EB-2007-0050

ONTARIO ENERGY BOARD

IN THE MATTER OF the Ontario Energy Board Act, 1998, S.O.1998, c. 15, Schedule B;

AND IN THE MATTER OF an Application by 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 (the "Leave to Construct Application*').

SUBMISSIONS OF THE INTERVENORS – THE ROSS FIRM GROUP
July 4, 2008

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INTRODUCTION:

The Ross Firm Group of Intervenors ("The Ross Firm Group") submits that the Application for Leave to Construct Transmission Facilities ("the Application") should be dismissed.

It became apparent as the proceedings ground forward that the Applicant Hydro One Networks Inc. ("HONI") was ill prepared for their Application. They had a duty to put before the Ontario Energy Board ("the Board") not only their own model, but all viable alternatives using current and available technologies. For reasons best known by the Applicants, they chose to ignore 21st century technology and relied instead on the wasteful and antiquated technologies of the last century to deliver power to the people of Ontario.

This narrow approach is that HONI has failed to discharge its burden before the Board in support of its Application. It is not, as opined by HONI, a case where credibility is the issue. This would be the case if there was compelling evidence to support the Application as proposed. It is the submission of the Ross Firm Group that evidence sufficient to support the Application has not been produced, and as such the Application fails even before the calling of Intervenor evidence.

In light of the evidence raised by the Intervenors regarding the economics of the proposed plan, the errors in economic and generation projection and the suitability of alternative technology to meet the need described, the Applicant falls further from the mark of success.

THE NEED NOT DEMONSTRATED THE JUSTIFICATION NOT SHOWN:

HONI submits that the need for the project is based on two areas of increased generation in the Bruce area and a current inability to transmit that generation. Specifically, HONI

submits that the refurbishment of Bruce A & B combined with committed and planned wind generation in the Bruce Area. HONI submits that this will increase generation in the Bruce area from approximately 5000 MW currently to 8,100 MW by 2015.

The Ross Firm Group submits that reliance on the guestimate of potential increased generation is tantamount to blind speculation.

THE MYTH OF REFURBISHMENT AND NUCLEAR ENERGY MINIMUMS:

HONI relies on the hint of Bruce B refurbishment to justify the need for increased transmission facilities out of the Bruce Area. There is no evidence that this process will take place. There has been no directive from the Ministry for the Ontario Power Authority ("OPA") to enter into contract negotiations with the Bruce for the refurbishments. Considering that the life of the Bruce B units end between 2015 – 2020 and that the proposed refurbishment has been estimated to commence anywhere between 2013 and 2018, one would conclude, based on the Bruce A refurbishment process, that discussions on an official level would have commenced. In the absence of evidence to the contrary, one must conclude no such discussions have commenced.

The potential refurbishment of the Bruce B complex is supported by hearsay, speculation and conjecture. No one from the Bruce appeared to give evidence. The OPA did not forward any evidence that negotiations for the refurbishment of the Bruce B complex had commenced. Indeed the only document we have to rely on is a Powerpoint presentation delivered by Duncan Hawthorne, President and CEO of Bruce Power wherein he presented a single and confusing chart purporting to represent an aggregate output from the Bruce including a 'New Build' and Bruce B refurbishment.[1] This document at best falls squarely into the category of self serving evidence and is of no probative value. This is not evidence. It is at best a "wish" ["If wishes were horses, then beggars would ride."]

[1] Undertaking, Filed June 11, 2008, page 13.

It is also of note, that there will be no 'New Build' at the Bruce Complex in the foreseeable, as the Darlington Complex was awarded the approval for this project.

The Applicant submits that the potential for a Bruce B refurbishment is supported by "…the continued need for nuclear electricity generation in Ontario to serve base-load electricity requirement of 14,000 MW, and to this end the Supply Mix Ministerial Directive directs OPA to make plans for such an outcome."[2]

The Applicant is reading the Ministerial Directive ("the Directive") in a very self serving manner. Point 3 from that directive reads as follows:

> Plan for nuclear capacity to meet base-load electricity requirements **but limit** the installed in-service capacity of nuclear power over the life of the plan to 14,000 MW. (*emphasis added)*[3]

This is not a floor, but a ceiling as pointed out by Mr. Russell during the almost 7 hours of cross-examination he was subjected to. This position is based on a plain reading of the ordinary meaning of the words.

Based on the foregoing it must be made clear that the nuclear capacity may reach but not exceed 14,000 MW. There is no directive to reach this point, and in fact, given the emphasis on renewable energy sources, a reading of the 14,000 MW as a floor would be counter-intuitive in light of the Province's desire to move away from sources of energy which produce pollution.

Despite representations made by Mr. Schneider about the nature of nuclear energy, the Ross Firm Group would ask the Board to take notice that nuclear waste is one of, if not the most dangerous forms of pollution created by any form of electricity generation.[4]

It is also important to note that the Directive, regardless of how one reads it, does not

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[2] Applicants Argument in Chief, page 16, 1st bullet point.
[3] Exhibit B, Tab 6, Schedule 5, Appendix 7, page 2.
[4] Transcript, Vol. 2, May 3, 2008, Page 116 line 23 – Page 117 line 9.

suggest that this nuclear energy is to be generated at the Bruce over Pickering or Darlington. Further, given the current constraints on transmission out of the Bruce, the Government has been inclined to build new nuclear generation facilities in areas with more robust transmission capabilities; hence the recent decision to have the new nuclear build in Darlington.

The board must ask itself whether they are being used to approve new transmission facilities to improve the chances of Bruce Power obtaining new or refurbished nuclear generation at the Bruce Complex. This, in the submission of the Ross Firm Group, is putting the cart before the horse.

THE ANSWER IS BLOWING IN THE WIND:

With regard to the increased wind generation, it was quoted throughout the hearing process that the average annual output to be expected in the Bruce area is 29% of the Nameplate Capacity of the Wind Generators in the aggregate. This projection was provided by the OPA and not challenged by any party. Despite this modest production projection, 100% transmission capacity is being put forward by HONI as a reasonable standard.

The Chair, Ms. Nowina saw this issue as live during the second day of the hearing when during The Ross Firm Group counsel's cross-examination of panel one she asked the following:

> MS. NOWINA: Mr. Ross, before you leave that, I have a question, because this came up yesterday and I didn't understand it then.
>
> You helped somewhat by asking about the planning practice applying to wind, so I would just like to confirm that the planning practice that you are talking about traditionally has not been planning practice for wind generation; is that correct?
>
> MR. CHOW: You are correct. The wind is a very recent generation source.
>
> MS. NOWINA: And does the OPA or Hydro One know what the normal planning practice is for wind generation? There are some countries that have

> had wind generation for some time. Do you know what the normal planning practice is for wind?
>
> MR. CHOW: No, I don't.
>
> MS. NOWINA: Does Hydro One know what the normal planning practice is for wind?
>
> MR. SABISTON: No.
>
> MS. NOWINA: Thank you.[5]

No evidence was forwarded throughout the rest of the hearing about international standards of planning or the reasonableness of the Applicant's reliance on 100% Maximum Continuous Rating ("MCR") for transmission planning purposes as it relates to wind generation. It was in fact a convenient figure NECESSARY to inflate the need and substantiate the project, in the absence of which, the proposed transmission line would not be required.

The Applicant attempts to bolster their position when they suggest that if the transmission line is not built and the specter of generation rejection or constraint exists, wind generators will not develop in the Bruce area.

> "There can be little doubt that their suggested approach, without more, would stifle a nascent wind market before it gets off the ground…"[6]

The Applicant refute their own argument when they concede that wind generation will be the last form of generation to be constrained off any transmission system because it is ALWAYS rated as the least expensive energy available.

> MR. CHOW: But I also believe that Mr. Falvo said a number of times, when he looked -- for non reliability-related for dispatching, he will dispatch based on the bid stack order, which, in other words, you are going to turn down generation, you turn down the most expensive that was bid into the system; right, Mr. Falvo?
>
> MR. FALVO: Right.
>
> MR. CHOW: Then he also indicated that wind is a price taker.

[5] Transcript, Vol. 2, May 2, 2008, page 67 line 26 – page 68 line 17.
[6] Applicant's Argument in Chief, page 20, 2nd full paragraph, line 11-12.

> Essentially, it is bidding or offering in zero dollars. You will take whatever the price the market clears.
>
> So in that stack of dispatch order, it is on the bottom of costs. So it would make -- I understand the way it works is that you will not take the bottom of the stack, which is the lowest cost, and remove that.
>
> You will take the highest cost generation that would solve that particular congestion problem and remove that. And the assumption that we have made is nuclear would have a higher cost in the stack order than the wind.[7]

When dealing with the issue of wind generation, the Applicant relies on the specter of constraint to justify need for the line. In the next breath it confirms that wind will not be constrained in order to refute contradictory evidence regarding locked in energy costs – a classic example of tergiversating.

With regard to the proposed/planned wind generation in the Bruce area, the Applicant relies on a Directive from August 27, 2007 requiring the sourcing of an additional 2000 MW of renewable power.

The Applicant has done a very narrow and unsupported reading of this Directive. The Directive calls for 2,000 MW of RENEWABLE energy not WIND energy. The Directive calls for this energy to be sourced PROVINCE WIDE not solely in the BRUCE AREA.

Finally, at page 15 of the Indenpednat Electricity System Operator's ("the IESO") April 21, 2008, "IESO Operability Review of OPA's Integrated Power System Plan," IESO_REP_0411, (a publically available document) Table 3 indicates that Ontario will have Surplus Baseload Generation ("SBG") for as many as 700 to 891 hours per year. SBG means that Ontario cannot absorb all the nuclear and wind and hydro generation available during minimum load periods. In order to avoid excessive backdowns of nuclear units in minimum load periods (which would cause the reactors to "poison out," [footnote 4, page 16]), the IESO plans to constrain off wind generation. This means that, even if the proposed lines were built, wind generation in the vicinity of Bruce would be

[7] Transcript, May 9, 2008, page 115 line 14 – page 116 line 4.

constrained off for as much as 891 hours per year just because of minimum load constraints.

With the above being said, there is nothing approaching certainty or even a high degree of probability presented in evidence by the Applicant to support the quantities of generation or corollary transmission claimed and as such no need for the proposed facilities in light of the proposed interim and near term measures.

THE MATH:

- The Bruce Nuclear facility is currently operating at approximately 4,800 MW.
- As of fall 2008 there will be an additional 700 MW of committed wind.
- There is 1,000 MW of 'planned' wind.
- As of January 2009, there will be approximately an additional 500 MW of generation from the refurbished units.

This totals 7,000 MW of generation with a system currently capable of transmitting approximately 5,000 MW. With the addition of the proposed near term and interim measures this transfer capability will be increased to approximately 6,500 MW.[8]

It is submitted that the following is a more realistic planning approach for the transmission of wind generated electricity.

- Take the transmission requirements of wind to 50% from 100% of MCR allowing for a 21% transmission capacity above the OPA 29% estimate of average wind generation. (this takes into account the fact that the wind blows the hardest in the winter when load is less than in the summer when the wind generation is less and thus less likely to cause transmission congestion requiring that the wind generation be constrained off the system.)

[8] Technical Conference Powerpont Presentation, October 2007, page 21.

- Reduce the total amount of planned wind to 700 MW equaling approximately 50% of those applicants in the queue based on the P50 probability employed by the OPA.

Based on the foregoing, the total transfer capability required would be 6,000 MW.

The above is substantiated by the following dialogue between counsel for the Applicant and Mr. Chow of the OPA and Mr. Falvo of the Independent Electricity System Operator ("IESO")

> MR. NETTLETON: Now, Mr. Chow, your evidence has been that the 1,000 megawatts of planned generation has a P50 associated with it; correct?
>
> MR. CHOW: Sorry, a P?
>
> MR. NETTLETON: The 1,000 megawatts of planned generation included in your forecast has a probability factor of 50 percent; correct?
>
> MR. CHOW: Yes, for the large wind.
>
> MR. NETTLETON: So that would equal 1,400 megawatts in total?
>
> MR. CHOW: Yes.
>
> MR. NETTLETON: Mr. Falvo, how many wind projects from the Bruce area are in your queue?
>
> MR. FALVO: I'm sorry, I don't have that with me. That is something we developed over the weekend.
>
> MR. NETTLETON: Can you tell me how, generally -- is it greater than or less than 1,400 megawatts.
>
> MR. FALVO: I'm sorry. I have it here.
> It is -- I believe it is totaling more than 1,400.[9]

Based on the foregoing, the 6,000 MW of required transmission capacity is 500 MW **below** the transmission capacity with the proposed near term and interim measures.

The new line increases the overall transmission capacity out of the Bruce area to approximately 8,100 MW. It is the submission of the Ross Firm that this overdesign by

[9] Transcript Vol. 8, May 12, 2008, page 43 lines 10-28

HONI is not a cost effective solution when compared to the near term and interim measures. Further, it does not provide for a system which is sufficiently scalable to deal with substantially decreased generation in the Bruce area.

COOKING THE BOOKS TO AVOID LONG TERM USE OF G/R AND THE BSPS:

HONI proposes the use of generation rejection ("G/R") as an interim and near term measure to bolster transmission capacity while the new line is being built. They submit this method combined with reliance on the Bruce Special Protection System (BSPS) can not be used in the long term. This has not however, always been the case.

Prior to March 2007 the IESO did not preclude the long term use of a Special Protection System ("SPS") in Ontario. In fact the evidence of the OPA and the IESO has shown that reliance on SPS and the BSPS in particular has been used successfully for many years. It was not until February 13, 2007 upon receipt of a letter to the IESO Change Management Process for Market Rules and Manuals from Naren Pattani, Manager, Transmission System Development, System Investment, Hydro One Networks Inc. that the inclusion of limiting language on the term and scope of use of a SPS was added to the IESO Ontario Resource and Transmission Assessment Criteria ("ORTAC")[10]. Prior to the HONI submissions on ORTAC, a SPS could be used as follows:

> A SPS may be used to provide protection for infrequent contingencies, or for temporary conditions that may exist such as project delays, unusual combinations of system demand and equipment or availability, or specific equipment maintenance. An SPS may also be applied to preserve system integrity in the event of a severe facility and extreme contingencies. The decision to employ an SPS shall take into account the complexity of the scheme and the consequences of correct or incorrect operation as well as its benefits.[11]

After the abovementioned February 13, 2007 letter, the following replaced the above quote in the ORTAC:

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[10] Saugeen Ojibway Nations Additional Material for the Examination in Chief of Mr. Whitfield Russell, June 10, 2008, Tab 5, Page 1-3.

[11] Saugeen Ojibway Nations Additional Material for the Examination in Chief of Mr. Whitfield Russell, June 10, 2008, Tab 9, Page 14, Paragraph 2 (Strikethrough)

> A Special Protection System (SPS) shall be used judiciously and when employed, shall be installed consistent with good system design and operating policy. A SPS associated with the bulk power system may be planned to provide protection for infrequent contingencies, for temporary conditions such as project delays, for unusual combinations of system demand and outages, or to preserve system integrity in the event of severe outages or severe contingencies. The reliance on a NPCC type I SPS for NPCC A-2 design criteria contingencies with all transmission elements in service must be reserved only for transmission periods while new transmission reinforcements are being brought in service. A SPS associated with the non-bulk portion of the power system may be planned to provide protection for a wider range of circumstances than a SPS associated with the bulk system.[12]

It goes without saying that this section quotes verbatim the suggestion made by Ms. Pattani.

It is the Ross Firm Group's submission that it is no coincidence that this fundamental change occurred within days of the filing of the current Application before the Board.

Of further note, HONI denies the IESO's jurisdiction as it relates to transmission planning standards that would assign obligations to other entities. It is HONI's stated position that all transmission planning standards should come under the purview of the Board's Transmission System Code ("TSC")[13] Again, HONI is playing both sides of the field in order to ensure the success of their Application.

USING THE PROVINCIAL POLICY STATEMENT TO ROUTE AROUND COMMON SENSE:

HONI has submitted that the proposed alternative is the ONLY alternative because it is the only one that meets the need **and** complies with the Provincial Policy Statement ("PPS"). HONI further submits that they have interpreted the language of the PPS using the plain and ordinary meaning of the words contained therein. HONI submits that based on the plain and ordinary interpretation of the PPS, specifically section 1.6.2, an existing

[12] Saugeen Ojibway Nations Additional Material for the Examination in Chief of Mr. Whitfield Russell, June 10, 2008, Tab 9, Page 14, Paragraph 2 (underlined)
[13] Saugeen Ojibway Nations Additional Material for the Examination in Chief of Mr. Whitfield Russell, June 10, 2008, Tab 4, Page 2, Paragraph 1 and 7.

corridor must be used before consideration is given to the use of any other corridor requiring the acquisition of new right-of way lands. The 'Summary of option screening results' contained in the power point presentation provided at the October, 2007 Technical Conference, at page 16, eliminates two alternatives based on the Applicant's reading of the PPS section 1.6.2. The Bruce to Kleinburg to Clarieville and Bruce to Crieff options are summarily dismissed based on the HONI interpretation of the PPS.

The Ross Firm Group submits that this is yet another example of patently slanted reading of a document or instrument in order to bolster the project as proposed. The PPS as related to Infrastructure and Public Service states:

> 1.6.1 Infrastructure and public service facilities shall be provided in a coordinated, efficient and cost-effective manner to accommodate projected needs.
>
> Planning for infrastructure and public service facilities shall be integrated with planning for growth so that these are available to meet current and projected needs.
>
> **1.6.2 The use of existing infrastructure and public service facilities should be optimized, wherever feasible, before consideration is given to developing new infrastructure and public service facilities.**
>
> 1.6.3 Infrastructure and public service facilities should be strategically located to support the effective and efficient delivery of emergency management services.
>
> Where feasible, public service facilities should be co-located to promote cost-effectiveness and facilitate service integration.
> (*emphasis added)*

Infrastructure is a defined term in the PPS. It is defined as:

> **Infrastructure:**
> means physical structures (facilities and corridors) that form the foundation for development. Infrastructure includes: sewage and water systems, sewage treatment systems, waste management systems, electric power generation and transmission, communications/telecommunications, transit and transportation corridors and facilities, oil and gas pipelines and associated facilities.

Public Service Facility is a defined term in the PPS, it is defined therein as:

> **Public service facilities:**
> means land, buildings and structures for the provision of programs and services provided or subsidized by a government or other body, such as social assistance, recreation, police and fire protection, health and educational programs, and cultural services. Public service facilities do not include infrastructure.

As public service facilities do not include infrastructure, we are dealing only with infrastructure.

In order to determine the plain and ordinary meaning of section 1.6.2 one must turn their mind to the operating language contained therein, specifically the words; 'should', 'optimized' and 'feasible'.

"Should" is defined in the Dictionary of Canadian Law, 2nd edition (Carswell). The word "should" denotes simply a 'desire' or 'request'….and not a legal obligation.[14]

According to the Dictionary of Canadian Law 2nd Edition (Carswell), "shall" is to be construed as imperative….unless such an interpretation of the word "shall" would be utterly inconsistent with the context.[15]

First, 'should'. This word is used whereas shall is not. It is of note that the word 'shall' is used in section 1.6.1 and elsewhere throughout the PPS, yet it is absent from section 1.6.2. It is reasonable then to assume that the use of 'should' in section 1.6.2 is designed to be more permissive than the use of the word 'shall' above and elsewhere in the PPS. The use of 'should' in section 1.6.2 conforms with the definition, wherein it connotes a suggested propriety in carrying out a certain act. Consider the following examples:

- You should do your homework.
- You should tie your shoelace.

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[14] Dukelow, D. & Nuse, B, The Dictionary of Canadian Law, (2 ed.), Thompson Carswell, 1995, (Scarborough) pp. 1155.
[15] Dukelow, D. & Nuse, B, The Dictionary of Canadian Law, (2 ed.), Thompson Carswell, 1995, (Scarborough) pp. 1148.

- You should not approve the application as proposed.

One would be hard pressed to argue that the above examples are synonymous with the mandatory effect when one replaces 'should' with 'shall'.

- You shall do your homework.
- You shall tie your shoelace.
- You shall not approve the application as proposed.

Optimized is defined as:

> **op·ti·mize**
> Pronunciation: \äp-tə-mīz\
> Function: *transitive verb*
> Inflected Form(s): op·ti·mized; op·ti·miz·ing
> Date: 1857
> **:** to make as perfect, effective, or functional as possible[16]

The word 'optimized' as used in paragraph 1.6.2 is straight forward: To make as functional as possible within a existing system. HONI argues that this word applies to the optimization of the 'existing' corridor, as no other infrastructure would be shared in the proposed alternative. This corridor however only exists in certain sections of the proposed line. Further land acquisitions are required for the proposed alternative as well as the two which were rejected.

Finally, it is argued that infrastructure does not include the existing transmission corridor as no specific reference to the transmission corridor is made in the definition of infrastructure, whereas specific reference to transit and transportation corridor is.

The word 'optimized' as used in section 1.6.2 must be taken in context with the final word to be analyzed, 'feasible'.

Feasible is defined as:

[16] http://www.merriam-webster.com/dictionary/optimize

> **fea·si·ble**
> Pronunciation: \fē-zə-bəl\
> Function: *adjective*
> Etymology: Middle English *faisible,* from Anglo-French *faisable,* from *fais-,* stem of *faire* to make, do, from Latin *facere* — more at do
> Date: 15th century
> 1 **:** capable of being done or carried out <a *feasible* plan>
> **2 : capable of being used or dealt with successfully : suitable**
> 3 **:** reasonable, likely
> synonyms see possible[17] *(Emphasis added)*

The use of the word 'feasible' in the context of section 1.6.2 is most readily suited to the second definition provided:

> 2 **:** capable of being used or dealt with successfully **:** suitable

The first definition is far too broad and would apply to almost any situation that was not virtually impossible:

> 1 **:** capable of being done or carried out <a *feasible* plan>

In the second definition is the concluding word: suitable. This again requires a contextual analysis. Is it suitable to have 84% of the Bruce Area generation transmitted along one corridor?[18]

Submissions on the ORTAC made by Energie Brookfield relating to the maximum amount of power that can be transferred along a single transmission corridor were ignored by the IESO and HONI alike. Energie Brookfield articulates their concerns as follows:

> There exists no standard explicitly covering the maximum amount of power that can be transferred along a single transmission corridor. Our concern is that the destruction of all lines in a shared corridor is credible and could result in a major blackout. Restricting the amount of power transmitted on a single corridor, and constructing new lines on different corridors, would prevent these incidents at little additional cost.

[17] http://www.merriam-webster.com/dictionary/feasible
[18] Report of Edward R. Brill, SEA Ltd, page 11.

For example:

> December 22, 1982: West Coast Blackout* This disturbance resulted in the loss of 12,350 MW of load and affected over 5 million people in the West. The outage began when high winds caused the failure of a 500-kV transmission tower. The tower fell into a parallel 500-kV line tower, and both lines were lost. The failure of these two lines mechanically cascaded and cause three additional towers to fail on each line. When the line conductors fell they contacted two 230-kV lines crossing under the 500-kV rights-of-way, collapsing the 230-kV lines.

> Ontario experiences an average of 14 tornadoes a year, mostly in the southwest of the province.** Tornadoes such as those which struck on April 20, 1996 in Grey, Dufferin and Wellington counties can have winds in excess of 300 km/h and could easily disrupt multiple 500 kV overhead lines on a shared corridor in the same way as described above.

> ---
> * Source: http://nrcan.gc.ca/media/docs.814blackoutreport_ch6_e.pdf
> ** Source: Environment Canada

> We recommend that the IESO work with transmitters to develop criteria relating to the physical layout of transmission equipment required to meet reliability standards.[19]

It would appear that that the Applicant would prefer their highly technical and esoteric interpretation of 'suitable' in support of further burdening an existing corridor over the common sense approach of spreading the risk around geographically.

Mr. Falvo acknowledged under cross examination that it would be preferable to avoid over-dependence on a single right-of-way but acknowledged that the IESO was in the business of planning cures not prevention.

> MR. ROSS: Where in there is line security contemplated? Is it in the planning phase of the option chosen?
>
> MR. FALVO: Can you help me, though? When you say line -- when I think of reliability, I think of meeting the standards, so that the system performs in accordance with standards, such as what happens when the pipe breaks.
>
> When I think of security, I think of physical security, like somebody intent on damaging a line.

[19] Saugeen Ojibway Nations Additional Material for the Examination in Chief of Mr. Whitfield Russell, June 10, 2008, Tab 6, pages 2-3 (Transmission Planning Criteria)

MR. ROSS: Or an act of God. I will give you the most extreme example I can think of. You put every single line coming out of the Bruce down one corridor. You got eight lines coming down one corridor, and someone drives a truck into them and they all go down. There would be a line security question there, where you would say: Probably not a good idea to put all eight lines down one corridor.

That's the area I am trying to get into right now, is where that was evaluated and how it was evaluated, what the pros and cons were, how they were weighed.

MR. FALVO: But as I said, that's part of the standards, are to test for the consequences of that and determine whether those consequences can be mitigated to some practical extent.

As we said, we believe the risks of that situation, the loss of the right-of-way, is acceptable.

MR. ROSS: So this is a cure as opposed to prevention approach?

MR. FALVO: Right. Because the design standards don't require separation of multiple circuits on the right-of-way.

MR. ROSS: But logic would suggest that it would make sense.

MR. FALVO: Well, as we said, it would be better if they're separated, but it's --

[Witness panel confers.]

MR. FALVO: Right. As we said, we've covered that in Staff interrogatory 2.1. Sorry, 2.10.

MS. NOWINA: Can you point us to where in 2.10 you have covered that?

MR. ROSS: Point 2; it is 2, little "i".

MS. NOWINA: Thank you.

MR. FALVO: Yes. In Exhibit C, Tab 1, schedule 2.10, starting at line 29 and 32. Sorry. Starting at line 29, and then a statement in the middle of that paragraph. We said:

"All else being equal, siting transmission lines on separate corridors is better than assuming common right-of-ways. However, the IESO believes the risk of the loss of the right-of-way contingency is acceptable and manageable and is consistent with the existing design and planning practice in Ontario."

MR. ROSS: How did it determine that the chances were acceptable and manageable? This sort of goes back to: "Yesterday, I couldn't spell meteorologist. Today I are one."

What tests were undertaken? What data was relied upon to ascertain that this was an acceptable risk?

MR. FALVO: As I said, I am not a meteorologist, so I can't give you the probability of the tornado, but I have assessed the consequence of that

situation, and I have concluded that I believe it is an acceptable risk.

MR. ROSS: How did you do that? Based on what did you assess it? What were you relying on?

MR. FALVO: I am relying on our past practices. We have measures where we monitor weather. We get advance warning of adverse weather conditions. We have plans in place when we get those indications on advance warning.

So that we could prepare the system for such an event if we have sufficient advance warning.

Then as part of the design that's being contemplated, we can use a special protection system, which is permitted under the NPCC standards, to manage the generation if the entire right-of-way were to be lost. And we have tested that situation and we get what we believe is an acceptable result.

Is it suitable to have a line which encroaches on the 'Camp Creek Lowlands'?

MR. SCHNEIDER:
A second local refinement is in what's called the Camp Creek area, just east of Hanover in West Grey. That is an environmentally sensitive wetland, and there were suggestions to us to take a look at that area for potential local refinement.[20]

MR. ROSS: Camp Creek. As far as I understand, there was a ministerial decision regarding Camp Creek back in the day when another line ran through that area and the Ministerial directive said: This area is sacrosanct, this area is not to be touched, we are going around this area. Yet from what I understand the current proposed routing goes straight through Camp Creek again.

MR. McCORMICK: There was a ministerial decision made under the Expropriation Act. The words were in there, justifying a decision that enabled the expropriation process to go ahead for the route at that time.

Our view is that that is a consideration, but it's not binding on us. It is a matter that we will consider as part of our EA process, but it is not a constraint to start the process.

Is it suitable to have a line which encroaches on the Niagara Escarpment?

MR. PAPPAS: Now, that jog was basically to accommodate industry in the area.

Is there any chance of a jog for the Niagara escarpment? And what costs

[20] Transcript - Technical Conference, Vol. 2, page 8 line 1-4

would be associated, if there was?

MR. McCORMICK: The environmental assessment will look at a number of refinements, and the project is subject to a permit under the Niagara Escarpment Planning & Development Act. The costs of doing that hasn't been determined, because we don't have an assessment of whether it is reasonable, feasible, what exactly would be done. That is an EA matter.

MR. PAPPAS: Perhaps you could tell me. Maybe that should be part of a due-diligence study before -- you did intend to go across the Niagara Escarpment, am I correct?

MR. McCORMICK: The transmission line does go across the Niagara Escarpment, yes.

MR. PAPPAS: I am going to ask you. It just seems to me that if you had to consider doing that, and you had to consider that there may be changes, it just seems to me -- could you tell me why that wouldn't have been looked at already, in terms of cost? Because obviously there is something that can cost a lot. Is there some reason why you couldn't have done an estimated study earlier?

MR. NETTLETON: Mr. Pappas, what Mr. McCormick indicated was that this project requires an environmental-assessment approval.

The environmental-assessment approval process is one that starts with defining the scope of the environmental assessment that is to be carried out, and that process is referred to as the terms-of-reference process. Effectively, the terms of reference define what factors are going to be considered and taken into account in the environmental assessment that's to be carried out.

Right now, we are going through a process with the Ministry of Environment on understanding what the terms of reference for this project are going to be. And those environmental assessment steps are happening at the same time as the OEB process is being carried out.

MR. PAPPAS: I understand that. That wasn't the nature of my question. Regardless of what the EA leads to, you still have this issue ahead of you; and since the cost, depending on what you do - regardless of the EA - could vary, it just -- isn't this, then, putting the cart before the horse, the leave to construct before the EA application?

MR. McCORMICK: We are certainly dealing with a very different regulatory environment, where we have a very short timeline and we had to run two processes concurrently. We felt that was the best approach.

We have put forward a reference route that had certain risks attached to it, but that was our best guess at the state of where the project was at that time, as to the likely outcome.

We have also admitted in the terms of reference that we will be looking at route refinements. Again, if those route refinements are determined to be more appropriate, have significant advantages, then that will be put forward and brought back to the Ontario Energy Board.

So it is not putting the cart before the horse. It is sort of doing the things in the right way. The environmental-assessment process will provide opportunities for the public to be involved in looking at options, refinement options, providing us feedback before we make any decisions.

So for us to say something else is going to work, would be more

> acceptable is premature.
>
> MR. PAPPAS: My question there would be, is: Do you feel that there wasn't enough time to do these studies and that's why you are waiting on the EA? I mean the financial studies of what would happen if you had to do this or that.
>
> MR. McCORMICK: I believe one is dependent on the other. You're going to do a financial study of a route that you haven't defined. You're talking about a refinement to how the reference route currently crosses the Niagara Escarpment Commission lands. We haven't determined whether that is appropriate or what exactly that route would be. So how could we do the economics on that?[21]

When compared to the other two route options eliminated by the Applicant, it is clear that the proposed option is not 'suitable'. Neither of the other options suffer from the three fundamental concerns hereinbefore described.

It is submitted that the misinterpretation of the PPS results in a total failure to adequately review the other two suitable options. This failure results in a lack of any evidence about these options being proffered by the Applicant and as such precludes the Board absolutely from ascertaining whether the proposed alternative is the BETTER alternative. This is unacceptable.

DESCRETION IS THE BETTER PART OF VALOUR:

HONI submits that the project applied for is a non-discretionary project as defined by the OEB Minimum Filing Requirements for Transmission and Distribution Rate Applications and Leave to Construct Projects. Section 5.2.2 deals with this classification:

> **5.2.2 Project Need**
>
> The second stage of project categorization is to distinguish whether the project need is determined beyond the control of the Applicant ("Non-discretionary") or determined at the discretion of the Applicant ("Discretionary").
>
> Non-discretionary projects may be triggered or determined by such things as:
>
> • Mandatory requirement to satisfy obligations specified by Regulatory Organizations including NPCC/NERC (NAERO in the near future) or by the

[21] Technical Conference, October 16, 2007, Vol. 2, page 52 line 3 to page 54 line 25.

> Independent Electricity Market Operator (IESO);
>
> • Need to accommodate new load (of a distributor or large user) or new generation (connection);
>
> • To relieve system elements (transmission lines, circuit breakers, etc.) where the loading exceeded their capacities or where short circuit levels on these system elements exceeded their withstand capabilities;
>
> • Projects identified in an approved IPSP;
>
> • To comply with direction from the Ontario Energy Board in the event it is determined that the transmission system's reliability is at risk.
>
> Discretionary projects are proposed by the Applicant to enhance the transmission system performance benefiting its users. Projects in this category may include:
>
> • Projects to reduce transmission system losses;
>
> • Projects to reduce congestion;
>
> • Projects to build a new or enhance an existing interconnection to increase generation reserve margin within the IESO-controlled grid;
>
> • Projects to meet system needs relying on best practices;
>
> • Projects which add flexibility to the operation and maintenance of the transmission system.[22]

Under cross-examination Panel 1 addressed the above criteria and it is clearly demonstrated based on their responses that this is a discretionary project. You will note in the following cross-examination that counsel for the Ross Firm Group carefully reviewed each bullet point under discretionary and non-discretionary projects and obtained confirmation that each relevant item set out under 'Project Need' are in fact discretionary.

> MR. ROSS: So it is a must do project?
>
> MR. CHOW: It's a non-discretionary project classification.
>
> MR. ROSS: Thank you. Organizations such as NPCC, NERC or the IESO did not direct this particular alternative, did they?
>
> MR. CHOW: Sorry. I don't understand that question.
>
> MR. ROSS: The organizations that I have enunciated did not direct the

[22] http://www.oeb.gov.on.ca/documents/minfilingrequirements_report_170706.pdf page 29-30

alternative as articulated by Hydro One. It was Hydro One that directed this, that put this alternative forward. Is that accurate?

[Witness panel confers]

MR. FALVO: We didn't direct the specific project. It was proposed, and we accepted it as satisfying the need.

MR. ROSS: The alternative proposed is not forwarded in order to relieve current system elements where the loading is exceeding their capacities or where short-circuit levels on these system elements exceeded their withstanding capabilities, to relieve current system elements?

MR. CHOW: Mr. Ross, where are you reading that?

MR. ROSS: From my notes. Do you want me to restate the question?

MR. CHOW: Yes.

MR. ROSS: The alternative proposed by Hydro One is not forwarded in order to relieve current system elements where the loading is exceeding their capacities or where short-circuit levels on these system elements exceed their withstanding capabilities.

MR. FALVO: I would say it may solve those things, but if those were the only problems on the system, this new line may not have been the solution to resolve those specific issues.

MR. ROSS: The alternative being put forward before the Board today is not a project identified and approved, IPSP?

MR. CHOW: It is identified in a discussion paper of the IPSP. Its urgency cannot await the outcome of the IPSP, so it is proceeding as a stand-alone project, ahead of the IPSP.

MR. ROSS: So it is not identified in an approved IPSP?

MR. NETTLETON: Mr. Ross, he answered your question.

MS. NOWINA: Well, Mr. Nettleton, in fairness, he didn't. I didn't hear the specific answer to the question, myself.

MR. CHOW: The project is identified in the discussion paper presented as part of the development of the IPSP.

MR. ROSS: Which is not yet approved.

MR. CHOW: Which is not yet approved.

MR. ROSS: Thank you. The alternative proposed by Hydro One is not undertaken to comply with the direction of the OEB, based on a determination that the transmission system's reliability is at risk?

MR. CHOW: It was not directed by the OEB.

MR. ROSS: The alternative proposed by Hydro One is designed to reduce transmission system losses?

> MR. CHOW: It will do that.
>
> MR. ROSS: The alternative proposed by Hydro One is designed to reduce congestion?
>
> MR. CHOW: It will do that, definitely.
>
> MR. ROSS: The alternative proposed by Hydro One is designed to add flexibility to the operation and maintenance of the transmission system?
>
> MR. CHOW: Yes.[23]

Given that this is a discretionary project, the Applicant should conform to the following standards when leading evidence before the Board:

> **5.3.1 Evidence in Support of Need**
> **The Applicant's evidence in support of the need for the project must be comprehensive**, and, where appropriate, could be supported by evidence of the IESO and/or the Ontario Power Authority:
>
> • where a proposed project is best compared to transmission alternatives, including "doing nothing"; and
>
> • where the Applicant lists benefits of avoiding non-transmission alternatives such as a peaking generation facility, it is helpful for the Applicant to include corroborative evidence from the IESO or the OPA regarding the Applicant's quantitative evaluation of such a benefit.[24]
> *(Emphasis added)*

The Applicant's evidence in support of this proposed project has been anything but comprehensive. It has been piecemeal and reactive. The evidence forwarded by the Applicant has been more akin to a defendant's response in civil litigation than that which should be proffered by an Applicant in a regulatory setting. This is not a case of one party's evidence being tested against another. It is the Applicant onus to establish the entire case, both pro and con, themselves. They must be seen to have covered all aspects and thought of and addressed all issues put before the Board.

The Board relies on the Applicant to educate them as to the need and justification of the project. In the instant case, the Applicant has shown the Board only scant evidence; and therefore the Applicant falls short of the threshold for approval. Throughout the process

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[23] Transcript, Vol. 2, May 2, 2008, page 89 line 28 – page 92 line 8.
[24] http://www.oeb.gov.on.ca/documents/minfilingrequirements_report_170706.pdf page 30.

the Applicant has challenged the Intervenors to provide evidence in areas which were rightly the province of the Applicant itself. A few striking examples of this are:

1. Series Compensation as a viable or non-viable alternative. The Applicant only brought forward evidence, in the form of two expert reports commissioned by the Applicant,[25] when pressed in interrogatories. Even then they denied its gravamen despite its clear statement that the technology is a viable resource in the Southwestern Ontario Grid.

2. Alternate conductoring technology was only reviewed after it was raised in interrogatories and was only addressed with a one page worksheet provided as an undertaking during the second day of hearing. This worksheet was prepared after the Application was filed.

3. Evidence about the BSPS's ability to deal with or not deal with the near term and interim measures, let alone deal with the alternative proposed by the Intervenors dealing with Series Compensation and G/R was not addressed until the 'late breaking news' raised by counsel for the Applicant after the close of their case. This important area was the subject of much procedural wrangling, but lead to limited and incomplete substantive evidence from which the Board could make an informed decision.

4. Evidence about wind generation forecasting and transmission needs was virtually non-existent until raised as a live issue by Intervenors. Similarly, this area, which was in the least a crux issue for the success or failure of the Application, was dealt with in a rhetorical and cursory manner, even when tested by the Intervenors.

The Applicant put in discussion points on these important issues in their pre-filed evidence and then only addressed them in a perfunctory way when tested by the

[25] The report of ABB and Mr. Woodward.

Intervenors.

This begs the question, what else has been neglected by the Applicant in their pitched attempt at success in this Application.

> **5.3.1 Evidence in Support of Need**
> **In some cases**, the need for a discretionary or **non-discretionary project is driven by factors external to the Applicant**, such as the need to satisfy an IESO requirement or to serve an incremental customer load. **The factors driving the project must be identified, but the burden remains on the Applicant to support the claim of need.**
>
> **It is not sufficient for the applicant to state that the customer or agency has established the need for the project; the Board must be able to test that assertion.**[26] *(Emphasis added)*

Clearly this project is driven by development at the Bruce Nuclear Generation Facility, yet **NO** evidence from Bruce Power has been proffered to support the refurbishment of Bruce B. This project is driven by the need to increase renewable generation in the Province yet nothing from the Wind Generation Applicants about the need for increased transmission has been submitted. Only hearsay conjecture and allusion have been led by the Applicant.

> **5.3.2 Options and Cost Benefit Analyses**
> In the case of a **non-discretionary project, the preferred option should establish that it is a better project than the alternatives**. The Applicant cannot include "doing nothing" as an alternative. One way for an Applicant to demonstrate that that a preferred option is the best option is to show that it has the highest net present value as compared to the alternatives. However, this net present value need not be shown to be greater than zero. In the case of an internally set project, "doing nothing" would count as a viable option.[27] *(Emphasis added)*

It is the Ross Firm Group's submission that this is not the better project. That in light of the environmental issues raised by Camp Creek and the Niagara Escarpment, it falls short of the other two routes considered by the Applicant. In light of the burden being placed on a single right-of-way to transmit such a large amount of energy to such a large load centre, the proposed alternative is not better as required by section 5.3.2.

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[26] http://www.oeb.gov.on.ca/documents/minfilingrequirements_report_170706.pdf page 30.
[27] http://www.oeb.gov.on.ca/documents/minfilingrequirements_report_170706.pdf page 31.

THE ROAD NOT TAKEN:

The evidence of Mr. Brill, which is not refuted, is that HONI did not investigate in a competent manner the available technological alternatives to the proposed line. Mr. Brill is unable, in fact to provide an opinion as to the better transmission alternative because there is simply not enough information provided by the Applicant upon which to do so.

> SEA did not find evidence of consideration to a combination of existing and new technologies or line upgrades, as opposed to acquiring new land and building new lines. The age of transmission facilities carrying load out of the Bruce area ranges from 13+ years to over 40 years in age. SEA would request to see information whether HONI has investigated or conducted research on adding capacitor technologies in combination with upgrading lines with higher capacity conductors. High capacity transmission line technology is available from several companies. Comparing these costs and adding them to the proposed series and shunt capacitors also with Static VAR Compensators (SVC) can provide an alternative to new transmission facilities at this time. HONI only used series capacitors as a stand-alone option when they rejected it during their assessment process. In addition, FACTS (Flexible Alternating Current Transmission Systems) technologies should also be considered and evaluated on a cost-benefit basis to determine if the different technologies associated with this system are justified. Although part of this system, which includes series and shunt capacitors, is being considered for the near-term and interim measures, different technologies and strategies of the FACTS alternatives should be considered and evaluated to improve the delivery of the generating capabilities out of the Bruce.[28]
>
> SUMMARY
> It is SEA's opinion that without additional information to clarify the areas address above, there is not enough supporting evidence to justify the need as it relates to the existing transmission system's capacity and the justification of the proposed Bruce to Milton 500-kV transmission expansion. Other technologies or combinations of technologies and short-term and interim measures may be sufficient to meet the need of supplying the existing and proposed power generated from the Bruce area.[29]

Mr. Brill, who was qualified by the Board as an expert in power quality and forensic engineering is well versed on the impacts of system design from both the planning and failure perspective. In addition, Mr. Brill's experience with Florida Power and Light as a liaison between generators and transmitters adds to his *bona fides*. Based on Mr. Brill's

[28] Report of Edward R. Brill, SEA Ltd, page 12.
[29] Report of Edward R. Brill, SEA Ltd, page 13.

expert and uncontroverted testimony it is the Ross Firm Group's submission that the Applicant's failure to consider alternative technologies in isolation or in combination with each other is fatal to their Application.

Below is an exchange between Mr. Fallis and Mr. Brill wherein Mr.Brill sets out his experience relevant to this proceeding and his opinion about the Applicant's failure to assess alternate technologies.

> MR. BRILL: That was mainly -- the main part of my job was to be the interface between the power company and the ratepayer and the consumer. From an industrial standpoint, you know, it would be customers such as -- like Cape Canaveral, which is a transmission level customer, Tropicana, which is also transmission, and we would also go down to the residential side. And being the interface between the customer from the engineering standpoint, when there were issues with new transmission lines and projected projects and proposed projects that FPL was considering, we were the group that actually had to be the technical interface between these large customers, similar to what you have, you know, as far as the way this is being handled, **where we would present a proposed -- either a line extension or a new line to the consumer, and as an engineer dealing with the -- you know, as the interface between the customer, we had to ask the questions that we felt the ratepayer was going to ask the utility, as far as, Why are you doing this? What options have you considered, and, you know, why didn't you do that?**
>
> So we, as the expert, wanted to try to see if we could look at the proposals, you know, whether it was EMF -- because EMF was a big issue for many years for new potential transmission projects. We were actually the interface to go out and talk about EMF issues with the customer, talk about why the lines were being built, what alternatives were considered and why the proposal that was being put forth before the Public Service Commission, which is a similar entity to what this Board is set up as, you know, whether this made sense to the ratepayer and whether we looked at all of the different options that were available to the ratepayer.
>
> MR. FALLIS: So, with respect -- you mentioned you've had experience in analyzing FACTS technologies, and I am just going to throw out some topical words, and I am not an expert so I may be not using them in the correct sense, but like thyristor. Is that something that is part of the FACTS technology, is that a part of the -- is that something you are familiar with as well?
>
> MR. BRILL: Yes, and it is just one component of one device. Basically, when we talk about series capacitors, and there has been a lot of talk about series capacitors, during these hearings, all of the FACTS technology is, is one version of a series capacitor.
>
> When you talk about FACTS -- which stands for Flexible Alternating Current Transmission System -- there's a FACTS technology that is based on series capacitors, and they use, they can use thyristors, which is basically just

> an electronic switch to control and turn on these series capacitors in varying degrees.
>
> By adding the extra electronic thyristor device, you now give yourself a lot more control and a lot more power with your series capacitors, to be able to control them and adjust them to avoid issues like we've heard discussed in these hearings about subsynchronous resonance. But again, you are going to add cost to that technology, so it has to be weighed in with cost and benefits.
>
> So when you look at the series capacitors, you may want to look at what -- if we were to put in thyristor-controlled series capacitors -- what benefits would we get that are in addition to the benefits we're going to see with a fixed capacitor, and then look at the costs associated with that and decide as a utility if that is a better option than just with a series capacitor standing alone. *(Emphasis added)*[30]

In sum, it was Mr. Brill's evidence in his report as well as his testimony that the Application as proposed ostensibly provided no alternative aside from a route selection. Mr. Brill also pointed out that the review of series capacitors without consideration of other integrated technology cast into question the use of this standard technology. On the other hand, serious consideration of the integrated technology would have borne out its potential viability. This evidence supports the notion that HONI was not compliant with the requirement to provide meaningful alternatives in word and in spirit. Their compliance was superficial at best and an intentional attempt to provide the Board with only one scenario.

FOOLS RUSH IN:

The evidence led by both the Applicant and Intervenors makes it clear that we are dealing with projections. It made clear that these projections are complex and are comprised of a myriad of variables. This point was underlined in the Applicant's argument and in the evidence of their experts when discussing financial modeling as relates to Net Present Value and wind generation forecasts. The Applicants take an all or nothing approach to this situation. They argue that it is the evidence before the Board currently that must be relied upon. The alternative they claim is to wait until all unknowns become certain at which time a reactionary approach will have to be taken at great expense.

Mr. Russell however suggested another approach. Mr. Russell advocates that the Board

[30] Transcript, Vol. 14, June 11, 2008, page 278 line 18 – page 280 line 26.

'wait and see' while the generation landscape defines itself with more clarity. He recommends that the Board need not make assumptions when facts will soon be readily available. He argues that the implementation lead time for the generation facilities projected which come to fruition (or don't) allow for ample time to respond in an educated and measured way. Further, Mr. Russell provided compelling financial data which not only negatives the assumptions of the OPA with regard to locked in energy costs, and also shows the lasting and superior Net Present Value of the 'wait and see' approach. This approach was not refuted in evidence and was only dealt with in a superficial way in the Applicant's argument.

BLACKOUT:

HONI has throughout the Application played on the fear of system failure to support the most robust and expansive option. There is no evidence to support this fear. The BSPS and other SPS like it have been functioning in the Province for decades without incident. They have functioned as designed. There is no evidence to suggest that further or continued reliance on this system will have any different outcome going forward.

It is the submission of the Ross Firm Group that the Board must discount that most human of developed civilization's fears; the fear that some day, if we do not conform to the Applicant's proposal, we will be thrust into darkness. This ghost in the machine is just that, an apparition which must be fanned out of sight to provide a clear view of the true merits of the Application.

CONCLUSION:

It is the submission of the Ross Firm Group that the Applicant has failed to meet the evidentiary burden in this Application. It is further submitted that the Applicant has failed to refute the evidence to the contrary with regard to their financial and generation projections. Finally the Applicant has not shown that the alternatives articulated by the Intervenors are without merit and as such require no further study.

It is the job of the Applicant to make their case. It is the job of the Intervenors to test it. In the instant matter, the Applicant has not made their case and Intervenors not only tested the Applicant's proposed alternative, but in turn suggested others which at the very least require further exploration. The Intervenors do not have the resources or teleology of expertise to forward a complete solution, nor is that their duty. What they have done is demonstrate areas which the Applicant did not address and have shown the need to further address those areas before a decision can be made.

It is the submission of the Ross Firm Group that while the Board cannot approve an alternative proposed by an Intervenor, they must recognize the importance of the work done by the Intervenors and send HONI away to complete the work started by the disciplined and thoughtful work of the parties opposed to the Application.

ALL OF WHICH IS RESPECTFULLY SUBMITTED this 4th day of July, 2008.

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Quinn M. Ross
Counsel for the Ross Firm Group of Intervenors