt remained with respect to the future nuclear generation capacity at the Bruce, this doubt was removed by the Government's public announcement on June 16, 2008, confirming that "the Bruce Site will continue to provide approximately 6300 MW of baseload electricity through either the refurbishment of the Bruce B units or new Units at Bruce C."<sup>17</sup>

33. The PWU submits that it is apparent that opponents of the proposed Bruce-Milton line and their experts, in coming up with their proposals, have failed to understand that the Government, in its wisdom, has determined that it will maintain 14,000 MW nuclear capacity for the Province and will maintain nuclear generation in the Bruce area in the range of 6000-7000 MW. That policy

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<sup>16</sup> Transcript Vol. 14, page 153

<sup>17</sup> see: [http://www.infrastructureontario.ca/en/news/io\\_news/2008/Jun1608/Phase%202%20NR%20FINAL.pdf](http://www.infrastructureontario.ca/en/news/io_news/2008/Jun1608/Phase%202%20NR%20FINAL.pdf)

decision forms part of this proceeding's framework and is not subject to review by this Board.

**(b) 1,000 MW of "Potential" Wind**

34. As indicated above, the PWU submits that it is the OPA that has the authority to determine the type, quantity or location of generation to be procured by the OPA prior to the Board's approval of the IPSP and Procurement Process. This has been established by the Directives listed earlier, as well as by a Directive dated August 27, 2007 in relation to the procurement of up to 2,000 MW of Renewable Energy Supply, which the OPA identified as additional new renewable generation to come into service by 2015 from projects that are greater than 10 MW. In that directive, the Minister not only directs that the OPA procurement of these resources needs to occur by 2011 but also for the OPA to assume "the responsibility for exercising the powers and performing the duties of the Crown in regard to the acquisition of up to 2,000 MW of new renewable electricity supply from projects that are greater than 10 MW in size".<sup>18</sup>

35. Among the opponents of the proposed Bruce-Milton project, the evidence-in-chief of SON's expert argues that the 1,000 MW of planned wind assumed in the IPSP generation forecast should be rejected on the ground that it constitutes an "uncommitted resource":

**It is critical to note that in its assessment of the need for its proposed project, Hydro One, relying on OPA analysis and reports, has included two significant sources of generation that have not been approved or committed. First, Hydro One has included 1000 MW of potential wind generation from the Bruce region that has been identified in the IPSP. Second, Hydro One has included in its analysis 4 refurbished Bruce B units with an estimated combined output of approximately 3400 MW. The inclusion of these two unapproved and uncommitted sources of generation has fundamental implications both as a justification for the proposed project from a system design perspective, as well as for the economic evaluation of the project and other reasonable alternatives.**

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<sup>18</sup> Minister's Directive to the OPA dated August 27, 2007, Re: Procurement of up to 2,000 MW of Renewable Energy Supply

**A proper need analysis ought to be based on existing and committed generation from the Bruce area. Removing the two major sources of unapproved and uncommitted generation that have been included in Hydro One's analysis results in a picture of the transmission facilities that are required to service the Bruce area dramatically different from that conveyed by Hydro One."**<sup>19</sup>

36. However, on Day 14 of the hearing, Mr. Russell conceded that, even on the basis of his criteria, the 300 MW component of the planned 1,000 MW wind (i.e. the Standard Offer Program component), faces a different and lesser degree of uncertainty than is the case with large wind projects:

**In other words, the barriers to standard offers, as I understand it, have a standard price, standard terms and conditions. There is not much to negotiate.**

**So there is probably a standard terms and conditions for an interconnection. It is on distribution facilities, so the barriers to getting an interconnection are far smaller than they are for large new wind.**

**So I see that the imponderables, the uncertainties with the 300 are fewer than for the 700.**<sup>20</sup>

37. However, Mr. Russell disregards the significance of government directives and the OPA's authority as system planner and to execute procurements and makes a very subjective proposition that a "little more certainty" is needed about the time and amounts of generation to be connected.<sup>21</sup> He makes this judgment even while purporting to recognize that the 700 MW component of the planned 1,000 MW that consists of large wind generation is only 50% of the 1,400 MW potential large wind identified in the Bruce area.

38. Mr. Russell admits that he has not done an independent study with respect to the wind generation potential from the Bruce area or other alternative geographic areas; nor did he carry out a study to determine the reasonableness

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<sup>19</sup> Direct Evidence of Saugeen Ojibway Nations (SON), dated April 18, 2008, Page 10 (#9, #10)

<sup>20</sup> Transcript Vol 14, June 11, 2008, page 102, lines 10-19

<sup>21</sup> Transcript, Vol.14, June 11, 2008, page 103, lines 17- 28

of the assumptions behind the 700 MW component of the 1,000 MW planned wind:

**MR. RUSSELL:** Right. I had not run a study to track the reasonableness of Mr. Chow's assumptions or the reasonableness of the 700 megawatts. It's a number. I understand his logic. It doesn't have the guarantees of certainty that I would want, and -- as we've discussed at considerable length, but it is a number.<sup>22</sup>

39. What is even more troubling is Mr. Russell's position that the 700 MW large wind component of the 1,000 MW planned wind generation, which the OPA derived from the August 27, 2007 Directive should not be assumed in the OPA's plan because it is yet to be addressed in the IPSP proceeding:

**MR. NETTLETON:** Do you understand that the evidence of the OPA, the testimony of the OPA, that has been given in this proceeding is that 700 megawatts of their planned wind forecast is under this directive?

**MR. RUSSELL:** That's their projection, yes, but it's not a necessary outcome. It's -- as I indicated earlier, this is going to be addressed in the IPSP.<sup>23</sup>

40. The PWU submits that, in the event this Board determines that it has the authority to independently assess the probable achievability of the OPA's pre-IPSP procurement plans, there is an ample basis in the evidence to conclude the OPA's plan will be achieved. While the proposed Bruce-Milton project is not necessitated by the assumed 1,000 MW planned wind only, and that the Bruce-Milton line would provide a number of reliability, security and safety benefits even if one assumes that the 1,000 MW does not materialize<sup>24</sup>, the Board should accept the OPA's assumption of 1,000 MW potential wind forecast for the following reasons:

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<sup>22</sup> Transcript, Vol. 14, June 11, 2008, p. 140, lines 9-14

<sup>23</sup> Transcript, Vol. 14, June 11, 2008, Page 131, lines 10-16

<sup>24</sup> HONI interrogatory response to Board Staff IR # 1.8, Exhibit C, Tab 1, Schedule 1.8



- a. What makes any plan reasonable and sound is the expertise and credibility of the party making the plan, and the degree to which the assumptions behind the plan are reasonable;
  - i. The OPA is the body created by the legislature of Ontario for the express purpose of engaging in electricity system planning. While there is no assumption of infallibility, there is no basis whatever to question the OPA's credibility and expertise in the discharge of its statutory functions;
  - ii. Moreover, the OPA, through its conservative forecasts, has exercised the appropriate level of caution, and therefore has based its forecast on assumptions that are more reasonable than alternative assumptions;
- b. There is no evidence before the Board that requires wind generation forecasts to be based on absolute certainty of the eventuality of the projects;
- c. Objectively, the OPA's conservative forecasts together with the expressed interest of potential generators as is evidenced by the IESO's queues point to the fact that there is a very high probability that the projects will materialize. In fact, all the evidence before the Board points to the possibility that the actual wind generation could very well exceed the OPA's conservative figure of 1,000 MW;
- d. Incidents of projects that are in queue but which potentially could fall off the queue are a possibility; however, such potential instances should not be the basis for excluding all planned generation from the forecast. Limiting the forecast to 50% of the potential wind generation as the OPA did, should more than account for potential queue fall off;

- e. The Provincial, national, and global trend is that governments are seeking to have increasing shares of renewables in their energy supply portfolios; therefore, the evidence is that more and more wind resources will be tapped into in the future...more than even what the OPA is currently forecasting; and
- f. Pursuant to the August 27, 2007 Directive, the OPA has both the responsibility for and the final authority in determining the implementation of the Directive i.e. the pre-IPSP procurements. To reject the OPA's forecast would, in essence, constitute a finding by this Board, on the basis of no evidence, that the OPA would fail to discharge its statutory responsibilities.

**B. Installed vs. Average Generation Output as a Basis for Transmission Planning**

41. Opponents of the Bruce-Milton line argue that the need for the project is not established partly because the proposal is based on a generation forecast that assumes nameplate/installed capacity (100% of Maximum Capacity Rating) for nuclear and wind generation.

42. In its summary of evidence, Pollution Probe, for example, states:

**“HONI's graphical presentation of transmission limits and generation quantities in the Bruce area masks the operational realities of actual available generation. The application assumes that nuclear and wind resources are at 100% of their maximum continuous [capacity] rating (MCR). However, aggregate resource output or availability is what actually matters in order to deliver energy and capacity from the Bruce area. For example, an examination of the historical output patterns for the Bruce nuclear station's 24 years of operation shows that its aggregate capacity has been much less than 100%. This contrast illustrates why it is misleading to use 100% of the station's MCR when assessing transmission delivery needs. Similarly, output patterns from wind resources (which are fairly well-understood) demonstrate that aggregate output for the entire Bruce area wind resources would likely never approach 100%. In order to assess transmission needs, more reasonable values should be used that**

**are considerably less than this, and such values should account for average annual wind resource capacity factors of 29%.”<sup>25</sup>**

43. The PWU notes, as evidenced in the above statement, part of the reason why Pollution Probe and others argue that the Bruce-Milton line is not required is that the transmission plan does not reflect the operational realities of actual nuclear and wind generation. The fact of the matter is that no one, including the Applicant, has disputed that, nuclear and wind generation do not generate at their maximum, 100% MCR rating all the time. The issue, therefore, is whether or not the Board has evidence before it that would require the OPA and the IESO to abandon their long established planning practice and design a transmission system for a capacity less than nameplate, which according to the expert witnesses from the OPA and the IESO, would amount to planning for congestion. The PWU submits that the answer is “no”, for the following reasons.

44. First, the Board should realize that the recommendation from the OPA and the IESO to plan transmission with the objective of delivering the full installed capacities in this application emanates from the specific attribute of planning for a combination of nuclear and wind resources. It may be theoretically possible to contemplate transmission planning for a capacity that is less than the nameplate capacity in situations involving other combinations of types of resources.<sup>26</sup> However the generation in question here is a combination of nuclear and wind generation. Nuclear generation is a base-load generation that should be assumed to operate continuously, with limited flexibility to ramp-up or down. Wind generation is a non-dispatchable resource, which runs intermittently and the output of which is controlled by the wind, not the transmission system operator. This means that if the transmission system is built to deliver less than the nuclear and wind nameplate capacity, then generation will need to be

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<sup>25</sup> Direct Evidence of Pollution Probe, dated April 18, 2008, Page 4, #3

<sup>26</sup> Although this would be inconsistent with all transmission planning precedents, at least in the Province of Ontario.

constrained when nuclear is running at 100% (which is often) and wind is generating at or near full capacity.

45. Second, both nuclear and wind generation have very low operating costs and emissions. If due to insufficient transmission capacity these generations are constrained, then they will have to be replaced by other generation sources, which will most likely be gas generation. This result:

- a. is contrary to the Directives and the OPA's authority to facilitate the development and use of renewable resources;
- b. does not make sense from an economic or environmental perspective. As the PWU pointed out during cross-examination of HONI's expert witnesses, both in terms of the low operating cost of wind generation and the environmental benefits of renewables, the system should be built in such a way that every kWh of wind energy is generated and delivered;<sup>27</sup>
- c. is inconsistent with the government's Supply-Mix Directive which specifically directs the OPA to strengthen the transmission system to facilitate the development and use of renewable energy resources in parts of the province where the most significant development opportunities exist and to promote congestion reduction. In fulfilling this Directive, the OPA's recommendation with respect to the specific combination of nuclear and wind generation is to build the system for full capacity; and
- d. is consistent with transmission planning standards for wind generation resources. There was no evidence presented to the Board that indicates that planning transmission for wind generation is based on a different set of standards with respect to this issue of planning transmission for nameplate vs. average production capacity. The PWU notes that in

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<sup>27</sup> Transcript, Volume 1, Page 61, Lines 16-24

responding to a question from the Board Panel on whether the OPA or HONI knew what the normal planning practice is for wind generation in other jurisdictions both Mr. Chow and Mr. Sabiston indicated that they were not aware of any.<sup>28</sup> What is before the Board is, in fact, the Tehachapi project in California, in which regard reference is made to wind generation nameplate capacity of 4,000-4,500 MW.

46. Finally, in transmission planning it is generally prudent to plan based on maximum generation capacity. Average capacity could be relevant for generation supply adequacy purposes, where one should be conservative and reflect operational realities in forecasting generation capacity of generators such as wind generators because they cannot be counted on to generate when they are needed. On the other hand, it is generally imprudent to be conservative in planning transmission to reflect average production capacity because there will be no alternative other than the rejection of needed generation, when the generators operate or are required to operate at their maximum nameplate capacity.

### **C. Current vs. Past Transmission Capability in the Bruce Area**

47. One of the issues that emerged during this proceeding is the question of the difference between the capability of the current system in the Bruce area, which the OPA, the IESO and the Applicant have said to be 5,000 MW, and the system that historically had transferred generation from all eight Bruce Units, output that sometimes exceeded 6,000 MW.

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<sup>28</sup> Transcript, Vol. 2, May 2, 2008, Page 68, lines 8-17

48. In response to interrogatories from a number of parties (see for example, Board Staff IR # 1.3)<sup>29</sup>, the Applicant and experts from the OPA and the IESO describe the major reasons behind the difference to include:

- a. the change in flow pattern from an east-to-west flow to a west-to-east flow;
- b. changes in the location and amount of generation resources and load;
- c. the increased significance of voltage instability as the dominating failure mode in Southwestern Ontario as opposed to generation plant instability which had been the case in the past; and
- d. the closure of the three Heavy Water Plants that were in operation at the Bruce Nuclear Facilities in the 1980's.

49. The PWU, submits that there is no credible evidence or argument that has successfully challenged the views of HONI, the OPA and the IESO that it is the existing and forecast generation and the existing capability that are relevant to this case as opposed to historical generation and past capability of the transmission system in the Bruce area. In fact, the only reason why the PWU notes this issue is because the PWU submits that the Board needs to assess the relevance of considering any historical information in this application.

50. As the Board is aware, parties opposed to the Bruce-Milton project have cited past experience in the use of generation rejection in the province together with the historical generation data to challenge the views of the IESO on the extent to which generation rejection and Special Protection Systems ("SPS") could be utilized as an alternative to the proposed Bruce-Milton line. This in spite of the revisions to the IESO's Ontario Resource and Transmission Assessment

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<sup>29</sup> Exhibit C, Tab 1, Schedule 1.3

Criteria that only allows for a judicious use of generation rejection and SPS as a transition measure.<sup>30</sup>

#### **D. Financial Analysis of “Locked-in” or “Bottled” Energy**

51. The PWU submits that the financial analysis of bottled-in energy would have been relevant to the Board’s consideration in this application had the Board been faced with two competing alternatives that, after equally meeting all other criteria and satisfying government Directive requirements and reliability, service quality and environmental standards, differ in their cumulative net present value of costs of locked-in energy. What the Board is faced with, instead, is a financial analysis of locked-in energy of two different alternatives: one that satisfies the fundamental question in this application, i.e., meeting the required system capability, and the other, one that is based on an unreasonable set of assumptions, disregards government directives, reliability requirements, and one which does not pass the capability requirement test.

52. The opponents of the proposed new line do not assert that any of their proposed alternatives will permit the unconstrained dispatch of the Bruce Area Generation. Rather, the essence of the position of the opponents of the proposed new line is that:

- a. The installation of series capacitors and generation rejection on the existing line can reduce the amount of the “constrained off” generation; and
- b. Once (a) has been achieved, the incremental cost of the proposed new line exceeds the net present value of the “constrained off” generation.

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<sup>30</sup> IESO, Ontario Resource and Transmission Assessment Criteria, Section 3.4.1

53. Their submission assumes that a financial analysis of the value of “bottled generation” is relevant to the Board’s consideration of whether or not to approve the new line. The PWU submits that it is not relevant. Rather, the PWU submits that the concession that generation will inevitably be bottled in the absence of the new lines definitively answers the question of whether there is a need for the proposed new line - in the affirmative.

54. The financial analysis with respect to the value of bottled generation, as put forward by opponents of the proposed line, is irrelevant to the Board’s consideration because it presupposes that the task of the Board is to determine the financially optimal combination of generation and transmission resources, regardless of all other factors that make the proposed project a non-discretionary and pre-IPSP project that is recommended by authorities mandated to do so. Such an exercise would be inconsistent with the authorities of the various entities involved in the electricity sector.

55. In particular, it is submitted that the Minister’s Directive to the OPA reflect a clear policy decision to mandate the expansion of renewable generation resources, including wind generation resources, for the purpose of displacing less environmentally benign generation resources. It is clear that this policy decision has been made, notwithstanding the fact that the financial cost of wind generation will significantly exceed the cost of the generation it is intended to displace.

56. The opponents of the proposed new line acknowledge that without the line the wind generation that has and will be procured by the OPA in the Bruce area will be constrained off or “bottled” from time to time. They argue that this result is justified because the financial cost of eliminating the bottling (i.e. the cost of the



proposed new line) exceeds the value of the energy that would be “unbottled”.<sup>31</sup> This argument presupposes, incorrectly, that financial considerations should govern the amount of wind generated energy on the system. To the contrary, it is clear that the Minister’s Directive to the OPA to procure wind generation has been made in spite of the clear knowledge that the financial cost of wind generation exceeds alternative sources of generation.

57. To prevent the unconstrained delivery of wind generation based solely on financial considerations substitutes the Board’s opinion of the wisdom of procuring wind generation with that of the Minister’s Directive. Moreover, this argument fails to recognize that every MWh of wind generated electricity which is not delivered due to transmission constraints is a MWh of emission free electricity which is not available to displace electricity generated from less environmentally benign sources. This result would thwart the Minister’s Directive’s clear objective that this displacement should occur without any reference to the financial cost of doing so.<sup>32</sup>

## **II. RELIABILITY AND QUALITY OF ELECTRICITY SERVICE**

58. The PWU is not intent on going through all the evidence before the Board on the issue of the reliability and service quality related to the proposed Bruce-Milton line. The Applicant has filed extensive evidence that indicates that the proposed line meets the requirements identified in the System Impact Assessment and Customer Impact Assessment; that the project meets applicable standards for reliability and quality of electricity service; and that all appropriate project risk factors relating to reliability and quality of service have been taken.

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<sup>31</sup> The PWU does not accept the methodology used by the opponents of the line in calculating the value of the bottled energy. However, the PWU’s position here accepts, for the purposes of argument, those calculations.

<sup>32</sup> The PWU submits that the same reasoning applies with respect to any constrained off Bruce area nuclear generation. The inevitable effect of constraining any MWh of nuclear generation is that it will need to be

The PWU also notes that the Applicant and the IESO have extensively responded to the one major concern raised by Board Staff and some opponents of the new line, i.e., the reliability impact of adding a new line to an existing corridor, which, it is argued, could raise the prospect of multiple outages under extreme weather conditions such as tornadoes and ice storms.

59. The PWU, however, submits that the Board should consider two important factors in its consideration of the issue of reliability and service quality as related to this application. First, the reliability impact of adding a new 500kV line in an existing corridor that already has another 500kV line should be seen in the context of the totality of factors that led the OPA, the IESO and the Applicant to select the proposed line as the preferred option. In an ideal world, and all other things being equal, the preferred option to avoid the loss of an entire corridor would be to build all transmission lines as far apart from each other, on separate corridors.

60. The proposed line is the preferred option because all the other alternatives to the proposed line were rejected because they either failed to meet the required capability, or were inferior on grounds of reliability, cost, provincial land use policy, reliability and availability of technology, and impact on other paths. Therefore, in addition to the evidence before the Board that shows the proposed line is in conformity with the IESO and the NPCC planning standards, the Board should consider this specific reliability concern in the context of all factors that make the proposed line superior to other options. In addition, the PWU would add that from an environmental impact perspective the use of an existing corridor has substantial less impact than the use of a new corridor.

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replaced by alternate generation which is less environmentally benign, and with greater emissions. This will clearly thwart the Minister's clear policy direction.

61. The second way available to the Board of considering the issue of reliability and service quality impact of the proposed line is to assess and determine whether or not the only other alternative proposed by the opponents of the Bruce-Milton line, i.e., the use of series compensation and generation rejection, provides superior reliability and service quality. As already indicated earlier, the alternatives proposed by opponents of the Project fail the one major test under consideration, i.e., meeting the required capability and, therefore, the issue of whether such alternatives are superior in terms of reliability and service quality is irrelevant. For the sake of argument, however, the PWU submits that the proposed Bruce-Milton line is superior to the alternatives proposed by opponents of the project in terms of reliability and service quality.

62. The PWU, owing to its fundamental interest in reliability, safety and quality of electricity service, cannot emphasize enough the concern that it has with series compensation and generation rejection as a long-term solution. The PWU submits that the Board should rely on the reliability criteria and standards developed and practiced by the respective authorities and the evidence before the Board that indicate the concerns of the IESO and the NPCC with respect to the extent of use of series compensation, generation rejection and Special Protections Systems.

### **III. CONCLUSION**

63. For all the reasons above, the PWU submits that the Board should grant the leave to construct for the proposed Bruce-Milton transmission reinforcement project applied for by the Applicant.

**ALL OF WHICH IS RESPECTFULLY SUBMITTED.**

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