EB-2007-0050

Chris Pappas - Interrogatories for Hydro One – 23 & 24, Part 5

March 20, 2008

Preamble:

Upgrading of transmission lines to conductors of higher temperature ratings conveys superior transmission efficiency, particularly where conductors are near or at their thermal limits. Hence, this should be a serious consideration as part of any transmission reinforcement project.

Interrogatory No. 23

Ref. 1) APPENDIX A to Procedural Order No. 5 IN THE MATTER OF Leave to Construct Application by Hydro One Networks EB-2007-0050 DATED February 25, 2008

Issue Number: 1.0 Project Need and Justification

Issue Number: 1.1

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

Issue Number: 1.3

1.3 Issue: Have all appropriate project risk factors pertaining to the need and justification (including but not limited to forecasting, technical and financial risks) been taken into consideration in planning this project?

Issue Number: 1.4

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

Issue Number: 2.0 Project Alternatives

Issue Number: 2.1

2.1 Issue: Have all reasonable alternatives to the project been identified and considered?

Issue Number: 2.2

2.2 Issue: Has an appropriate evaluation methodology been applied to all the alternatives considered?

Issue Number 2.3

2.3 Issue For all of the considered alternatives, does the evaluation methodology utilized include a cost benefit comparison as well as a comparison of all quantitative and qualitative benefits?

Issue Number: 2.4

2.4 Issue:

a) Have appropriate evaluation criteria and criteria weightings been utilized in the evaluation process for the alternatives and the proposed project and what additional criteria/weightings could be considered?

b) Have appropriate comparisons been carried out on all reasonable alternatives with respect to reliability and quality of electricity service, including stability and transient stability levels, voltage performance and Loss of Load Expectation projections under normal and post-contingency conditions?

c) Do the alternatives meet the applicable standards for reliability and quality of electricity service?

Issue Number: 2.5

2.5 Issue: Is the proposal a better project than the reasonable alternatives?

Issue Number: 2.6

2.6 Issue: Are the project's rate impacts and costs reasonable for:

- **the transmission line;**
- **the station modifications; and**
- **the Operating, Maintenance and Administration requirements.**

Issue Number: 4.0 Reliability and Quality of Electricity Service

Issue Number: 4.1

4.1 Issue: For the preferred option, does the project meet all the requirements as identified in the System Impact Assessment and the Customer Impact Assessment?

Issue Number: 4.2

4.2 Issue: Does the project meet applicable standards for reliability and quality of electricity service?

Issue Number: 4.3

4.3 Issue: Have all appropriate project risk factors pertaining to system reliability and quality of electricity service been taken into consideration in planning this project?

Request

Provide data showing the change in resistance and change in heat loses, over the temperature range of minus 40 degrees Celsius to 40 degrees Celsius [ambient air temperature] experienced, over a year's time, by the various conductors in use on all of the 500 kV and 230 kV circuits emanating from the Bruce Power Generating Facility, and for conductors that could be considered for upgrading these to higher temperature ratings.

Interrogatory No. 24
Ref. 1) APPENDIX A to Procedural Order No. 5 IN THE MATTER OF Leave to Construct Application by Hydro One Networks EB-2007-0050 DATED February 25, 2008
Issue Number: 1.0 Project Need and Justification
Issue Number: 1.1
1.1 Issue: Has the need for the proposed project been established?
Issue Number: 1.3
1.3 Issue: Have all appropriate project risk factors pertaining to the need and justification (including but not limited to forecasting, technical and financial risks) been taken into consideration in planning this project?
Issue Number: 1.4
1.4 Issue: Is the project suitably chosen and sufficiently scalable so as to meet all reasonably foreseeable future needs of significantly increased or significantly reduced generation in the Bruce area?

Issue Number: 2.0 Project Alternatives
Issue Number: 2.1
2.1 Issue: Have all reasonable alternatives to the project been identified and considered?

Issue Number: 2.2

2.2 Issue: Has an appropriate evaluation methodology been applied to all the alternatives considered?

Issue Number 2.3

2.3 Issue For all of the considered alternatives, does the evaluation methodology utilized include a cost benefit comparison as well as a comparison of all quantitative and qualitative benefits?

Issue Number: 2.4

2.4 Issue:

a) Have appropriate evaluation criteria and criteria weightings been utilized in the evaluation process for the alternatives and the proposed project and what additional criteria/weightings could be considered?

b) Have appropriate comparisons been carried out on all reasonable alternatives with respect to reliability and quality of electricity service, including stability and transient stability levels, voltage performance and Loss of Load Expectation projections under normal and post-contingency conditions?

c) Do the alternatives meet the applicable standards for reliability and quality of electricity service?

Issue Number: 2.5

2.5 Issue: Is the proposal a better project than the reasonable alternatives?

Issue Number: 2.6

2.6 Issue: Are the project's rate impacts and costs reasonable for:

- **the transmission line;**
- **the station modifications; and**
- **the Operating, Maintenance and Administration requirements.**

Issue Number: 4.0 Reliability and Quality of Electricity Service

Issue Number: 4.1

4.1 Issue: For the preferred option, does the project meet all the requirements as identified in the System Impact Assessment and the Customer Impact Assessment?

Issue Number: 4.2

4.2 Issue: Does the project meet applicable standards for reliability and quality of electricity service?

Issue Number: 4.3

4.3 Issue: Have all appropriate project risk factors pertaining to system reliability and quality of electricity service been taken into consideration in planning this project?

Request

Provide data showing the temperature rise, change in resistance, and change in heat loss, over the months of the year, experienced by the various conductors in use on all of the 500 kV and 230 kV circuits emanating from the Bruce Power Generating Facility, and for conductors that could be considered for upgrading these to higher temperature ratings, due to the effects of direct sunlight. Provide this data as the average effect of such radiation as modified by cloud cover, wind speed, etc. for a fair and reasonable estimate. The purpose here is to understand which conductors are more likely to approach their thermal limits in response to insolation.