INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #1

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please identify the witnesses who will sponsor the evidence, and explain their relationship to the documents in the Appendices to the letter (e.g., author, familiar with the development of the document, no relationship)

RESPONSE

The IESO witnesses are:

- Dan Rochester, Manager – Reliability Assessments. Mr. Rochester's relationship with the documents in the Appendices to the letter is as follows:
    - Appendix 1 – limited review and limited familiarity with the content
    - Appendices 2 and 6 – no relationship
    - Appendices 3 to 5 - author
- David Robitaille, Manager – Operational Effectiveness. Mr. Robitaille's relationship with the documents in the Appendices to the letter is as follows:
    - Appendix 1, 2 and 6 – no relationship
    - Appendices 3 to 5 – familiar with the content

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #2

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide the equivalent of Table 1 for "Capability at Winter Peak."

RESPONSE

The Forecast Capability at 2013/2014 Winter Peak is included and provided in the last column of the table below:

Fuel Type	Total Installed Capacity (MW)	Forecast Capability at Summer Peak* (MW)	Number of Stations	Change in Installed Capacity (MW)	Change in Stations	Forecast Capability at Winter Peak* (MW)
Nuclear	12,998	12,844**	5	0	0	12,887**
Hydroelectric	7,939	5,718	70	0	0	6,089
Coal	3,293	3,018	3	0	0	153***
Oil / Gas	9,987	8,925	29	0	0	9,295
Wind	1,560	213	13	49	1	520
Biomass / Landfill Gas	122	90	6	0	0	90
Total	35,899	30,808	126	49	1	29,034

* Actual Capability may be less as a result of transmission constraints

** Output of certain nuclear units may be limited due to environmental variances

*** Coal capability in winter is reduced due to planned southwest coal retirements

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #3

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please list the gas-fired plants that make up the "approximately 2300 MW…situated in the greater Toronto area." (p. 3)

RESPONSE

The gas-fired plants that make up the "approximately 2300 MW…situated in the greater Toronto area" are:

- Portlands Energy Centre
- Goreway Power Station
- GTAA Cogeneration Plant
- TA Douglas Cogeneration Plant
- Whitby Cogeneration Plant
- York Energy Centre

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #4

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please explain whether the "Toronto electricity zone" is the same as the "greater Toronto area," as these terms are used in the letter. (p. 3)

RESPONSE

Yes, the "Toronto electricity zone" is the same as the "greater Toronto area". The Toronto electricity zone is defined in electrical terms by major transmission interfaces as described in the IESO's Ontario Transmission System document. However, it has come to our attention that there is an error in our geographic translation of these interfaces in our June 28th letter. The Toronto electricity zone is bordered approximately by the west boundary of Mississauga, north to Orangeville, and east to Bowmanville.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #5

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide "the Toronto electricity zone's peak demand for the" winter of 2012/13. (p. 3)

a) Please provide the time and date of the Toronto electricity zone's peak electric load in 2012/13.

RESPONSE

Toronto zone's peak demand for the winter of 2012/13 was 7,924 MW.

a) Toronto electricity zone's peak electric load occurred on Tuesday, January 22nd, 2013 at hour ending 1900 EST. This information is posted on the IESO website and can be found here - see link titled '2013 zonal demands': http://www.ieso.ca/imoweb/marketdata/ZonalDemands.asp

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #6

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide the time date and load of the ten highest-load hours in the Toronto zone, for each winter 2005/06 to 2012/13.

RESPONSE

The following table has the ten highest load hours in the Toronto zone, for each winter 2005/06 to 2012/13.

Winter	Date	Hour Ending (EST)	Toronto Zone Demand (MW)	Month	Winter	Date	Hour Ending (EST)	Toronto Zone Demand (MW)
2005-06	14-Dec-05	18	7954	12	2009-10	28-Jan-10	19	7909
2005-06	14-Dec-05	19	7935	12	2009-10	04-Jan-10	18	7903
2005-06	12-Dec-05	19	7902	12	2009-10	04-Jan-10	19	7878
2005-06	12-Dec-05	18	7888	12	2009-10	12-Jan-10	19	7800
2005-06	13-Dec-05	19	7880	12	2009-10	11-Jan-10	19	7799
2005-06	15-Dec-05	18	7870	12	2009-10	11-Jan-10	18	7796
2005-06	13-Dec-05	18	7868	12	2009-10	28-Jan-10	20	7779
2005-06	15-Dec-05	19	7836	12	2009-10	05-Jan-10	19	7778
2005-06	06-Dec-05	19	7834	12	2009-10	05-Jan-10	18	7777
2005-06	07-Dec-05	19	7824	12	2009-10	10-Dec-09	18	7765
2006-07	05-Feb-07	19	8048	2	2010-11	24-Jan-11	19	7991
2006-07	07-Feb-07	19	8042	2	2010-11	24-Jan-11	18	7941
2006-07	13-Feb-07	19	8034	2	2010-11	13-Dec-10	18	7893
2006-07	06-Feb-07	19	8013	2	2010-11	14-Dec-10	18	7879
2006-07	14-Feb-07	19	7952	2	2010-11	14-Dec-10	19	7839
2006-07	13-Feb-07	20	7935	2	2010-11	13-Dec-10	19	7829
2006-07	05-Feb-07	20	7920	2	2010-11	01-Feb-11	19	7815
2006-07	07-Feb-07	20	7907	2	2010-11	08-Feb-11	19	7799
2006-07	25-Jan-07	19	7900	1	2010-11	02-Feb-11	19	7784
2006-07	06-Feb-07	20	7867	2	2010-11	24-Jan-11	20	7781
2007-08	21-Jan-08	19	7805	1	2011-12	03-Jan-12	19	7713
2007-08	05-Dec-07	18	7801	12	2011-12	03-Jan-12	18	7676
2007-08	12-Feb-08	19	7779	2	2011-12	19-Jan-12	19	7587
2007-08	11-Feb-08	19	7766	2	2011-12	03-Jan-12	20	7560
2007-08	21-Jan-08	18	7744	1	2011-12	18-Jan-12	19	7508
2007-08	05-Dec-07	19	7742	12	2011-12	30-Jan-12	19	7484
2007-08	03-Dec-07	18	7739	12	2011-12	19-Jan-12	20	7457
2007-08	11-Dec-07	18	7717	12	2011-12	19-Jan-12	18	7456
2007-08	17-Dec-07	18	7705	12	2011-12	16-Jan-12	18	7421
2007-08	06-Dec-07	18	7702	12	2011-12	30-Jan-12	18	7421
2008-09	21-Jan-09	19	7833	1	2012-13	22-Jan-13	19	7924
2008-09	21-Jan-09	18	7760	1	2012-13	23-Jan-13	19	7854
2008-09	14-Jan-09	19	7744	1	2012-13	22-Jan-13	20	7815
2008-09	14-Jan-09	18	7712	1	2012-13	24-Jan-13	19	7814
2008-09	08-Dec-08	18	7707	12	2012-13	22-Jan-13	18	7801
2008-09	15-Jan-09	19	7690	1	2012-13	23-Jan-13	18	7765
2008-09	04-Feb-09	19	7654	2	2012-13	23-Jan-13	20	7705
2008-09	21-Jan-09	20	7650	1	2012-13	24-Jan-13	20	7701
2008-09	08-Dec-08	19	7632	12	2012-13	21-Jan-13	19	7678
2008-09	15-Jan-09	18	7600	1	2012-13	04-Feb-13	19	7662

This information is posted on the IESO website and can be found at http://www.ieso.ca/imoweb/marketdata/ZonalDemands.asp

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #7

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

a) Please provide the forecast winter peak for the Toronto electricity zone for each year for which the IESO has a forecast.

b) Please explain how energy-efficiency and demand response are included in those forecasts.

RESPONSE

a) The IESO demand forecasting is limited to an 18-month time period. The forecasted winter peak for the Toronto zone is 8018 MW in January 2014. This forecast forms part of the 18-Month Outlook which can be found on the IESO website - http://www.ieso.ca/imoweb/monthsYears/monthsAhead.asp

The forecast value is found in the 18-Month Outlook Update Tables, Table 3.1.2.

b) The impacts of conservation, of which energy efficiency is a component, are included in the demand forecast as a reduction to demand. Demand response capacity is treated as a resource. The demand response impacts are added back onto the demand history and the forecast is generated on that data. These concepts are covered in the Outlook Methodology document Section 2.4 which can be found at http://www.ieso.ca/imoweb/monthsYears/monthsAhead.asp

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #8

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide the "installed capacity of generators" in "the Toronto electricity zone."

RESPONSE

The installed capacity of the generators in the Toronto electricity zone is listed below

Station	Fuel Type	Installed Capacity (MW)
DARLINGTON	Nuclear	3,546
GTAA	Gas	117
PICKERING	Nuclear	3,094
PORTLANDS	Gas	639
SITHE	Gas	942
TADOUGLAS	Gas	122
WHITBY	Gas	56
YORK	Gas	438
		8,954

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #9

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide a list of the generators in the Toronto electricity zone and the winter capability of each.

RESPONSE

The list of each generator along with corresponding winter capability in the Toronto electricity zone is listed in below:

Station	Fuel Type	Winter Capability (MW)*
DARLINGTON	Nuclear	3,497
GTAA	Gas	106
PICKERING	Nuclear	2,570**
PORTLANDS	Gas	639
SITHE	Gas	942
TADOUGLAS	Gas	122
WHITBY	Gas	56
YORK	Gas	438
		8,370

*Winter Capability values are based on information available from the public Generator Output and Capability Report (GOC) on the day of 2012/13 Toronto electricity zone's winter peak (re: January 22, 2013).

**Pickering capability is reduced due to an unplanned outage and derates

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #10

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide the IESO's best estimate of the amount of demand response available in the Toronto electricity zone at the winter peak.

RESPONSE

The Toronto zone demand measures effective capacity expected to be available at the time of the zonal winter peak is 112 MW.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY 11

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide the effect of "the upcoming anticipated nuclear refurbishment projects" on winter capability in the Toronto electricity zone, for each year for which IESO has an estimate or forecast.

RESPONSE

No refurbishment activities are scheduled within the IESO's 18-months forecasting timeframe. The nuclear refurbishment projects are expected to begin beyond the next 18 months.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY 12

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide the transmission import capacity of the Toronto electricity zone.

RESPONSE

Summer load meeting capability of Toronto Zone with Portlands and two Pickering units in service is about 10,250MW. The load meeting capability with Portlands and all six Pickering units in service is about 12,000MW.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #13

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

a) Please describe "the shift in where natural gas supplies for Ontario are sourced." (p. 4)

b) Please describe any situation of which the IESO is aware in which changes in the sourcing of natural gas supply has reduced the availability of a gas-fired generator in Ontario.

c) Please explain whether the IESO believes that future changes in contracting for natural gas supply would reduce the availability of gas-fired generators in Ontario. If so, please describe the specific problems anticipated.

RESPONSE

a) The IESO relied on evidence presented in Union's[1] and Enbridge's[2] applications to understand the shift in where natural gas supplies for Ontario are sourced.

b) The IESO is not aware of any situation in which changes in the sourcing of natural gas supply has reduced the availability of a gas-fired generator in Ontario.

c) As the IESO is not involved in the contracting for natural gas supply for gas-fired generators in Ontario, the IESO cannot comment on whether future changes in contracting for natural gas supply would reduce the availability of gas-fired generators in Ontario.

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[1] Union Application Section 4 – Changing Gas Supply Dynamics

[2] Enbridge Application Exhibit A Tab 3 Schedule 5, pages 13 - 17

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #14

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Question

Please provide a list of the "natural gas-fired generators in Ontario …supplied…directly from …the Dawn-Parkway system." (p. 4)

RESPONSE

In preparing its June 28th letter, the IESO assumed that the flow of natural gas in Ontario entered at Dawn and Niagara and flowed to the greater Toronto area. Based on this assumption, the following natural gas-fired generators in Ontario are supplied directly from the Dawn-Parkway system:

- St. Clair Energy Centre
- TransAlta Sarnia Cogeneration Plant
- Imperial Oil
- Brighton Beach Power Station
- West Windsor Cogeneration Centre
- TransAlta Windsor Cogeneration Plant

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #15

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

a) Please provide a list of the "natural gas-fired generators in Ontario…supplied … downstream of the Dawn-Parkway system." (p. 4)

b) Please define the locations "downstream of the Dawn-Parkway system."

c) Please identify the generators "downstream of the Dawn-Parkway system" that can also be served off the TCPL mainline.

RESPONSE

a) Based on the assumption described in interrogatory #14 above, the following natural gas-fired generators in central Ontario are supplied downstream of the Dawn-Parkway system:

- Goreway Power Station
- TA Douglas Cogeneration Plant
- GTAA Cogeneration Plant
- Portlands Energy Centre

There are additional natural-gas fired generators in eastern Ontario that, depending on their source of natural gas (Marcellus and Utica shale gas or Western Canadian Sedimentary Basin), can also be considered downstream of the Dawn-Parkway system. Natural gas-fired generators in northwestern and northeastern Ontario are supplied off TransCanada's pipeline and are assumed to be sourced from the Western Canadian Sedimentary Basin.

b) In the IESO's opinion, locations "downstream of the Dawn-Parkway system" are locations where the natural gas flow stems from the Dawn-Parkway system.

c) The IESO cannot speak to the availability of gas transportation on the TransCanada Mainline for these generators but is aware that the local gas distribution systems serving those generators have physical access to the TransCanada Mainline.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #16

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide any evidence that the "natural gas-fired generators in Ontario…supplied either directly from or downstream of the Dawn-Parkway system" do not currently have secure gas supply.

RESPONSE

We currently do not have detailed knowledge of the contracting arrangements of gas generators in the province.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #17

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

Please provide a list of all natural gas-fired generators in Ontario supplied either directly from or downstream of the Parkway Compressor Station, about which the IESO expresses concern on p. 5.

RESPONSE

On page 5, the IESO does not express concern about any natural gas-fired generators in Ontario. The IESO stated that Union's Parkway West and Enbridge's GTA Expansion projects **enhance** the reliable supply of natural gas to various gas-fired generators in Ontario (emphasis added). As gas-fired generation is essential to the reliable operation of the IESO-controlled grid, the IESO supports these projects.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #18

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

"After the shutdown of Lakeview generating station in 2005, Toronto relied on supplies generated outside the city to meet demand. During this time, the IESO identified that there was an increasingly high risk of transmission facilities supplying downtown Toronto becoming overloaded during heavy demand periods…" (p. 4)

a) Please explain whether "downtown Toronto" in this quote is the same as the Toronto transmission zone. If not, please provide the following data for "downtown Toronto:"

   i. Transmission lines serving downtown Toronto, in 2005 and currently.

   ii. The winter peak transfer limits into downtown Toronto in 2005 and currently.

   iii. Generation in downtown Toronto, with summer and winter capability.

   iv. Actual summer and winter peak loads, 2005/06 to 2012/13.

   v. The date and time of winter peak, 2005/06 to 2012/13.

   vi. Forecast summer and winter peak loads, for whatever period the IESO or Toronto Hydro has developed such forecasts.

   vii. Load on the peak demand hours on the GTA gas system, 2012/13.

b) Please provide any analyses since 2005 that have identified a "high risk of transmission facilities supplying downtown Toronto becoming overloaded" in the winter.

RESPONSE

a) Downtown Toronto is a subzone of the Toronto transmission zone. Downtown Toronto, or Central Toronto, was the term used to define the demand supplied by the Leaside and Manby autotransformers that was used to assess the need for Portlands.

i. The Downtown Toronto network of circuits cables is served via the autotransformer at the Leaside and Manby transformer stations. Leaside is supplied via six 230 kV circuits from the Cherrywood transformer station. Manby is supplied by seven circuits from the Richview transformer station.

No change in these facilities has occurred between 2005 & the present.

ii. The transfer capability into the downtown is limited by the ratings of the autotransformers at Leaside and Manby. This capability is unchanged since 2005. The IESO analysis has focused on the summer period when the demand is higher and the transformer ratings are lower, however the winter transfer capability is estimated to be about 2500 MW.

iii. Portlands Energy Centre (PEC) is the only generation resource in downtown Toronto. Both summer and winter peak days' capabilities of PEC were 639 MW. These values are based on information available from the public Generator Output and Capability Report (GOC) on the day of Toronto zone`s summer peak (July 17, 2012) and the winter peak day (January 22, 2013).

iv. The following table has the summer and winter peak loads for downtown Toronto for the period 2005-2013.

Year	Summer		Year	Winter	
	Peak (MW)	Date & Time (Hour Ending EST)		Peak (MW)	Date & Time (Hour Ending EST)
2005	1,948.09	2005/07/13 15:00	2005-06	1,678.17	2005/12/12 18:00
2006	1,991.85	2006/08/01 13:00	2006-07	1,756.82	2007/02/13 19:00
2007	1,889.33	2007/06/27 15:00	2007-08	1,691.60	2008/02/11 19:00
2008	1,831.27	2008/06/09 15:00	2008-09	1,704.23	2009/01/14 19:00
2009	1,870.68	2009/08/17 13:00	2009-10	1,656.23	2010/01/04 18:00
2010	1,937.55	2010/07/08 16:00	2010-11	1,696.43	2011/01/24 19:00
2011	2,037.09	2011/07/21 15:00	2011-12	1,614.02	2012/01/03 19:00
2012	1,990.71	2012/07/17 16:00	2012-13	1,679.41	2013/01/22 19:00

v. The table provided in our response to 18 (iv) above lists the date and time of respective winter peaks.

vi. The IESO does not forecast at the sub zonal level. The Toronto zone peak forecast is provided in interrogatory #7.a)

vii. The IESO is not aware of and does not forecast the demand on the GTA gas system

b) The IESO does not have any such analysis.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #19

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

"The IESO identified… that a combination of new generation capacity, demand-side initiatives and transmission were needed to alleviate this concern." (p. 4)

a) Please provide a list of all the generation assets added since 2005 in the area "supplying downtown Toronto."

b) Please provide a list of all the transmission assets added since 2005 in the area "supplying downtown Toronto."

c) Please describe each demand-side initiative implemented to "alleviate this concern," including the nature of the initiative (e.g., class, market segment, demand response or energy-efficiency), the winter MW reduction for each initiative, the period over which the initiative was implemented, and IESO's role in promoting or financing the initiative.

RESPONSE

a) Portlands Energy Centre was added since 2005.

b) The following new transmission assets have been added to the system supplying downtown Toronto since 2005:

- May 2005: 125MVAr shunt capacitor at Leaside TS
- July 2005: Revised connections between Cooksville TS & Manby TS (following the shutdown of Lakeview GS)
- December 2007: Incorporation of the John to Esplanade Link
- April 2008: Connections at Hearn SS for the incorporation of the Portland Energy Centre

c) The IESO's Dispatchable Loads program has been active since market opening (May 2002). There are no participants in this program that are located in downtown Toronto.

The OPA's Demand Response 3 ("DR3") program, implemented in 2008, also acts to reduce demand. The DR3 Toronto Zone capacity at the time of the winter peak is 105 MW – How much of that capacity is within downtown Toronto is not known to the IESO. The IESO is responsible for activating DR 3 (subject to a set of protocols established by the OPA). The IESO dispatches DR3 participants either directly or through an aggregator to reduce their electricity use. The IESO is also responsible for settlement and measurement and verification (M&V) services

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #20

INTERROGATORY

Issue A.1. Reference IESO Letter, June 28, 2013

Questions

"PEC…has played a vital role to secure the supply to downtown Toronto. Based on its location, it is not only needed to meet demand during peak demand days but also to allow maintenance outages of various local transmission elements to proceed.

a) Please list each winter peak demand day on which PEC was needed to meet peak demand, and provide
    i. The load for downtown Toronto.
    ii. The generation, demand resources and transmission capacity available to meet peak.
b) Please list each maintenance outage of local transmission elements that could not have proceeded without PEC, and provide
    i. The dates of each outage.
    ii. The MW of import capacity lost.
    iii. The load for downtown Toronto anticipated in the outage period.
    iv. The generation, demand resources and transmission capacity available in the outage period.

RESPONSE

a) In each of the four winter seasons since becoming dispatchable, Portlands has been online during the peak winter day.
    i. The load for the downtown Toronto is shown in the following table:

Winter Season	Date	Peak Ontario Demand	Downtown Toronto Demand	Portland Generation
2009/2010	January 4th	22,045 MW	1,656 MW	Yes (HE 13-23)
2010/2011	January 24	22,733 MW	1,696 MW	Yes (HE 6-24)
2011/2012	January 3	21,847 MW	1,614 MW	Yes (HE 1-24)
2012/2013	January 24	22,610 MW	1,665 MW	Yes (HE 1-24)

ii. The generation, demand resources and transmission capacity available to meet peak are listed in the table below:

Available Ontario Capacity on Winter Peak Days

Winter Season	Date	Ontario Generation Capacity[1]	Demand Resource Capacity[2]	Ontario Import Transmission Capacity[3]
2009/2010	January 4@ HE18	28,146 MW	370 MW	4,915 MW
2010/2011	January 24@ HE19	28,456 MW	467 MW	5,690 MW
2011/2012	January 3@ HE19	25,967 MW	591 MW	5,400 MW
2012/2013	January 24@ HE19	27,350 MW	646 MW	5,345 MW

[1] Generation capacity is equal to total installed generation capacity minus generation capacity on outage (as reported in System Status Report - SSR)

[2] Demand resource capacity is the sum from dispatchable loads (as reported in SSR) and the available capacity from Demand Response programs (DR2 and DR3)

[3] Import Transmission capacity is the sum of import limits from all available interties at time of peak

b) The IESO approves requests for maintenance outages if the impact to reliability is acceptable. This process is outlined in Market Manual 7: System Operations Part 7.3: Outage Management. In making these assessments, the IESO considers various factors including but not limited to:

- Other transmission and generation elements out of service,
- Equipment ratings,
- Operating limits,
- Expected system conditions for the duration of the outage including expected electricity demand

When assessing outage request, the IESO does not determine and record which elements were critical to the approval of an outage request, and therefore cannot provide the requested information.

i. See response to interrogatory #20.b) above.

ii. See response to interrogatory #20.b) above.

iii. See response to interrogatory #20.b) above.

iv. See response to interrogatory #20.b) above.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO
GREEN ENERGY COALITION INTERROGATORY #21

INTERROGATORY

Issue A.1. Reference IESO Appendix 1: 2013 Special Reliability Assessment

Questions

p. 35: Please provide Ontario's existing capacity of the categories of generators listed in Table 3:

a) Non-Dual-Fuel Gas Turbines

b) Non-Dual-Fuel Combined Cycle

c) Gas-Fired Dual-Fuel

RESPONSE

The intent of referencing this report was to highlight the importance in coordination between the natural gas and electricity sectors. The IESO was not involved in the authoring of this report. Notwithstanding, the IESO can provide the following data:

	Summer Capacity (MW)	Winter Capacity (MW)
a) Non-Dual-Fuel Gas Turbines	560	576
b) Non-Dual-Fuel Combined Cycle	6197	6551
c) Gas-Fired Dual-Fuel	2100	2100

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #22

INTERROGATORY

Issue A.1. Reference IESO Appendix 1: 2013 Special Reliability Assessment

Questions

pp. 35–36: Does IESO believe that it is reasonable to plan for winter electric demand being 10% higher than forecast in:

a) 2015

b) 2017

c) 2022

RESPONSE

a) The IESO was not involved in the authoring of this report and, as such, cannot comment on the reasonableness of its assumptions. Further, IESO demand forecasting is limited to an 18-month time period.

b) See response to interrogatory 22.a) above.

c) See response to interrogatory 22.a) above.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #23

INTERROGATORY

Issue A.1. Reference IESO Appendix 1: 2013 Special Reliability Assessment

Questions

If IESO has access to the Resource Adequacy Scenario Analysis & Tool spreadsheet (footnote 53), please provide a copy, as the link in the document does not appear to work.

RESPONSE

The IESO was not involved in the authoring of this report and, as such, does not have access to the Resource Adequacy Scenario Analysis & Tool spreadsheet.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #24

INTERROGATORY

Issue A.1. Reference IESO Appendix 1: 2013 Special Reliability Assessment

Questions

P. 35: Does IESO believe that it is reasonable to assume that 50% of Ontario gas-fired dual-fuel capacity would be unavailable, or that such capacity would be derated 50%, at the winter peak? If so, please explain why.

RESPONSE

The IESO was not involved in the authoring of this report and, as such, cannot comment on the reasonableness of its assumptions.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #25

INTERROGATORY

Issue A.1. Reference IESO Appendix 1: 2013 Special Reliability Assessment

Questions

Considering the emphasis in the document on the problems created by non-dual-fuel gas generation (e.g., Chapter 4), has IESO proposed or taken any actions to encourage or require gas-fired plants to have backup fuel capability?

a) If so, please describe those actions.

b) If not, please explain why the IESO is not concerned about the lack of backup fuel at some gas-fired plants or has not taken action.

RESPONSE

The IESO is not responsible for procuring or contracting generation resources and, as such, has not proposed or taken any actions to encourage or require gas-fired plants to have backup fuel capability.

a) However, in the case of PEC, due to the reliability need identified by the IESO for downtown supply, in the IESO letter to the OPA included as Appendix 6 to the IESO's June 28th letter, the IESO stated:

> 4. A secure fuel supply is required. In the case of combined cycle gas, this could be dual fuel capability (gas plus distillate). If cogeneration, firm gas transportation may suffice.

b) See response to interrogatory #25 above.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #26

INTERROGATORY

Issue A.1. Reference IESO Appendix 1: 2013 Special Reliability Assessment

Questions

Figures 36 and 37: Please provide the annual energy loss and number of outages due to lack of fuel by year for Ontario, and identify the fuel and generator for each event.

RESPONSE

The IESO is not aware of any energy loss or any gas-fired generation outage due to lack of fuel since market opening (May 2002).

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #27

INTERROGATORY

Issue A.1. Reference IESO Appendix 2: Natural Gas Electricity Interface Review

Questions

Figure 5: Please provide IESO's estimate of peak day gas demand for "New Gas Fired Generation" in Ontario in

a) Summer 2010 through 2012

b) Winter 2010/11 through 2012/13

RESPONSE

a) The IESO does not forecast gas demand of the natural gas-fired generators and, as such, does not have the requested data.

b) See response to interrogatory #27.a) above.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #28

INTERROGATORY

Issue A.1. Reference IESO Appendix 3: 18-Month Outlook from June 2013 to November 2014

Questions

Page 16: "Hydro One is working to change the configuration of the 230 kV switchyard at Manby TS by the end of the second quarter in 2014. This transmission enhancement solution will help manage the long-term load supply in the southwestern GTA."

a) Please provide any available estimates of the degree to which this change will increase Toronto import capacity.

RESPONSE

a) This change is expected to provide adequate capability for the circuits supplying Manby TS up to at least 2018. The capability improvement is about 200 MW, but these circuits supply southern Etobicoke, southern Mississauga, and eastern Oakville as well as part of downtown Toronto.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #29

INTERROGATORY

Issue A.1. Reference IESO Appendix 3: 18-Month Outlook from June 2013 to November 2014

Questions

Page 16: "For the short term, day-to-day operating procedures are available to manage the forecasted transmission loading during periods of high demand."

a) Please describe these operating procedures.

b) Please provide IESO's estimate of the amount of additional GTA load that can be carried due to these operating procedures at summer peak.

c) Please provide IESO's estimate of the amount of additional GTA load that can be carried due to these operating procedures at winter peak.

d) Please describe the seasonal periods during which these operating procedures are required.

RESPONSE

a) "Operating procedures" consist of both policies and procedures for execution. System Operations Manual Part 7.1 - System Operating Procedures and Part 7.4 - IESO-Controlled Grid Operating Policies provide the framework, guiding principles and procedural steps to address and manage power system reliability. As it relates to the management of transmission loadings, they provide the mechanisms to expand transmission capability under certain operating conditions.

b) In general terms, the IESO applies the operating procedures identified in part a) to expand the transfer capability into the Toronto zone by:

- Recalling/revoking transmission element outages

- Operating to higher operating (thermal) limits on limiting transmitting elements
- Operate to Emergency Condition Limits. This step is used as a last resort before the disconnection of load.

We cannot estimate the quantity of additional GTA load that can be carried by executing these operating procedures as they are a function of prevailing conditions.

c) See response to interrogatory #29.b) above.

d) These operating procedures are typically required during peak loading seasons such as the summer and winter. They can also be utilized in other seasons during planned maintenance outages and unplanned events.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #30

INTERROGATORY

Issue A.1. Reference IESO Appendix 3: 18-Month Outlook from June 2013 to November 2014

Questions

Page 16: "Clarington TS is scheduled to be in service as soon as spring 2015. This new station will increase the 500 to 230 kV autotransformer capacity in the eastern part of the GTA."

a) Please provide any available estimates of the degree to which this TS will increase Toronto import capacity or reduce load on the Cherrywood TS.

RESPONSE

a) IESO's latest information for Clarington TS in-service date is not before 2017.

The addition of Clarington TS will enhance the auto-transformer capacity in the eastern part of the GTA. This additional capacity is expected to be offset by the additional loading on the autotransformers that is expected once Pickering NGS is shutdown. The net effect of adding Clarington TS and shutting down Pickering NGS will be to maintain the existing load-meeting capability of the Toronto zone as limited by the autotransformers in the eastern GTA.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #31

INTERROGATORY

Issue A.1. Reference IESO Appendix 4: 18-Month Outlook From January 2006 to June 2007

Questions

Page iv: Please provide the basis for the claim that "Increased demand response and conservation efforts will reduce but not eliminate the need for new supply."

RESPONSE

At the time of the Portlands analysis, there was not enough evidence that there could be enough demand response or conservation measures delivered to provide sufficient demand reductions to serve the forecasted demand.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #32

INTERROGATORY

Issue A.1. Reference IESO Appendix 4: 18-Month Outlook From January 2006 to June 2007

Questions

Please provide the IESO's current estimate of the amount of winter demand reduction available in the GTA and downtown Toronto.

RESPONSE

The IESO does not have the requested information specific to downtown Toronto, only the Toronto zone. The estimate of winter demand reduction (112 MW) provided in response to interrogatory #10 applies to the Toronto Zone.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #33

INTERROGATORY

Issue A.1. Reference IESO Appendix 5: The Ontario Reliability Outlook, February 2006

Questions

P. 2: a) Please provide the specific dates on which "The transmission system serving central Toronto was at or near capacity during peak periods in the summer of 2005."

b) Please define the transmission system serving central Toronto.

c) Please provide the capacity of the transmission system serving central Toronto in 2005 and in winter 2012/13.

RESPONSE

a) The IESO does not keep records of this information. A comparison of the peak demand for summer 2005 and the Leaside and Manby transformer ratings indicates that the loading did not exceed the planning criteria for the supply to the downtown.

b) See response to interrogatory #18.a.i.

c) See response to interrogatory #18.a.ii.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #34

INTERROGATORY

Issue A.1. Reference IESO Appendix 5: The Ontario Reliability Outlook, February 2006

Questions

P. 4: a) Please explain whether the "central area of Toronto" is the same as "Downtown Toronto" as that term is used in the IESO letter of June 28, 2013.

b) If not, please explain the differences.

RESPONSE

a) Yes, the "central area of Toronto" is the same as "Downtown Toronto".

b) Not applicable.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #35

INTERROGATORY

Issue A.1. Reference IESO Appendix 5: The Ontario Reliability Outlook, February 2006

Questions

P. 4: a) Please provide the "forecasts [that] indicate that 500 MW of total capacity should be planned for summer, 2010." For the area of those forecasts:

b) Please provide the actual loads for summer 2010, 2011 and 2012.

c) Please provide the actual loads for winter 2010/11, 2011/12 and 2012/13.

RESPONSE

a) The IESO does not have a record of the detailed forecasts.

b) For the area of those forecasts:

The actual monthly peak loads are contained in the following table.

Summer		Winter	
Date	Peak (MW)	Date	Peak (MW)
2010/06/28	1694	2010/12/13	1659
2010/07/08	1938	2011/01/24	1696
2010/08/31	1848	2011/02/01	1654
2011/06/08	1799	2011/12/29	1518
2011/07/21	2037	2012/01/03	1614
2011/08/02	1739	2012/02/29	1515
2012/06/20	1923	2012/12/11	1519
2012/07/17	1991	2013/01/22	1679
2012/08/03	1785	2013/02/07	1613

c) The actual loads for winter 2010/11, 2011/12 and 2012/13 are provided in our response to interrogatory #35.b) above.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #36

INTERROGATORY

Issue A.1. Reference IESO Appendix 5: The Ontario Reliability Outlook, February 2006

Questions

P. 4: a) Please explain whether the "third transmission supply [that] could bring about 1,000 MW of power to Toronto and should be in service early in the next decade" was built.

b) If so, please identify the facilities constituting this supply.

c) If not, please explain why.

RESPONSE

a) The "third transmission supply" has not been built.

b) Not applicable.

c) Since the addition of Portlands, load forecasts for downtown Toronto do not indicate a need for a third transmission supply.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #37

INTERROGATORY

Issue A.1. Reference IESO Appendix 5: The Ontario Reliability Outlook, February 2006

Questions

P. 4: The report expresses concern about "continued reliable and diverse supply for the city under hot summer weather conditions."

a) Please provide any analyses indicating that there was a supply problem under cold winter conditions in 2005.

b) Please identify and quantify any supply problem under cold winter conditions in 2012/13.

RESPONSE

a) The IESO does not have analysis indicating an overload problem in winter 2005.

b) The IESO does not have analysis indicating an overload problem in winter 2012/13.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #38

INTERROGATORY

Issue A.1. Reference IESO Appendix 5: The Ontario Reliability Outlook, February 2006

Questions

P. 6: Please explain whether the "western GTA" is part of the GTA or the "Toronto electricity zone," as those terms are used in the June 28 IESO letter.

RESPONSE

A portion of the "western GTA" is part of the Toronto electricity zone. As described on pg. 7of Appendix 5: The Ontario Reliability Outlook, February 26, the "Western GTA" was defined as Halton Region (Burlington, Halton Hills, Milton and Oakville) and Peel Region (Brampton, Caledon and Mississauga). As clarified in interrogatory #4, the Toronto electricity zone is bordered approximately by the west boundary of Mississauga.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #39

INTERROGATORY

Issue A.1. Reference IESO Appendix 6: IESO Requirements for Downtown Supply

Questions

Please provide the increased import capability into the GTA and downtown Toronto due to the completion of the John-to-Esplanade link.

RESPONSE

The John-to-Esplanade link provides about 100 MW of increased load-meeting capability in the downtown, primarily by allowing load to be transferred from the Leaside supply to the Manby West supply.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR RESPONSE TO GREEN ENERGY COALITION INTERROGATORY #40

INTERROGATORY

Issue A.1. Reference IESO Appendix 6: IESO Requirements for Downtown Supply

Questions

Does PEC have the "dual fuel capability (gas plus distillate)" that this document specifies for combined cycle gas? If not, please explain why.

RESPONSE

PEC does not have the dual fuel capability. The IESO does not procure or contract generation resources and cannot provide an answer to the latter part of this question.