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BY COURIER

March 7, 2008

Mr. Basil Alexander
Klippensteins
Barristers & Solicitors
160 John St., Suite 300
Toronto ON
M5V 2E5

Dear Mr. Alexander:

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

I am attaching a paper copy of the responses to the interrogatory questions in your first list (questions 1 to 13). A CD with electronic copy of the model requested as part of Interrogatory # 9 is also included as C-2-9 Attachment 1. This model also applies to the request of Interrogatory # 10 and # 11.

Interrogatory responses are being filed as Exhibit C. Responses to your questions are being included under Tab 2, Schedules 1 to 13.

Sincerely,

ORIGINAL SIGNED BY ANDREW PORAY FOR SUSAN FRANK

Susan Frank

c. K. Walli, Ontario Energy Board
EB-2007-0050 Intervenors
M. Heinz, Ontario Power Authority

Pollution Probe INTERROGATORY #1 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1

For each month from January 1984 to the present, please state:

a) the installed capacity at the Bruce Nuclear Station;

b) the total monthly output (MWh) of the Bruce Nuclear Station;

c) the peak hour output (MW) of the Bruce Nuclear Station; and

d) the average capacity factor of the Bruce Nuclear Station.

Response

As noted in Hydro One's earlier correspondence dated February 26, 2008 to the Board and parties, generation production data prior to market opening is not available. The production data from market opening to the present is as follows:

	Bruce A				Bruce B			
Year / Month	Capacity (MW)	Total Monthly Output (MWh)	Peak Hourly Output (MW)	Average Capacity Factor (%)	Capacity (MW)	Total Monthly Output (MWh)	Peak Hourly Output (MW)	Average Capacity Factor (%)
200205					3,180	1,717,900	2,398	73
200206					3,180	1,709,508	2,394	75
200207					3,180	1,766,080	2,402	75
200208					3,180	1,812,964	3,132	77
200209					3,180	1,951,634	3,179	85
200210					3,180	1,766,045	2,387	75
200211					3,180	1,711,077	2,390	75
200212					3,180	1,787,511	2,947	76
200301					3,180	2,353,939	3,187	99
200302					3,180	2,134,663	3,190	100
200303					3,180	2,362,288	3,237	100
200304					3,180	1,802,961	3,191	79
200305					3,180	1,773,058	2,395	75
200306					3,180	1,775,117	3,122	78
200307					3,180	2,320,372	3,181	98
200308					3,180	2,122,785	3,190	90
200309					3,180	2,062,760	3,172	90
200310					3,180	1,751,470	2,380	74
200311	770	383,794	716	69	3,180	1,653,791	2,386	72
200312	770	525,370	712	92	3,180	1,675,077	2,392	71
200401	1,540	586,388	1,395	51	3,180	1,812,649	3,166	77
200402	1,540	601,759	1,428	56	3,180	2,090,206	3,194	94
200403	1,540	768,670	1,502	67	3,180	2,365,452	3,197	100
200404	1,540	1,064,712	1,499	96	3,246	2,240,862	3,213	96

	Bruce A				Bruce B			
Year / Month	Capacity (MW)	Total Monthly Output (MWh)	Peak Hourly Output (MW)	Average Capacity Factor (%)	Capacity (MW)	Total Monthly Output (MWh)	Peak Hourly Output (MW)	Average Capacity Factor (%)
200405	1,540	917,464	1,487	80	3,246	2,384,130	3,217	99
200406	1,540	512,496	744	46	3,246	2,300,882	3,216	98
200407	1,540	984,899	1,501	86	3,246	2,357,266	3,218	98
200408	1,540	1,039,960	1,514	91	3,246	2,275,630	3,220	94
200409	1,540	1,056,785	1,503	95	3,246	1,087,714	3,189	47
200410	1,540	1,106,266	1,500	97	3,246	709,421	1,585	29
200411	1,540	731,772	1,501	66	3,246	1,580,153	2,378	68
200412	1,540	1,097,002	1,491	96	3,246	2,287,976	3,207	95
200501	1,540	694,718	1,488	61	3,246	2,182,061	3,217	90
200502	1,540	506,642	762	49	3,246	2,011,053	3,208	92
200503	1,540	539,828	1,142	47	3,246	2,348,069	3,220	97
200504	1,540	373,831	1,354	34	3,246	1,690,298	3,154	72
200505	1,540	1,020,770	1,518	89	3,246	1,483,067	2,410	61
200506	1,540	1,075,439	1,521	97	3,246	1,741,539	2,473	75
200507	1,540	1,104,661	1,514	96	3,246	1,774,846	2,414	73
200508	1,540	1,084,376	1,513	95	3,246	2,085,252	3,237	86
200509	1,540	862,083	1,512	78	3,246	2,265,513	3,201	97
200510	1,540	1,114,801	1,515	97	3,246	1,922,252	3,180	80
200511	1,540	1,029,189	1,512	93	3,246	1,652,514	2,452	71
200512	1,540	1,041,670	1,514	91	3,246	1,542,761	2,886	64
200601	1,540	1,018,915	1,541	89	3,246	2,294,166	3,205	95
200602	1,540	822,278	1,558	79	3,246	1,972,431	3,219	90
200603	1,540	716,503	1,513	63	3,246	2,373,827	3,218	98
200604	1,540	931,815	1,523	84	3,246	2,217,925	3,210	95

	Bruce A				Bruce B			
Year / Month	Capacity (MW)	Total Monthly Output (MWh)	Peak Hourly Output (MW)	Average Capacity Factor (%)	Capacity (MW)	Total Monthly Output (MWh)	Peak Hourly Output (MW)	Average Capacity Factor (%)
200605	1,540	556,142	760	49	3,246	2,269,594	3,237	94
200606	1,540	615,891	1,448	56	3,246	2,167,307	3,237	93
200607	1,540	927,894	1,504	81	3,246	2,366,508	3,245	98
200608	1,540	1,047,600	1,509	91	3,246	2,360,548	3,242	98
200609	1,540	902,005	1,516	81	3,246	1,826,177	3,245	78
200610	1,540	1,104,292	1,498	96	3,246	1,782,500	2,434	74
200611	1,540	1,019,454	1,501	92	3,246	1,890,090	3,292	81
200612	1,540	1,105,726	1,497	97	3,246	2,394,197	3,266	99
200701	1,540	1,102,006	1,489	96	3,246	2,152,489	3,242	89
200702	1,540	992,764	1,487	96	3,246	1,609,360	2,410	74
200703	1,540	838,342	1,495	73	3,246	1,693,787	2,509	70
200704	1,540	677,921	1,553	61	3,365	2,095,669	3,272	86
200705	1,575	726,958	1,541	62	3,365	2,257,257	3,237	90
200706	1,575	1,101,020	1,547	97	3,365	2,049,804	3,266	85
200707	1,575	1,030,478	1,553	88	3,365	2,363,992	3,228	94
200708	1,575	1,099,698	1,518	94	3,365	2,184,157	3,218	87
200709	1,575	620,465	1,523	55	3,365	2,284,742	3,225	94
200710	1,575	534,210	740	46	3,365	2,313,492	3,214	92
200711	1,575	685,278	1,459	60	3,365	2,123,964	3,282	88
200712	1,575	1,060,920	1,523	91	3,365	2,260,175	3,277	90
200801	1,575	1,103,638	1,496	94	3,365	2,274,749	3,324	91

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Pollution Probe INTERROGATORY # 2 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1

For each year from 1984 to the present, please state:

a) the annual output (MWh) of the Bruce Nuclear Station;

b) the peak hour output (MW) of the Bruce Nuclear Station;

c) the average annual capacity factor of the Bruce Nuclear Station; and

d) the average annual capacity factor for each unit of the Bruce Nuclear Station.

Response

As noted in Hydro One's earlier correspondence dated February 26, 2008 to the Board and parties, generation production data prior to market opening is not available. The production data requested from market opening to the present is as follows:

a) to c)

	Bruce A				Bruce B		
Year	Annual Output (MWh)	Peak Hourly Output (MW)	Average Annual Capacity Factor (%)		Annual Output (MWh)	Peak Hourly Output (MW)	Average Annual Capacity Factor (%)
2002					14,222,719	3,179	76
2003	909,164	716	81		23,788,282	3,237	85
2004	10,468,173	1,514	77		23,492,341	3,220	83
2005	10,448,007	1,521	77		22,699,224	3,237	77
2006	10,768,517	1,558	80		25,915,270	3,292	88
2007	10,470,060	1,553	76		25,388,887	3,282	86
2008	1,103,638	1,496	94		2,274,749	3,324	91

d) The average annual capacity factory for each unit at the Bruce Nuclear Station is as follows:

Year	Bruce A Units Avg. Annual Capacity Factor (%)					Bruce B Units Avg. Annual Capacity Factor (%)			
	1	2	3	4		1	2	3	4
2002						98	51	55	99
2003				81		76	97	96	71
2004			74	81		85	75	92	82
2005			73	82		74	77	69	99
2006			81	79		97	95	93	76
2007			73	78		94	69	96	90
2008			92	96		97	96	86	85

Pollution Probe INTERROGATORY # 3 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1 and B/Tab 4/Sch 4

For each year from 2012 to 2036 inclusive, please provide the OPA's estimates of the total generation (MWh) for the Bruce Area. Please also break-out these estimates by the following generation types:

a) existing Bruce A nuclear reactors;

b) existing Bruce B nuclear reactors;

c) re-built Bruce B nuclear reactors;

d) new Bruce nuclear reactors;

e) existing wind generation;

f) committed wind generation;

g) uncommitted wind generation; and

h) other.

Response

The Bruce Area has been studied by the OPA only to 2030. Information for the period 2012 to 2030 is shown below. Information to 2036, as requested in the Interrogatory, is not available.

The following assumptions have been made in order to respond to this interrogatory:

1. The nuclear capacity at Bruce will be the equivalent to the 4 Bruce A and 4 Bruce B units in the long term.

2. 15 MW of existing wind generation in the Bruce Area.

3. 685 MW of committed wind generation in the Bruce Area.

4. There will be 1000 MW of future wind generation in the Bruce Area.

5. An Effective Forced Outage Rate of 8% was assumed for the Bruce nuclear units.

6. Each unit at Bruce would require 45 days in every two years for planned maintenance outages.

7. The Bruce NGS B units will be refurbished starting in 2018.

8. Each unit will take 2.5 years to refurbish.

9. Wind in the Bruce Area has an average energy that is equivalent to approximately 29% of the installed capacity running for the entire year.

The results are presented below in table format for each of the requested breakdowns:

Energy (MWh)

Year	Bruce A	Bruce B	Bruce B Refurb	Existing Wind	Committed Wind	Future Wind	Total
2012	15124800	25586624	0	37681	1720767	0	42469872
2013	22214550	25712160	0	37681	1720767	791302	50476459
2014	22687200	25712160	0	37681	1720767	1971974	52129782
2015	22687200	25712160	0	37681	1720767	2512068	52669876
2016	22687200	25712160	0	37681	1720767	2512068	52669876
2017	22687200	25712160	0	37681	1720767	2512068	52669876
2018	22687200	19284120	0	37681	1720767	2512068	46241836
2019	22687200	12856080	0	37681	1720767	2512068	39813796
2020	22687200	9642060	3214020	37681	1720767	2512068	39813796
2021	22687200	3214020	9642060	37681	1720767	2512068	39813796
2022	22687200	0	12856080	37681	1720767	2512068	39813796
2023	22687200	0	19284120	37681	1720767	2512068	46241836
2024	22687200	0	25712160	37681	1720767	2512068	52669876
2025	22687200	0	25712160	37681	1720767	2512068	52669876
2026	22687200	0	25712160	37681	1720767	2512068	52669876
2027	22687200	0	25712160	37681	1720767	2512068	52669876
2028	22687200	0	25712160	37681	1720767	2512068	52669876
2029	22687200	0	25712160	37681	1720767	2512068	52669876
2030	22687200	0	25712160	37681	1720767	2512068	52669876

Pollution Probe INTERROGATORY # 4 List 1

Interrogatory

Issue Number: 1.0

Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1 and B/Tab 4/Sch 4

For each year from 2012 to 2036 inclusive, please provide the OPA's estimates of the total effective generation capacity (MW) in the Bruce Area at the time of Ontario's province-wide system peak. Please also break-out these estimates by the following generation types:

a) existing Bruce A nuclear reactors;

b) existing Bruce B nuclear reactors;

c) re-built Bruce B nuclear reactors;

d) new Bruce nuclear reactors;

e) existing wind generation;

f) committed wind generation;

g) uncommitted wind generation; and

h) other.

Response

Please refer to the response to Pollution Probe's Question 3 for a list of assumptions employed by the OPA in developing a response to this interrogatory.

For the purpose of responding to this interrogatory, "Effective Generation Capacity" at the time of system peak is being defined as 20% of installed capacity for wind generation and as (100%-Effective Forced Outage Rate) of the installed capacity for nuclear generation.

The results are presented below in table format for each of the requested breakdowns:

Effective Capacity (MW)

Year	Bruce A	Bruce B	Bruce B Refurb	Existing Wind	Committed Wind	Future Wind	Total
2012	2070	3113	0	3	137	0	5323
2013	2760	3128	0	3	137	63	6091
2014	2760	3128	0	3	137	157	6185
2015	2760	3128	0	3	137	200	6228
2016	2760	3128	0	3	137	200	6228
2017	2760	3128	0	3	137	200	6228
2018	2760	2346	0	3	137	200	5446
2019	2760	1564	0	3	137	200	4664
2020	2760	782	782	3	137	200	4664
2021	2760	0	1564	3	137	200	4664
2022	2760	0	1564	3	137	200	4664
2023	2760	0	2346	3	137	200	5446
2024	2760	0	3128	3	137	200	6228
2025	2760	0	3128	3	137	200	6228
2026	2760	0	3128	3	137	200	6228
2027	2760	0	3128	3	137	200	6228
2028	2760	0	3128	3	137	200	6228
2029	2760	0	3128	3	137	200	6228
2030	2760	0	3128	3	137	200	6228

Pollution Probe INTERROGATORY # 5 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1

For each year from 2012 to 2036 inclusive, please provide the OPA's estimates of the Bruce Area's annual electricity consumption (MWh).

Response

As noted in Hydro One's letter of February 28, 2008, the requested forecast is not prepared by either Hydro One or the OPA. The information is therefore not available.

Pollution Probe INTERROGATORY # 6 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1

For each year from 2012 to 2036 inclusive, please provide the OPA's estimates of the Bruce Area's demand (MW) at the time of Ontario's province-wide system peak.

Response

As noted in Hydro One's letter of February 28, 2008, the requested forecast is not prepared by either Hydro One or the OPA. The information is therefore not available.

Pollution Probe INTERROGATORY # 7 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1, B/Tab4/Sch 4 and K/Tab 1

If the proposed Bruce to Milton high-voltage transmission line is not approved, please provide the OPA's estimates of the Bruce Area's locked-in energy (MWh) for each year from 2012 to 2036 inclusive under each of the following scenarios:

a) The implementation of Hydro One's near-term measures (i.e. dynamic and static reactive resources and upgrading the Hanover to Orangeville line);

b) The implementation of Scenario A plus the expansion of the Bruce special protection system;

c) The implementation of Scenario B plus the installation of series capacitors;

d) The implementation of Scenario C if the Bruce B nuclear reactors are not re-built at the end of their service lives and no new nuclear capacity is installed in the Bruce Area; and

e) The implementation of Scenario C if the Bruce B nuclear reactors are not re-built at the end of their service lives, no new nuclear capacity is installed in the Bruce Area, **and** the average annual capacity factor of the Bruce Nuclear Station is 10% lower than the OPA's current estimate.

Please also break-out these annual locked-in energy estimates by the following generation categories:

a) existing Bruce A nuclear reactors;

b) existing Bruce B nuclear reactors;

c) re-built Bruce B nuclear reactors;

d) new Bruce nuclear reactors;

e) existing wind generation;

f) committed wind generation;

g) uncommitted wind generation; and

h) other.

Response

(a) The undelivered energy was calculated using a detailed analysis of generation and transmission capabilities of the Bruce Area power system. The Bruce Area has only been studied by the OPA to 2030 and information to that date is shown below instead of to 2036 as requested in the Interrogatory.

A summary of salient aspects of the methodology used to forecast undelivered energy is provided below:

Wind Generation

Wind generation varies with season and time of day. A distribution of wind generation output was developed using twenty years of historical wind speed data for the Bruce Area. Probabilistic distributions were developed for 8 time periods in a year: winter peak, winter mid-peak, winter-off peak, summer peak, summer mid-peak, summer off-peak, shoulder mid-peak and shoulder off-peak.

Nuclear Generation

Probabilistic distribution of nuclear generation was developed using a two-state model (i.e., either on or off) and their Effective Forced Outage Rate (EFOR) and Planned Outage Duration for each unit at the Bruce NGS.

Total Generation in the Bruce Area

Probabilistic distribution of total generation in the Bruce Area was then produced as a convolution of the wind and nuclear generation. This was done assuming that the output of wind and nuclear generation are independent.

Transmission Capability

Transmission capability needs to be reduced when outages occur on transmission elements from planned outages and forced outages. Transfer-capability probability distributions were developed using the all-element in-service capability and the historical capability reduction data for the Bruce Area for the years 2005 to 2007.

Undelivered Energy

The undelivered energy was determined by taking a convolution of the difference between the available Bruce Area generation and the transmission capability on a probabilistic basis. Available generation and transmission capabilities were assumed to be independent events.

Assumptions employed by the OPA in developing a response to this interrogatory are provided in the Response to Pollution Probe Interrogatory 3. In addition to those, it was assumed that generation rejection (G/R) cannot be used except to mitigate the effects of transmission equipment outages.

The results for the years 2012 to 2030 are shown in the table below.

OPA has not assigned undelivered energy values to the categories described in items (a) to (h). Such an assignment would depend on then-prevailing system operations, including re-dispatch selection.

a) See table below.

b) See table below.

c) See table below.

d) See table below.

e) See table below.

Undelivered Energy (MWh)

Year	Part a)	Part b)	Part c)	Part d)	Part e)
2012	59545	59545	6497	6497	2953
2013	1489431	1489431	608816	608816	255128
2014	2271113	2271113	1115368	1115368	495319
2015	2573342	2573342	1340332	1340332	614178
2016	2573342	2573342	1340332	1340332	614178
2017	2573342	2573342	1340332	1340332	614178
2018	494611	494611	175495	1340332	614178
2019	29499	29499	4680	1340332	614178
2020	29499	29499	4680	102658	48451
2021	29499	29499	4680	3220	1610
2022	29499	29499	4680	0	0
2023	494611	494611	175495	0	0
2024	2573342	2573342	1340332	0	0
2025	2573342	2573342	1340332	0	0
2026	2573342	2573342	1340332	0	0
2027	2573342	2573342	1340332	0	0
2028	2573342	2573342	1340332	0	0
2029	2573342	2573342	1340332	0	0
2030	2573342	2573342	1340332	0	0

Pollution Probe INTERROGATORY # 8 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1, B/Tab4/Sch 4 and K/Tab 1

If the proposed Bruce to Milton high-voltage transmission line is not approved, please provide the OPA's estimates of the Bruce Area's locked-in effective capacity (MW) at the time of Ontario's province-wide system peak for each year from 2012 to 2036 inclusive under each of the following scenarios:

a) The implementation of Hydro One's near-term measures (i.e. dynamic and static reactive resources and upgrading the Hanover to Orangeville line);

b) The implementation of Scenario A plus the expansion of the Bruce special protection system;

c) The implementation of Scenario B plus the installation of series capacitors;

d) The implementation of Scenario C if the Bruce B nuclear reactors are not re-built at the end of their service lives and no new nuclear capacity is installed in the Bruce Area; and

e) The implementation of Scenario C if the Bruce B nuclear reactors are not re-built at the end of their service lives, no new nuclear capacity is installed in the Bruce Area, and the average annual capacity factor of the Bruce Nuclear Station is 10% lower than the OPA's current estimate.

Please also break-out these estimates of the annual locked-in effective capacity by the following generation categories:

a) existing Bruce A nuclear reactors;

b) existing Bruce B nuclear reactors;

c) re-built Bruce B nuclear reactors;

d) new Bruce nuclear reactors;

e) existing wind generation;

f) committed wind generation;

g) uncommitted wind generation; and

h) other.

Response

For the purpose of responding to this IR, "locked-in effective capacity" is assumed to mean effective generation capacity in excess of the effective transmission capability at system peak. "Effective generation capacity" is defined as in the response to Pollution Probe question 4. "Effective transmission capability" is assumed to mean the normal system transmission capability reduced by the average of the historical (2005 to 2007) capability reductions resulting from outages in the system.

Please see the response to Pollution Probe #7 for the assumptions and methodology used in developing the results below. Note that it is not possible to assign the undelivered energy costs to the categories requested. Also note that the results for part (a) and part (b) are identical. This relates to the assumption made regarding the use of generation rejection (G/R). Please see the response to Pollution Probe Interrogatory #7.

Effective Locked-in Capacity (MW)

Year	Part a)	Part b)	Part c)	Part d)	Part e)
2012	0	0	0	0	0
2013	0	0	0	0	0
2014	0	0	0	0	0
2015	43	43	0	0	0
2016	43	43	0	0	0
2017	43	43	0	0	0
2018	0	0	0	0	0
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	0	0	0	0	0
2023	0	0	0	0	0
2024	43	43	0	0	0
2025	43	43	0	0	0
2026	43	43	0	0	0
2027	43	43	0	0	0
2028	43	43	0	0	0
2029	43	43	0	0	0
2030	43	43	0	0	0

Pollution Probe INTERROGATORY # 9 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. B/Tab 1/Sch 1, B/Tab4/Sch 4 and K/Tab 1

If the proposed Bruce to Milton high-voltage transmission line is not approved, please provide the OPA's estimates of the net present value (in 2007$) of Bruce Area's locked-in electricity for each year from 2012 to 2036 inclusive under each of the following scenarios:

a) The implementation of Hydro One's near-term measures (i.e. dynamic and static reactive resources and upgrading the Hanover to Orangeville line);

b) The implementation of Scenario A plus the expansion of the Bruce special protection system;

c) The implementation of Scenario B plus the installation of series capacitors;

d) The implementation of Scenario C if the Bruce B nuclear reactors are not re-built at the end of their service lives and no new nuclear capacity is installed in the Bruce Area; and

e) The implementation of Scenario C if the Bruce B nuclear reactors are not re-built at the end of their service lives, no new nuclear capacity is installed in the Bruce Area, and the average annual capacity factor of the Bruce Nuclear Station is 10% lower than the OPA's current estimate.

If the OPA's discount rate is not the same as the discount rate used by Hydro One to calculate the net present value of the cost for the proposed Bruce to Milton transmission line, please provide the OPA's net present value calculations using:

a) the OPA's discount rate; and

b) Hydro One's discount rate.

With respect to these net present value calculations, please provide all of the OPA's input and other assumptions, and please break-out the net present values for each year from 2012 to 2036 inclusive by the following generation categories:

a) existing Bruce A nuclear reactors;

b) existing Bruce B nuclear reactors;

c) re-built Bruce B nuclear reactors;

d) new Bruce nuclear reactors;

e) existing wind generation;

f) committed wind generation;

g) uncommitted wind generation; and

h) other.

Please also provide an electronic copy of the OPA's discounted cash flow model which will allow the Board and interveners to vary the input and other assumptions and recalculate these net present values.

Response

The Bruce Area has been studied by the OPA to 2030 and information to that date is shown below instead of to 2036 as requested in the Interrogatory.

As explained in the evidence in Exhibit B, Tab 6, Schedule 5, Appendix 1, pg. 3, the proposed project is non-discretionary and therefore does not need to be evaluated on a cash flow basis. However, OPA has created a cash flow model to respond to this and other Interrogatories. The model uses the methodology and assumptions outlined in the response to Interrogatory 7 from Pollution Probe.

In addition to these, the following assumptions were made in order to respond to this question:

1. The cost of undelivered energy is equal to the cost of the replacement energy.
2. Energy costs are those in the OEB published TRC Guide, Table 11.
3. A real discount rate of 4% was assumed by the OPA.

The results using both OPA's discount rate and Hydro One's discount rate are provided below. Note that the OPA uses a real discount rate of 4%, which is an estimate of the social discount rate. This is different from Hydro One's discount rate, which is an after-tax, nominal rate of 5.47% based on its cost of capital, as shown in the Nov. 30th, 2007 update to the evidence at Exhibit B/T4/S4/p.5. When discounting unescalated, non-utility cash flows such as undelivered energy, use of a real social discount rate is advised rather than a utility-specific, nominal, after-tax discount rate.

The results for 2012 to 2030 are shown in the table below. Note that it is not possible to assign the undelivered energy costs to the categories requested. Also note that the results for part (a) and part (b) are identical. This relates to the assumption made regarding the use of generation rejection (G/R). Please see the response to Pollution Probe Interrogatory #7.

a) See tables below.
b) See tables below.
c) See tables below.
d) See tables below.
e) See tables below.

A copy of the requested model is provided, as Attachment 1, subject to the conditions described in the OPA's letter to the Board dated March 5, 2008.

Undelivered Energy Cost (M$2007) (OPA Discount Rate)

Year	Part a)	Part b)	Part c)	Part d)	Part e)
2012	3	3	0	0	0
2013	69	69	29	29	12
2014	105	105	52	52	23
2015	120	120	63	63	29
2016	115	115	60	60	28
2017	110	110	58	58	26
2018	20	20	7	55	25
2019	1	1	0	53	24
2020	1	1	0	4	2
2021	1	1	0	0	0
2022	1	1	0	0	0
2023	17	17	6	0	0
2024	82	82	43	0	0
2025	78	78	41	0	0
2026	75	75	39	0	0
2027	72	72	38	0	0
2028	69	69	36	0	0
2029	67	67	35	0	0
2030	64	64	34	0	0

Undelivered Energy Cost (M$2007) (Hydro One Discount Rate)

Year	Part a)	Part b)	Part c)	Part d)	Part e)
2012	3	3	0	0	0
2013	64	64	26	26	11
2014	95	95	47	47	21
2015	107	107	56	56	26
2016	101	101	53	53	24
2017	96	96	50	50	23
2018	17	17	6	47	22
2019	1	1	0	45	20
2020	1	1	0	3	2
2021	1	1	0	0	0
2022	1	1	0	0	0
2023	13	13	5	0	0
2024	64	64	34	0	0
2025	61	61	32	0	0
2026	58	58	30	0	0
2027	55	55	29	0	0
2028	52	52	27	0	0
2029	49	49	26	0	0
2030	47	47	24	0	0

Pollution Probe INTERROGATORY # 10 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. K/Tab 1

Please provide OPA's estimate of the net present value (in 2007$) of expanding the Bruce special protection system.

If the OPA's discount rate is not the same as the discount rate used by Hydro One to calculate the net present value of the cost for the proposed Bruce to Milton transmission line, please provide the OPA's net present value calculations using:

c) the OPA's discount rate; and

d) Hydro One's discount rate.

With respect to these net present value calculations, please provide all of the OPA's input and other assumptions, and please break-out the net present values by each year.

Please also provide an electronic copy of the OPA's discounted cash flow model which will allow the Board and interveners to vary the input and other assumptions and recalculate these net present values.

Response

The response to this question is in the two tables below. The assumptions made to respond to this Interrogatory are the same as those made in Hydro One's response to Pollution Probe Interrogatory 9.

The results below assume that the near-term measures are completed and the Bruce SPS upgrade is installed. The undelivered energy costs shown (under the LIE column) and the system losses represent the undelivered energy and losses without the proposed Bruce to Milton line installed.

The results using both OPA's discount rate and Hydro One's discount rate are provided below. Note that the OPA uses a real discount rate of 4%, which is an estimate of the social discount rate. This is different from Hydro One's discount rate, which is an after-tax, nominal rate of 5.47% based on its cost of capital, as shown in the Nov. 30th, 2007 update to the evidence at Exhibit B/T4/S4/p.5. When discounting unescalated, non-utility cash flows such as undelivered energy, use of a real social discount rate is advised rather than a utility-specific, nominal, after-tax discount rate.

A copy of the requested model is provided in the response to Pollution Probe Interrogatory #9 subject to the conditions described in the OPA's letter to the Board dated March 5, 2008.

Net Present Cost of Expanding the BSPS (OPA Discount Rate)

	Cost in 2007 Dollars (M$)				Discounted Cost in 2007 Dollars (M$)	
Year	LIE	Capital	Losses	Sum	NPV	Cumulative NPV
2009	$ 1	$ -	$ -	$ 1	$ 1	$ 1
2010	$ 3	$ 7	$ -	$ 10	$ 9	$ 10
2011	$ 0	$ -	$ -	$ 0	$ 0	$ 10
2012	$ 3	$ -	$ 20	$ 24	$ 19	$ 29
2013	$ 88	$ -	$ 24	$ 112	$ 88	$ 118
2014	$ 138	$ -	$ 22	$ 160	$ 122	$ 239
2015	$ 164	$ -	$ 23	$ 188	$ 137	$ 376
2016	$ 164	$ -	$ 23	$ 187	$ 131	$ 507
2017	$ 163	$ -	$ 23	$ 186	$ 126	$ 633
2018	$ 31	$ -	$ 26	$ 57	$ 37	$ 670
2019	$ 2	$ -	$ 19	$ 21	$ 13	$ 683
2020	$ 2	$ -	$ 19	$ 21	$ 13	$ 696
2021	$ 2	$ -	$ 19	$ 21	$ 12	$ 708
2022	$ 2	$ -	$ 19	$ 21	$ 12	$ 720
2023	$ 31	$ -	$ 25	$ 56	$ 30	$ 750
2024	$ 159	$ -	$ 22	$ 181	$ 93	$ 843
2025	$ 158	$ -	$ 22	$ 181	$ 89	$ 932
2026	$ 158	$ -	$ 22	$ 181	$ 86	$ 1,018
2027	$ 158	$ -	$ 22	$ 181	$ 82	$ 1,100
2028	$ 158	$ -	$ 22	$ 181	$ 79	$ 1,179
2029	$ 158	$ -	$ 22	$ 181	$ 76	$ 1,256
2030	$ 158	$ -	$ 22	$ 181	$ 73	$ 1,329

Net Present Cost of Expanding the BSPS (Hydro One Discount Rate)

	Cost in 2007 Dollars (M$)				Discounted Cost in 2007 Dollars (M$)	
Year	LIE	Capital	Losses	Sum	NPV	Cumulative NPV
2009	$ 1	$ -	$ -	$ 1	$ 1	$ 1
2010	$ 3	$ 7	$ -	$ 10	$ 9	$ 9
2011	$ 0	$ -	$ -	$ 0	$ 0	$ 9
2012	$ 3	$ -	$ 20	$ 24	$ 18	$ 28
2013	$ 88	$ -	$ 24	$ 112	$ 81	$ 109
2014	$ 138	$ -	$ 22	$ 160	$ 110	$ 219
2015	$ 164	$ -	$ 23	$ 188	$ 123	$ 341
2016	$ 164	$ -	$ 23	$ 187	$ 116	$ 457
2017	$ 163	$ -	$ 23	$ 186	$ 109	$ 566
2018	$ 31	$ -	$ 26	$ 57	$ 32	$ 598
2019	$ 2	$ -	$ 19	$ 21	$ 11	$ 609
2020	$ 2	$ -	$ 19	$ 21	$ 10	$ 620
2021	$ 2	$ -	$ 19	$ 21	$ 10	$ 630
2022	$ 2	$ -	$ 19	$ 21	$ 9	$ 639
2023	$ 31	$ -	$ 25	$ 56	$ 24	$ 663
2024	$ 159	$ -	$ 22	$ 181	$ 73	$ 736
2025	$ 158	$ -	$ 22	$ 181	$ 69	$ 806
2026	$ 158	$ -	$ 22	$ 181	$ 66	$ 871
2027	$ 158	$ -	$ 22	$ 181	$ 62	$ 933
2028	$ 158	$ -	$ 22	$ 181	$ 59	$ 993
2029	$ 158	$ -	$ 22	$ 181	$ 56	$ 1,048
2030	$ 158	$ -	$ 22	$ 181	$ 53	$ 1,102

Pollution Probe INTERROGATORY # 11 List 1

Interrogatory

Issue Number: 1.0
Issue: Project Need and Justification

Ref. K/Tab 1

Please provide OPA's estimate of the net present value (2007$) of installing series capacitors.

If the OPA's discount rate is not the same as the discount rate used by Hydro One to calculate the net present value of the cost for the proposed Bruce to Milton transmission line, please provide the OPA's net present value calculations using:

a) e) the OPA's discount rate; and

b) f) Hydro One's discount rate.

With respect to these net present value calculations, please provide all of the OPA's input and other assumptions, and please break-out the net present values by each year. Please also provide an electronic copy of the OPA's discounted cash flow model which will allow the Board and interveners to vary the input and other assumptions and recalculate these net present values.

Response

The response to this question is in the two tables below. The assumptions made to respond to this Interrogatory are the same as those made in Hydro One's response to Pollution Probe Interrogatory 9.

The results below assume that the near-term measures and the Bruce SPS upgrade are completed, and the series capacitors are added in 2012. The undelivered energy costs shown (under the LIE column) and the system losses represent the undelivered energy and losses without the proposed Bruce to Milton line installed.

The results using both OPA's discount rate and Hydro One's discount rate are provided below. Note that the OPA uses a real discount rate of 4%, which is an estimate of the social discount rate. This is different from Hydro One's discount rate, which is an after-tax, nominal rate of 5.47% based on its cost of capital, as shown in the Nov. 30th, 2007 update to the evidence at Exhibit B/T4/S4/p.5. When discounting unescalated, non-utility cash flows such as undelivered energy, use of a real social discount rate is advised rather than a utility-specific, nominal, after-tax discount rate.

A copy of the requested model is provided in the response to Pollution Probe Interrogatory #9 subject to the conditions described in the OPA's letter to the Board dated March 5, 2008.

Net Present Cost of Series Capacitors (OPA Discount Rate)

	Cost in 2007 Dollars (M$)				Discounted Cost in 2007 Dollars (M$)	
Year	LIE	Capital	Losses	Sum	NPV	Cumulative NPV
2009	$ 1	$ 31	$ -	$ 32	$ 30	$ 30
2010	$ 3	$ 52	$ -	$ 55	$ 49	$ 79
2011	$ 0	$ 0	$ -	$ 0	$ 0	$ 79
2012	$ 0	$ -	$ 21	$ 21	$ 18	$ 96
2013	$ 36	$ -	$ 29	$ 65	$ 52	$ 148
2014	$ 68	$ -	$ 29	$ 97	$ 74	$ 222
2015	$ 86	$ -	$ 30	$ 116	$ 85	$ 306
2016	$ 85	$ -	$ 30	$ 116	$ 81	$ 388
2017	$ 85	$ -	$ 30	$ 115	$ 78	$ 465
2018	$ 11	$ -	$ 28	$ 39	$ 25	$ 490
2019	$ 0	$ -	$ 20	$ 20	$ 12	$ 503
2020	$ 0	$ -	$ 20	$ 20	$ 12	$ 515
2021	$ 0	$ -	$ 20	$ 20	$ 11	$ 526
2022	$ 0	$ -	$ 20	$ 20	$ 11	$ 537
2023	$ 11	$ -	$ 27	$ 38	$ 20	$ 558
2024	$ 83	$ -	$ 29	$ 112	$ 58	$ 616
2025	$ 83	$ -	$ 29	$ 112	$ 55	$ 671
2026	$ 83	$ -	$ 29	$ 112	$ 53	$ 724
2027	$ 83	$ -	$ 29	$ 112	$ 51	$ 775
2028	$ 83	$ -	$ 29	$ 112	$ 49	$ 824
2029	$ 83	$ -	$ 29	$ 112	$ 47	$ 872
2030	$ 83	$ -	$ 29	$ 112	$ 45	$ 917

Net Present Cost of Series Capacitors (Hydro One Discount Rate)

	Cost in 2007 Dollars (M$)				Discounted Cost in 2007 Dollars (M$)	
Year	LIE	Capital	Losses	Sum	NPV	Cumulative NPV
2009	$ 1	$ 31	$ -	$ 32	$ 29	$ 29
2010	$ 3	$ 52	$ -	$ 55	$ 47	$ 76
2011	$ 0	$ 0	$ -	$ 0	$ 0	$ 76
2012	$ 0	$ -	$ 21	$ 21	$ 16	$ 92
2013	$ 36	$ -	$ 29	$ 65	$ 47	$ 140
2014	$ 68	$ -	$ 29	$ 97	$ 67	$ 206
2015	$ 86	$ -	$ 30	$ 116	$ 76	$ 282
2016	$ 85	$ -	$ 30	$ 116	$ 72	$ 354
2017	$ 85	$ -	$ 30	$ 115	$ 68	$ 421
2018	$ 11	$ -	$ 28	$ 39	$ 22	$ 443
2019	$ 0	$ -	$ 20	$ 20	$ 11	$ 454
2020	$ 0	$ -	$ 20	$ 20	$ 10	$ 464
2021	$ 0	$ -	$ 20	$ 20	$ 9	$ 473
2022	$ 0	$ -	$ 20	$ 20	$ 9	$ 482
2023	$ 11	$ -	$ 27	$ 38	$ 16	$ 498
2024	$ 83	$ -	$ 29	$ 112	$ 45	$ 544
2025	$ 83	$ -	$ 29	$ 112	$ 43	$ 587
2026	$ 83	$ -	$ 29	$ 112	$ 41	$ 627
2027	$ 83	$ -	$ 29	$ 112	$ 39	$ 666
2028	$ 83	$ -	$ 29	$ 112	$ 37	$ 703
2029	$ 83	$ -	$ 29	$ 112	$ 35	$ 737
2030	$ 83	$ -	$ 29	$ 112	$ 33	$ 770

Pollution Probe INTERROGATORY # 12 List 1

Interrogatory

Issue Number: As Applicable

Ref. As Applicable

For all of Pollution Probe's interrogatories that ultimately require responses or other information from the OPA, please provide Hydro One's responses to these interrogatories if the OPA cannot provide the responses or other information.

Response

Not applicable.

Pollution Probe INTERROGATORY # 13 List 1

Interrogatory

Issue Number: As Applicable

Ref. As Applicable

For all of Pollution Probe's interrogatories that ultimately require responses or other information from the OPA, please state if Hydro One does not agree with some or all of the OPA's responses or other information. If so, please also identify the areas of disagreement and provide Hydro One's alternative responses.

Response

Hydro One agrees with the OPA's responses.