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March 20, 2009

VIA EMAIL & COURIER

Ms. Kirsten Walli Board Secretary Ontario Energy Board 2300 Yonge St, Suite 2701 Toronto ON M4P 1E4

Dear Ms. Walli:

# Board File No. EB-2008-0272 Hydro One Networks 2009-2010 Transmission Rates Case Argument of Energy Probe

Pursuant to the Panel Chair's direction in respect of the argument schedule, delivered during the Oral Hearing on March 3, 2009, please find two hard copies of the Argument of Energy Probe Research Foundation (Energy Probe) in the EB-2008-0272 proceeding. An electronic version of this communication will be provided in PDF format.

Should you require additional information, please do not hesitate to contact me.

Yours truly,

David S. MacIntosh Case Manager

cc: Glen MacDonald, Hydro One Networks Inc. (By email)

Donald H. Rogers, Rogers Partners LLP (By email) Peter T. Faye, Counsel to Energy Probe (By email)

Parties of Interest (By email)

## 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** a review of an application filed by Hydro One Networks Inc. under section 78 of the *Ontario Energy Act*, 1998, seeking changes to the uniform provincial transmission rates.

# Final Argument On Behalf Of

**Energy Probe Research Foundation** 

March 20, 2009

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## Final Argument On Behalf Of

#### **Energy Probe Research Foundation**

#### How these Matters came before the Board

- 1. On September 30, 2008, Hydro One Networks Inc. (the "Applicant" or "Hydro One"), filed an Application seeking approval for changes to the uniform provincial transmission rates that it charges for electricity transmission, to be effective July 1, 2009. The Board issued a Notice of Application on October 17, 2008. Energy Probe filed a Notice of Intervention on October 24, 2008, as a full time intervenor.
- 2. Energy Probe participated in extensive pre-hearing consultations with Hydro One prior to the Application being filed with the Board. These consultations were well organized and the relevant information was well presented, resulting in a much reduced overall scope for the hearing, substantially enhanced information being brought forward to the Board by the applicant, and a better informed stakeholder community. Energy Probe expresses its appreciation to Hydro One for undertaking the consultation process.
- 3. Procedural Order No. 1 was issued by the Board on November 14, 2008 and provided both a Proposed Issues List and a procedural schedule for the proceeding. Parties were encouraged to make submissions on the proposed issues list.
- 4. The Issues Decision and Procedural Order No. 2 was issued by the Board on December 1, 2008. Energy Probe filed Interrogatories on December 24, 2008, and actively participated in a short Settlement Conference on February 9, 2009.

5. Energy Probe did take part in the Oral Hearing, including cross examination of witnesses, commencing on February 23, 2009.

#### **Argument Overview**

- 6. Energy Probe has conducted itself as an all issues intervenor throughout this proceeding.
- 7. In its Argument, Energy Probe will not seek to explore all outstanding Issues before the Board, but will be examining those Issues of concern to Energy Probe where we believe we can be of most assistance to the Board, and has addressed some matters that might not be as thoroughly canvassed by other consumer-oriented groups.

#### OM&A

- Issue 3.1 Are the proposed spending levels for Sustaining and Development OM&A in 2009 and 2010 appropriate, including consideration of factors such as of system reliability and asset condition?
- 8. The Applicant requests an increase in OM&A spending for the test years.

  The most significant component of that spending increase is in Stations OM&A and within Stations, the largest contributing category is Power Equipment.
- 9. According to the evidence, this spending is driven by an aging population of power system components. Exhibit C1, Tab 2, Schedule 2, page 14, lines 23-28, summarizes the situation as follows:
  - "An increasing number of power equipment assets, such as power transformers and circuit breakers, are entering their mid-life and end of life regions. Mid-life represents the point in an asset's life-cycle where the reliability of the equipment begins to deteriorate and OM&A costs begin to escalate. End-of-life represents a point where reliability deteriorates and it is no longer economical to repair or refurbish the asset."

- 10. Under cross examination, the applicant's witnesses clarified that within the broad mid-life range, those devices in the 20 30 year age class were more apt to require increased maintenance (Transcript Volume 2, page 170, line 23, to page 171, line 25) and that the trend for devices entering this maintenance prone age class was upwards. The witness also referred Energy Probe to Exhibit D1, Tab 3, Schedule 2, pages 10 and 20, for more detail of transformer and circuit breaker age distributions. (Transcript Volume 2, page 174, lines 8-13).
- 11. Interpolating from the graph in Exhibit D1, Tab 3, Schedule 2, page 20, for power transformers, a numerical age distribution for 2008 can be constructed. Further, using the fact that a transformer of age X in 2008 would have been age (X-1) in 2007, (X-2) in 2006 etc. allows construction of age distributions for years previous to 2008. Similarly, future age distribution can be constructed by recognizing that transformers of age X in 2008 will be age (X+1) in 2009, age (X+2) in 2010 and so on.
- 12. The results of this analysis taken back to 1998 and forward to 2018 in Chart 1 (See Appendix A), shows the trend of power transformers entering the maintenance prone age class of 20-30 years old. The chart demonstrates that the number of power transformers in the 20-30 year age class actually peaked in 1998 at about 262 units and has declined steadily since then to about 80 units in 2008 and 2009 and about 95 units in 2010. The trend shows an increase after 2010 but stabilizes around 125 units in each of the years up to 2018.
- 13. Historical year spending on Power Equipment Sustaining OM&A is shown in Exhibit C1, Tab 2, Schedule 2, page 5, Table 2. In 2005 the spending was \$42.2 M and, referring again to Chart 1, there were about 143 transformers in the 20-30 year old age class. Similarly, in 2006, the spending was \$52.9 M and there were about 116 transformers in the 20-30 year age class. In 2007, the spending was

- $$69.4 ext{ M}$ with about 85 transformers in the <math>20-30$  year age class. The trend over this period appears to be that as the number of transformers entering the 20-30 year age class declines, the applicants spending on sustaining OM&A has risen. The evidence does not adequately explain this observation.
- 14. Furthermore, because transformers entering this age class remain in the class for 10 years, many of the same transformers are in the 20-30 year age class for the entire period 2007-2010. Therefore, the population is not only static in terms of numbers but is comprised largely of the same units over the test period raising the question of how asset condition can be significantly different in the bridge and test years than it was in 2007.
- 15. Energy Probe submits that, based on this analysis, the evidence does not support an inference that the number of transformers entering the maintenance prone mid life class of 20-30 years old is increasing over the test years. In fact, looking at the entire 20 year range presented in Chart 1, the bridge and test years actually have the fewest number of transformers in that age class. If there is any relationship between the number of transformers in the maintenance prone age class and the cost of maintaining them, the cost for the bridge and test years should be lower than for the historical years.
- 16. Energy Probe also notes that the Health Index results for power transformers presented in Exhibit I, Tab 6, Schedule 51, shows an improvement in the index for power transformers from the 2006 results, so that about 96% of power transformers are currently in the Good to Very Good categories. This, in Energy Probe's submission, suggests that OM&A spending on power transformers in the test years should be less than the spending in 2006.

- 17. A similar analysis for age distribution of circuit breakers yields the results in Chart 2 (Appendix A). Here the number of circuit breakers in the 20 30 year age class peaked in 1998 at about 1350 units, declined steadily to about 820 units in 2008, will decline further to about 740 units in 2009 and return to the 2008 level of about 825 units in 2010. After that the trend rises through 2011 to 2018 to levels comparable to 1998.
- 18. Over the bridge and test years, however, the number of circuit breakers in the maintenance prone age class of 20-30 years old, remains relatively stable. If, as the witnesses stated, this age class is providing the pressure on OM&A costs, the evidence does not support an increase in expenditures above historical levels. Indeed, given the higher historical levels of circuit breakers in this maintenance prone age class, one would expect that historical expenditures would be higher than those required in the test years.
- 19. If transformers and circuit breakers comprise most of the equipment in the Power Equipment category of Sustaining OM&A, Energy Probe submits that the evidence does not support the claim of an increasing trend for maintenance costs in the bridge and test years.

#### OM&A

- Issue 3.3 Are the compensation levels proposed for 2009 and 2010 appropriate?
- 20. The Applicant was directed in a previous Board decision (EB-2006-0501) "to provide empirical evidence which reveals the relative productivity of its workforce in comparison to other utilities" according to the evidence at Exhibit A, Tab 16, Schedule 1, page 11, lines 21-22.

- 21. The Applicant's response was to file a Compensation Cost Benchmarking Study prepared by consultants Mercer/Oliver Wyman. The compensation part of that study concluded that "on an overall weighted average basis for the positions reviewed, Hydro One is approximately 17% above the market median" (Exhibit A, Tab 16, Schedule 2, page 2, lines 26-28).
- 22. According to the evidence, the productivity part of the study shows that Hydro One is "better than or approximately at median performance for the Total Transmission and Distribution productivity indicators" (Exhibit A, Tab 16, Schedule 2, page 3, lines 12-14).
- 23. The Applicant concludes that these "results balance Hydro One's total compensation being above the market median. The benchmarking study results provide further support for Hydro One's position that its continued productivity accomplishments offset its relative compensation levels". (Exhibit A, Tab 16, Schedule 2, page 3, lines 20-23).
- 24. One of the measures used in the productivity study was "Total Compensation/MWhr sold". For T&D productivity purposes, this metric compares total T&D compensation to the total number of MWhrs sold through the transmission network. In most of the peer group used in the study, it was clear that the peer's total Transmission and Distribution compensation was for delivering electricity from the generator to the end use customer. However, in the case of Hydro One, the distribution part of the total T&D compensation is only for distributing electricity to the 1/3 of the Provinces electricity customers that it actually serves. However, it has included all of the Mwhrs delivered to the other 2/3 of the Province's electricity customers by others.

- 25. This results from the unique structure of the distribution industry in Ontario in which Local Distribution Companies (LDCs) other than Hydro One perform the distribution function for 2/3 of the Provinces electricity customers. The distribution compensation attributable to LDCs is not included in Hydro One's compensation costs in the study which understates them compared to the peer group who provide both Transmission and Distribution services to all customers in the Province not just a portion of them.
- 26. Therefore, Hydro One's productivity on this metric which shows it as better than the median is incorrect. To compare properly to the peer group, the distribution compensation of LDCs to deliver to the other 2/3 of the Provinces customers would have to be added to that of Hydro One. Under cross examination, the applicant's witnesses confirmed that those costs had not been included. (Transcript Volume 3, page 44, line 18, to page 48, line 8).
- 27. A similar situation arises with the "Total Compensation/Service Territory (km²)" metric. Service territory was defined by the applicant's witnesses as 96% of Ontario's land mass. (Transcript Volume 3, page 33, line 12, to page 34, line 3). Because LDC territory gets included in Hydro One's service territory using this definition, but LDC compensation costs do not get included, the result is that the metric makes Hydro One look better than it really is. Once again, to be comparable to the peer group, Hydro One would have to add the distribution costs of all the LDCs covered by the service territory definition to its own. Alternatively, the LDC territory included in the total would have to be removed to make the metric comparable. In either case, the recalculated metric would show Hydro One as less productive than it does in the study.

- 28. In addition to the flaws discussed above, the presentation of results in the study appears to be internally inconsistent. For example, on page 33 of the study, a bar chart shows Hydro One's ranking on the "T&D compensation per gross asset value" as the median value. However, when represented in the graphical chart on page 31, Hydro One is shown as better than the median value. The same situation occurs with the metric "T&D compensation per km of line". On page 34, Hydro One is shown as the median value but on the graphical presentation on page 31 it is shown as better than median. The result, plotted on the graphical presentations, is used to conclude that Hydro One is better than the median when in fact, it is the median.
- 29. When asked in cross examination about these apparent inconsistencies, the applicant's witness was unable to explain it. (Transcript Volume 3, page 49, line 6, to page 50, line 16).
- 30. A second section of the productivity study was devoted to Customer Service compensation metrics. Here the metrics are all the same as in the T&D part of the study except that, instead of T&D compensation being considered, total Customer Service Compensation is considered. Hydro One compares favourably to the peer group on all measures of customer service used, but Energy Probe submits that the study suffers from the same flaws already discussed in the T&D section.
- 31. For example, "Customer Service compensation/Mwhr sold" ignores the customer service costs of LDCs to deliver a large part of those Mwhrs to 2/3 of the Province's customers. The peer group, however, does not have the large number of LDCs that Ontario has so their Customer Service compensation costs are for most or all of the comparable Province's customers. In order to be comparable with the peer group, the customer service compensation costs of LDCs would have to be added to Hydro One's or the Mwhrs delivered by LDCs would have to be subtracted from the total used in the metric.

- 32. Similarly, for the "Customer Service compensation/territory size" the territory size calculation includes the LDC territory for which Hydro One has little or no customer service costs whereas its peer group do have costs because they serve the end customer.
- 33. Another consideration is that Hydro One's actual distribution service territory doesn't have very many customers per km<sup>2</sup> compared to the more urban and therefore denser LDCs. Because the metric uses "territory size" instead of "number of customers served" the result is biased in Hydro One's favour even if the territory size is reduced to account for the areas served by LDCs.
- 34. Energy Probe submits that the productivity study is sufficiently flawed that the results cannot be used to conclude that Hydro One productivity is at or better than median on any of the metrics considered. Unbundled metrics such as "Distribution compensation/customer", "Customer service compensation/customer" or "Transmission compensation costs/Tx line km" would provide more meaningful bases on which to compare productivity and compensation with other transmission and distribution companies.
- 35. Energy Probe further submits that the applicant's statement in Exhibit A, Tab 16, Schedule 2, page 3, lines 20-23, that the "results balance Hydro One's total compensation being above the market median. The benchmarking study results provide further support for Hydro One's position that its continued productivity accomplishments offset its relative compensation levels" is not supported by the evidence and should be given no weight by the Board.

#### **CAPITAL EXPENDITURES and RATE BASE**

- Are the proposed 2009 and 2010 Sustaining and Development and Operations capital expenditures appropriate, including consideration of factors such as system reliability and asset condition?
- 36. The evidence states and the witnesses confirmed that the increasing number of power transformers and circuit breakers entering the end of life age class of 40 60 years old is driving the need for increased sustaining capital expenditures in the bridge and test years.
- 37. An analysis to regress and age the current population of transformers and circuit breakers similar to the preceding analysis for mid life populations yields the trend in Charts 3 and 4 (Appendix A) for transformers and circuit breakers entering their end of life age classes.
- 38. This analysis is complicated by the likelihood that retrospective numbers in this chart (years 1998 2008) are understated because they do not account for retirements of units greater than 60 years old during the period. However, the trend clearly indicates a significant increase in the number of units of both transformers and circuit breakers that will need replacement over the next ten years.
- 39. Energy Probe, therefore, supports the Applicant's proposal for increased expenditures in sustaining capital related to power transformer and circuit breaker replacements.

## Costs

40. Energy Probe submits that it participated responsibly in this proceeding. Energy Probe requests the Board award 100% of its reasonably incurred costs.

## ALL OF WHICH IS RESPECTFULLY SUBMITTED

March 20, 2009

# **Peter Faye**

**Counsel to Energy Probe Research Foundation** 

	Chart 1  Number of Power Transformers in 20 - 30 year age class 1998 -2018  Data derived from chart in Exhibit D1 T3 S2 page 20.																				
Age (Yrs)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
20	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20	13	8	0	0	3	0
21	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20	13	8	0	0	3
22	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20	13	8	0	0
23	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20	13	8	0
24	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20	13	8
25	41	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20	13
26	15	41	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32	20
27	18	15	41	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20	32
28	36	18	15	41	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18	20
29	31	36	18	15	41	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9	18
30	19	31	36	18	15	41	6	28	36	14	18	5	15	10	7	6	3	1	1	5	9
Total	262	248	232	206	195	186	148	143	116	85	80	80	95	112	122	128	130	127	126	128	123

	Chart 2 Number of Circuit Breakers in 20 - 30 year age class 1998 -2018 Data derived from chart in Exhibit D1 T3 S2 page 10.																				
Age (Yrs)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
20	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200	135	130	65	100	95	90
21	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200	135	130	65	100	95
22	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200	135	130	65	100
23	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200	135	130	65
24	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200	135	130
25	140	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200	135
26	65	140	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180	200
27	155	65	140	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125	180
28	180	155	65	140	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75	125
29	80	180	155	65	140	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170	75
30	125	80	180	155	65	140	115	120	110	105	155	40	120	65	75	90	30	20	30	25	170
Total	1350	1265	1305	1190	1110	1135	1025	930	840	755	820	740	825	885	1020	1080	1120	1155	1235	1300	1365

							Nu				- 60 year a	ge class 19 S2 page 20									
Age (Yrs)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
40	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15	41	6	28	36	14	18
41	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15	41	6	28	36	14
42	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15	41	6	28	36
43	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15	41	6	28
44	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15	41	6
45	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15	41
46	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18	15
47	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36	18
48	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31	36
49	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19	31
50	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11	19
51	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23	11
52	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11	23
53	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7	11
54	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15	7
55	4	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7	15
56	3	4	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16	7
57	5	3	4	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21	16
58	2	5	3	4	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16	21
59	0	2	5	3	4	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5	16
60	0	0	2	5	3	4	1	0	6	3	1	24	8	10	44	17	14	4	4	21	5
Totals	176	192	213	227	229	241	244	254	277	282	298	328	340	350	355	352	341	355	387	397	394

	Chart 4  Number of Circuit Breakers in 40 - 60 year age class 1998 -2018  Data derived from chart in Exhibit D1 T3 S2 page 10.																				
Age (Yrs)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
40	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65	140	115	120	110	105	155
41	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65	140	115	120	110	105
42	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65	140	115	120	110
43	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65	140	115	120
44	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65	140	115
45	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65	140
46	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155	65
47	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180	155
48	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80	180
49	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125	80
50	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65	125
51	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50	65
52	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40	50
53	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25	40
54	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40	25
55	3	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65	40
56	2	3	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25	65
57	2	2	3	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30	25
58	2	2	2	3	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15	30
59		2	2	2	3	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20	15
60			2	2	2	3	0	0	10	10	10	15	10	15	10	20	15	20	5	25	20
Totals	194	209	239	262	325	363	385	425	475	530	645	715	880	1025	1075	1205	1300	1405	1495	1595	1725