



Independent Electricity Market Operator



18-MONTH OUTLOOK:

Ontario Demand Forecast

From July 2004 to December 2005



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Executive Summary

The IMO has a responsibility to forecast the demand for electricity on the IMO-controlled grid and to assess whether the existing and proposed generation and transmission facilities are adequate to meet Ontario's needs. This document presents the demand forecast for the 18-month period from July 2004 to December 2005 and supercedes that portion of the previous 18-month forecast released in March 2004.

Economic Outlook

The economic assumptions that underpin the forecast have been updated to reflect the most recent outlook for the Ontario economy. The mixed signals of the past year have continued through the early part of 2004. Generally, the North American economy has been, and continues to be propelled by the consumer. Low interest rates have meant strong housing starts and automotive sales. However, escalating oil prices, geopolitical events, higher inflation and potentially higher interest rates are seen as moderating factors for consumer confidence. While rising corporate profits could signal increased business investment, higher rates and uncertainty could stymie growth in that sector of the economy. The next 18-months will be very heavily influenced by consumers' state of mind.

Expectations are for lower employment growth and higher housing starts in 2004 compared to previous economic forecasts. Overall, the lower employment growth will outweigh housing activity over the forecast.

Actual Demand

Total actual and weather-corrected energy demand for the months of March, April and May were lower than forecasted in the previous publication. The weather-corrected demand for the period of March through May has shown a decrease of 0.2% on a year-over-year basis. Actual demand also shrunk on a year-over-year basis (-0.8%). Much of this is attributable to the fact that demand peaked in May of 2003 and has faltered since. By May of 2003, the Canadian dollar had appreciated by 12%, thereby putting a damper on exports and electricity demand.

Actual peak demands for the period of March through May were generally lower than forecasted. Only the weather-corrected peaks for April was higher than anticipated.

Methodology

A number of small structural changes were made to the model. First, dummy variables were utilized to gain a better estimation of the weeks containing Christmas, New Years' and Canada Day. Second, the weather variables were changed from being seasonal to temperature driven. Third, additional historical data that was previously incompatible was incorporated into the model. Overall, the impact of these structural changes can be seen in the profile of the shoulder periods and the level of demand for the two holiday periods.

Demand Forecast

For the remainder of 2004, energy demand is expected to be slightly lower than in the previous forecast. This is due to the shift in the economic outlook for the province. Peak demands are generally lower throughout the forecast due to the incorporation of actuals, the updated economic

forecast and the addition of a large embedded generator, which now supplies load previously supplied by the IMO grid.

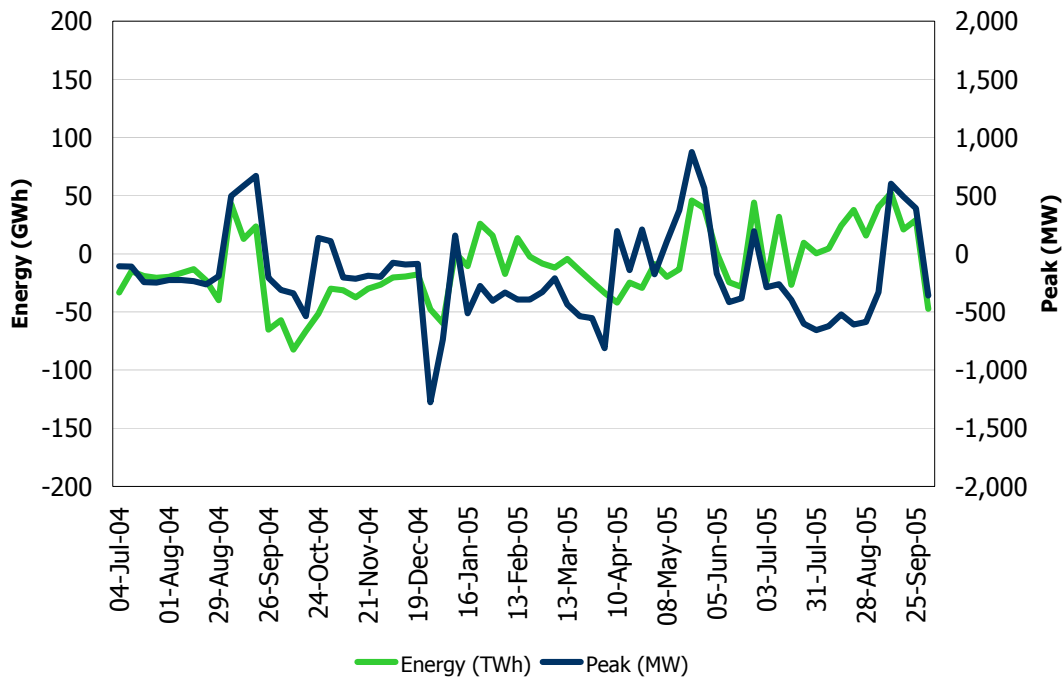
Table 1 has the Normal weather, Expected seasonal and Extreme weather peak demands for the seasons of the 18-month forecast. More detail on the determination of these peak demands can be found in Section 4.0.

Table 1: Forecasted Peak Demands

Season	Normal Weather Peak (MW)	Expected Seasonal Peak (MW)	Extreme Weather Peak (MW)
Summer 2004	23,558	25,210	26,238
Winter 2005	23,734	24,700	25,501
Summer 2005	23,828	25,581	26,649

Figure 1 graphically displays the difference in weekly energy and peak demand between this forecast and the previous 18-month forecast.

Figure 1: Comparison of Current and Previous Forecast (Current less Previous)



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1.0 Introduction

1.1 Outlook Documents

The Ontario Electricity Market Rules (Chapter 5 Section 7.1) require that the Independent Electricity Market Operator (IMO) produce and publish demand forecasts on a quarterly basis for the next 18 months. This Ontario Demand Forecast meets this requirement and covers the 18-month period from July 2004 to December 2005. It supercedes those common portions of the previous forecast for the period July 2004 to September 2005, dated March 25, 2004.

1.2 Demand Forecast Document

This document provides an 18-Month forecast of electricity demand for Ontario, based on the stated assumptions and using the methodology described in the document entitled “Methodology to Perform Long Term Assessments” (IMO_REP_0044) (found on the IMO web site at http://www.theimo.com/imoweb/pubs/marketReports/Methodology_RTAA_2004jun.pdf). Readers may envision other possible scenarios, recognizing the uncertainties associated with various input assumptions, and are encouraged to use their own judgement in considering possible future scenarios. This forecast provides a base upon which changes in assumptions can be considered.

The Ontario demand is the sum of coincident loads plus the losses on the IMO-controlled grid. This demand forecast was based on actual demand, weather and economic data as of the end of March 2004. Actuals reported since the time of the forecast have been incorporated into the tables and figures of this document.

Section 2.0 briefly looks at historical demand. A more detailed discussion of historical demand and the factors that shape it can be found in the 10-Year Ontario Demand Forecast (IMO_REP_0173) document. Section 3.0 describes the assumptions used in this forecast of electricity demand and Section 4.0 presents the forecast. Appendices A through C contains additional demand forecast details and analysis.

Readers are invited to provide comments on this report or to give suggestions as to the content of future reports. To do so, please call the IMO Help Centre at 905-403-6900 or 1-888-448-7777 or send an email to helpcentre@theIMO.com, or to forecasts.demand@theIMO.com. Copies of the forecast, by hour, weather scenario and zone are available upon request.

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2.0 Historical Demand

This section looks at recent historical weekly energy and peak demand. Ontario measures peak demand as the average over the course of a clock hour. The weather-corrected numbers are generated based on Normal weather. Weather-corrected demand for August 2003 has been adjusted to incorporate an estimate of the demand lost over the period August 14th to August 24th. Actual figures for August represent the true consumption for that time period.

2.1 Historical Energy Demand

Actual energy demand has averaged annual growth of 1.5% over the 1997 to 2003 time frame. Demand is a function of the level of economic activity, the rate of population growth and the use and number of end-use appliances. Energy demand peaked in the spring of 2003 and has remained fairly flat since that time. This corresponded with the appreciation of the Canadian dollar.

Figure 2.1 shows the 52-week moving average of actual and weather corrected energy demand. As noted above, energy demand had been quite strong before softening to close out 2003.

Figure 2.1: Energy Demand – 52-Week Moving Average

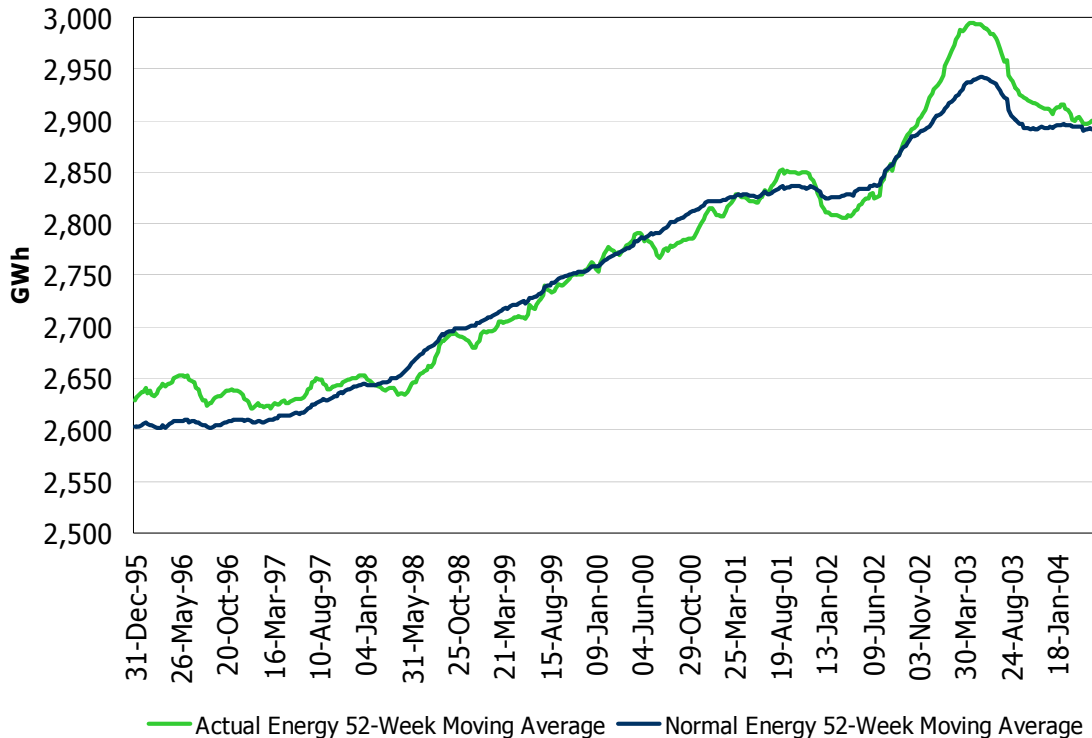


Table 2.1: Actual and Weather Corrected Weekly Energy Demand

Week Ending	Actual Energy (GWh)	Weather Corrected Energy (GWh)	Weather Correction (GWh)	Week Number	Notes for Week
06-Apr-03	3,058	2,916	-142	14	
13-Apr-03	2,903	2,860	-43	15	
20-Apr-03	2,688	2,722	34	16	Good Friday
27-Apr-03	2,718	2,676	-41	17	Easter Monday
04-May-03	2,656	2,685	29	18	
11-May-03	2,659	2,708	49	19	
18-May-03	2,625	2,635	10	20	
25-May-03	2,562	2,573	11	21	Victoria Day
01-Jun-03	2,638	2,654	16	22	
08-Jun-03	2,654	2,679	25	23	
15-Jun-03	2,676	2,723	47	24	
22-Jun-03	2,749	2,779	30	25	
29-Jun-03	3,088	2,884	-204	26	
06-Jul-03	2,993	2,837	-156	27	Canada Day
13-Jul-03	2,846	2,898	52	28	
20-Jul-03	2,843	2,962	119	29	
27-Jul-03	2,883	2,876	-7	30	
03-Aug-03	2,893	2,872	-21	31	
10-Aug-03	3,015	2,878	-137	32	Civic Holiday
17-Aug-03	2,723	2,617	-105	33	Blackout
24-Aug-03	2,749	2,646	-103	34	Conservation Appeals
31-Aug-03	2,845	2,826	-19	35	
07-Sep-03	2,689	2,726	37	36	Labour Day
14-Sep-03	2,868	2,774	-94	37	
21-Sep-03	2,772	2,786	14	38	
28-Sep-03	2,679	2,714	35	39	
05-Oct-03	2,731	2,642	-90	40	
12-Oct-03	2,695	2,749	54	41	
19-Oct-03	2,667	2,655	-12	42	Thanksgiving
26-Oct-03	2,794	2,724	-70	43	
02-Nov-03	2,796	2,825	30	44	
09-Nov-03	2,891	2,856	-35	45	
16-Nov-03	2,918	2,936	18	46	Remembrance Day
23-Nov-03	2,871	3,023	153	47	
30-Nov-03	2,973	3,019	46	48	
07-Dec-03	3,146	3,120	-26	49	
14-Dec-03	3,162	3,162	0	50	
21-Dec-03	3,135	3,147	11	51	
28-Dec-03	2,703	2,860	157	52	Christmas & Boxing Day
04-Jan-04	2,707	2,879	172	1	New Years Day
11-Jan-04	3,369	3,251	-118	2	
18-Jan-04	3,445	3,359	-86	3	New All-Time Winter Peak
25-Jan-04	3,447	3,290	-157	4	
01-Feb-04	3,419	3,310	-109	5	
08-Feb-04	3,239	3,277	38	6	
15-Feb-04	3,215	3,197	-18	7	
22-Feb-04	3,158	3,145	-12	8	
29-Feb-04	3,039	3,117	78	9	
07-Mar-04	2,961	3,089	129	10	
14-Mar-04	3,027	3,035	8	11	
21-Mar-04	3,069	2,984	-85	12	
28-Mar-04	2,921	2,955	33	13	
04-Apr-04	2,847	2,869	22	14	
11-Apr-04	2,746	2,698	-48	15	Good Friday
18-Apr-04	2,741	2,758	17	16	Easter Monday
25-Apr-04	2,692	2,702	9	17	
02-May-04	2,726	2,723	-3	18	
09-May-04	2,706	2,652	-53	19	
16-May-04	2,746	2,731	-15	20	
23-May-04	2,670	2,690	20	21	
30-May-04	2,607	2,631	24	22	Victoria Day

Table 2.1 shows the actual and weather-corrected energy demand along with any notes for the week. Other than January, the weather was fairly close to Normal. The weather-corrected energy for the period August 14th to August 24th 2003 has been adjusted to include an estimate of lost demand due to the blackout.

2.2 Historical Peak Demand

The actual annual peak demand has averaged growth of 2.0% over the 1997 to 2003 time frame. For that period, five of the seven annual peaks have been summer peaks. For 2004, it is expected that it will be winter peaking based on the all-time winter peak on January 15th, 2004. On a weather-corrected basis the system has peaked during the winter for 2002 and 2003. However on an actual basis, the system has not been winter peaking since 2000. The system has moved from being winter peaking (1984-97 and 2000) to summer peaking (1998-99 and 2001-03). The forecast anticipates that the system will be winter peaking in 2004 but summer peaking in 2005.

Figure 2.2 displays the 52-week moving average of both actual and weather-corrected peak demands. The profile is similar to that of the energy demand, with the highpoint occurring in the spring of 2003.

Figure 2.2: Peak Demand – 52-Week Moving Average

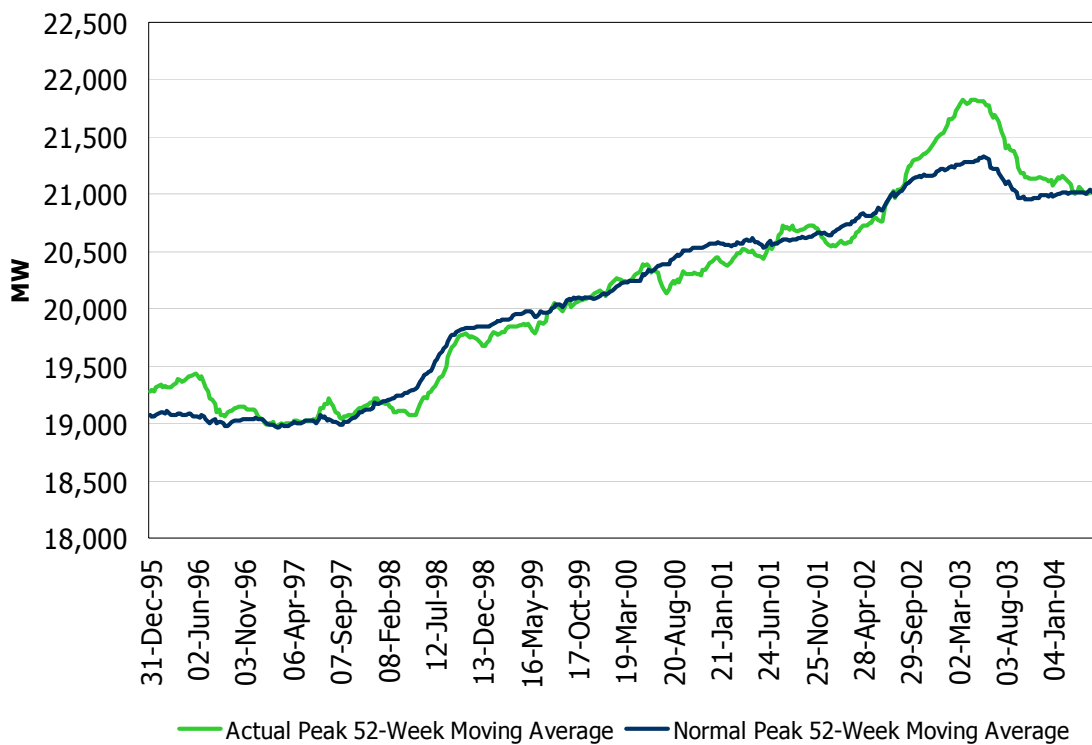


Table 2.2 contains the actual and weather-corrected weekly peak demands since April 2003. The table also shows the daily afternoon maximum temperature for both the actual peak day and the Normal peak day. This allows readers to see whether the peak was above or below Normal.

Table 2.2: Actual and Weather Corrected Weekly Peak Demand

Week Ending	Peak Day	Actual Peak (MW)	Weather Corrected Peak (MW)	Week Number	Actual Peak Day Temperature (°C)	Normal Peak Day Temperature (°C)
06-Apr-03	Thu	21,010	20,289	14	-1.8	0.2
13-Apr-03	Mon	20,921	19,729	15	-2.0	1.9
20-Apr-03	Thu	19,555	19,309	16	2.7	5.0
27-Apr-03	Tue	19,075	18,837	17	7.1	7.1
04-May-03	Thu	18,191	18,500	18	19.0	14.0
11-May-03	Mon	18,741	19,306	19	13.1	12.0
18-May-03	Mon	18,362	18,544	20	11.1	11.2
25-May-03	Tue	18,599	18,637	21	15.7	27.5
01-Jun-03	Thu	18,226	18,925	22	24.2	27.2
08-Jun-03	Wed	18,410	18,569	23	16.1	24.5
15-Jun-03	Wed	19,042	19,345	24	24.6	30.7
22-Jun-03	Wed	19,935	20,346	25	22.6	31.3
29-Jun-03	Thu	24,753	22,761	26	33.3	28.5
06-Jul-03	Fri	23,175	22,514	27	31.3	30.4
13-Jul-03	Tue	22,137	22,475	28	28.6	28.1
20-Jul-03	Mon	21,149	22,326	29	28.0	31.8
27-Jul-03	Fri	20,937	21,546	30	28.7	28.7
03-Aug-03	Wed	21,438	21,385	31	28.3	27.5
10-Aug-03	Thu	22,380	21,885	32	26.9	26.6
17-Aug-03	Thu	23,891	22,781	33	31.0	29.6
24-Aug-03	Thu	20,726	19,321	34	31.7	28.0
31-Aug-03	Tue	21,910	21,742	35	30.0	29.3
07-Sep-03	Wed	19,761	20,277	36	23.2	24.2
14-Sep-03	Thu	20,700	19,423	37	26.8	26.9
21-Sep-03	Mon	20,243	20,243	38	19.6	19.6
28-Sep-03	Mon	19,194	19,797	39	18.4	12.8
05-Oct-03	Thu	19,062	18,691	40	9.4	10.1
12-Oct-03	Thu	19,033	19,627	41	23.6	9.5
19-Oct-03	Tue	19,339	19,413	42	16.2	9.8
26-Oct-03	Thu	19,764	19,404	43	5.4	8.3
02-Nov-03	Tue	20,408	20,980	44	9.7	4.8
09-Nov-03	Tue	20,872	20,645	45	4.7	3.5
16-Nov-03	Thu	21,289	21,273	46	2.0	1.0
23-Nov-03	Mon	21,051	22,169	47	5.3	-0.3
30-Nov-03	Mon	21,584	21,864	48	13.4	0.0
07-Dec-03	Tue	22,798	22,487	49	-5.6	-3.1
14-Dec-03	Mon	22,664	22,861	50	1.4	-1.2
21-Dec-03	Mon	22,769	22,641	51	1.1	-4.7
28-Dec-03	Mon	21,276	22,364	52	5.9	-4.8
04-Jan-04	Tue	19,971	21,344	1	3.0	-8.3
11-Jan-04	Fri	23,957	23,054	2	-18.3	-10.3
18-Jan-04	Thu	24,937	23,958	3	-19.7	-14.7
25-Jan-04	Thu	23,740	22,742	4	-7.9	-9.5
01-Feb-04	Mon	24,843	24,319	5	-12.8	-10.6
08-Feb-04	Wed	22,608	22,917	6	-3.9	-9.4
15-Feb-04	Wed	22,141	22,205	7	-3.2	-6.1
22-Feb-04	Mon	22,591	22,436	8	-5.7	-6.0
29-Feb-04	Mon	21,397	22,216	9	-1.2	-4.3
07-Mar-04	Thu	20,576	21,587	10	6.8	-4.9
14-Mar-04	Mon	21,033	21,323	11	0.2	-2.4
21-Mar-04	Tue	21,634	21,042	12	-3.1	-2.1
28-Mar-04	Mon	21,411	20,622	13	-2.8	-0.2
04-Apr-04	Thu	19,867	20,052	14	5.2	0.2
11-Apr-04	Mon	19,911	19,499	15	3.2	1.9
18-Apr-04	Tue	19,287	19,296	16	4.2	5.0
25-Apr-04	Wed	18,456	19,175	17	20.0	7.1
02-May-04	Mon	18,934	19,463	18	15.3	14.0
09-May-04	Mon	18,664	18,233	19	8.3	12.0
16-May-04	Thu	20,327	19,677	20	27.3	11.2
23-May-04	Thu	19,003	19,040	21	23.6	27.5
30-May-04	Thu	18,395	19,112	22	17.7	27.2

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3.0 Forecasting Process and Assumptions

A detailed description of the forecasting methodology can be found in the document entitled "Methodology to Perform Long Term Assessments" (IMO_REP_0044) (found on the IMO web site at http://www.theimo.com/imoweb/pubs/marketReports/Methodology_RTAA_2004jun.pdf). In addition to the regular activities of updating and re-estimating the model, some structural changes were made to the forecasting system. Dummy variables were utilized to gain a better estimation of the weeks containing Christmas, New Years' and Canada Day. Previously, a dummy was used to mark off the period between Christmas and New Years. However, that specification was changed to capture impacts for the period between Christmas and the previous weekend and between New Years Day and the following weekend. These changes were statistically significant and the results can be seen in those weeks containing those holidays.

Another change was instituted regarding the way the weather variables were treated in the model. Previously weather data was segmented into seasonal components such as winter wind, winter cloud, summer wind and summer cloud. This led to some "seams" issues at the change of seasons. The weather has been re-specified to be based on weather rather than seasons. Now wind and cloud are specified as hot or cold - based on the temperature - as opposed to based on the seasons. The impact of these changes shows up primarily in the shoulder months, as the demand profile is somewhat smoother than before.

Finally, additional historical data was incorporated into the model. Data for the period 1990-1994 was added to the models. This data was not initially utilized, as zonal data was not available for that time period. This zonal data was estimated based on historical data and incorporated into the model.

Overall, the impact of these structural changes can be seen in profile of the shoulder periods and the level of demand for the two holiday periods.

The forecast of electricity demand requires inputs and/or assumptions with respect to the three classes of drivers. This section looks at how each of the drivers is generated for the forecast.

3.1 Weather Drivers for Forecast

Since forecasting long-term weather is not possible, weather scenarios are generated based on historical data. For the purposes of assessing the adequacy of the system, the IMO uses Weekly normalized weather for three weather scenarios - Normal, Normal + 1 LFU and Extreme. Load Forecast Uncertainty (LFU) represents one standard deviation in the weather elements underpinning the peak demand.

Weekly normalized weather is created using the following steps. First, the daily weather history is grouped into weeks within each year. Next, each day is then assigned a "weather impact" based on its weather conditions (temperature, wind speed, cloud cover and humidity). Within each week the daily weather factors are then sorted from highest to lowest. Then the highest ranked days for each Week 1 of the 31 years of history are combined to create the first day of Week 1 of the weather scenario. The second highest ranked days for Week 1 of the 31 years of history are combined to create the second day of Week 1 of the weather scenario. The process is repeated until all days of all weeks have been created for the weather scenario.

To generate the Normal weather scenario the median value is selected for each day of the week. To create the Extreme weather scenario the maximum value is selected. To create the Mild scenario the minimum value is selected.

Load Forecast Uncertainty (LFU), a measure of demand fluctuations due to weather variability, is also a critical part of the analysis. LFU is generated by taking the difference between the Normal weather scenario and the Normal + 1 LFU weather scenario. As stated earlier, LFU represents one standard deviation in the weather elements underpinning the peak demand.

The Normal weather scenario, in conjunction with LFU is valuable in determining a distribution of potential outcomes under various weather conditions. It should be recognized that for resource adequacy assessments, the Weekly Normal weather forecast is used in conjunction with a measure of Weekly LFU to consider a full range of peak demands that can occur with various weather conditions with varying probability of occurrence.

The Extreme weather scenario is valuable for studying situations where the system is under duress. The Weekly Extreme weather scenario is valuable when examining peak conditions but is unrealistic from an energy demand standpoint, as severe weather conditions do not persist over a longer time period.

Table 3.1 contains information about the Weekly Normal and Extreme weather scenarios. For each week, the table shows the historical weather used for the peak day of that week. The table shows the daily high (temperature) and wind speed. Not shown - but used in forecasting demand - are humidity and cloud cover. The IMO uses six weather stations, the data below is for Toronto.

Table 3.1: Normal and Extreme Weather

Week	Normal Peak Date	Normal Temperature (°C)	Normal Wind Speed (km/hr)	Extreme Peak Date	Extreme Temperature (°C)	Extreme Wind Speed (km/hr)
1	04-Jan-76	-8.3	28.7	10-Jan-82	-15.8	41.3
2	13-Jan-00	-10.3	33.3	15-Jan-94	-21.4	19.5
3	17-Jan-03	-14.7	23.3	19-Jan-94	-19.0	35.7
4	29-Jan-78	-9.5	12.0	23-Jan-76	-18.3	10.7
5	30-Jan-76	-10.6	14.0	05-Feb-95	-17.6	40.7
6	09-Feb-75	-9.4	15.5	06-Feb-95	-15.4	18.7
7	13-Feb-95	-6.1	31.5	17-Feb-79	-19.4	14.7
8	19-Feb-79	-6.0	6.8	25-Feb-90	-15.9	27.8
9	28-Feb-01	-4.3	27.3	29-Feb-80	-14.4	35.0
10	07-Mar-78	-4.9	19.8	03-Mar-03	-14.3	6.3
11	12-Mar-01	-2.4	32.7	12-Mar-84	-11.3	7.0
12	21-Mar-98	-2.1	22.5	20-Mar-86	-11.1	29.2
13	29-Mar-91	-0.2	19.7	25-Mar-02	-3.5	15.2
14	08-Apr-00	0.2	38.2	06-Apr-82	-7.4	38.0
15	12-Apr-92	1.9	37.3	07-Apr-03	-2.0	35.5
16	22-Apr-89	5.0	23.8	18-Apr-83	1.9	25.7
17	27-Apr-88	7.1	27.8	22-Apr-86	1.0	19.0
18	03-May-81	14.0	11.0	07-May-00	29.0	39.5
19	05-May-92	12.0	13.7	09-May-79	29.7	21.5
20	19-May-00	11.2	23.2	19-May-96	28.8	38.8
21	22-May-84	27.5	26.7	23-May-75	27.8	7.3
22	30-May-94	27.2	23.0	29-May-87	32.0	18.2
23	05-Jun-81	24.5	12.7	07-Jun-99	32.9	22.2
24	13-Jun-92	30.7	26.3	18-Jun-94	35.2	9.8
25	21-Jun-94	31.3	36.7	19-Jun-95	35.1	20.2
26	26-Jun-95	28.5	26.0	04-Jul-99	34.4	23.3
27	14-Jul-84	30.4	20.7	14-Jul-95	36.7	17.3
28	05-Jul-77	28.1	9.2	02-Jul-02	34.3	21.7
29	18-Jul-83	31.8	12.2	20-Jul-77	33.8	16.3
30	27-Jul-97	28.7	18.0	30-Jul-99	34.4	18.0
31	02-Aug-00	27.5	21.5	01-Aug-75	34.4	17.5
32	04-Aug-03	26.6	18.8	07-Aug-01	35.3	28.0
33	13-Aug-91	29.6	10.7	15-Aug-95	31.9	9.2
34	24-Aug-80	28.0	9.0	27-Aug-93	34.0	25.8
35	30-Aug-79	29.3	22.3	28-Aug-73	35.6	26.7
36	01-Sep-97	24.2	10.5	03-Sep-73	32.8	9.3
37	13-Sep-90	26.9	15.3	09-Sep-02	33.5	14.8
38	15-Sep-03	19.6	16.3	16-Sep-91	31.2	30.3
39	24-Sep-76	12.8	11.7	22-Sep-70	26.7	21.3
40	04-Oct-94	10.1	20.7	01-Oct-02	28.8	34.2
41	07-Oct-81	9.5	40.2	12-Oct-88	4.6	23.5
42	17-Oct-03	9.8	19.0	20-Oct-74	2.2	27.3
43	21-Oct-74	8.3	25.3	26-Oct-79	2.5	26.7
44	02-Nov-88	4.8	34.2	07-Nov-93	2.6	26.0
45	05-Nov-98	3.5	16.7	12-Nov-95	0.5	34.3
46	13-Nov-95	1.0	7.3	13-Nov-86	-4.2	11.5
47	22-Nov-81	-0.3	22.5	21-Nov-87	-8.0	22.7
48	25-Nov-75	0.0	24.7	03-Dec-89	-9.2	34.8
49	06-Dec-03	-3.1	5.5	11-Dec-77	-14.1	8.5
50	09-Dec-02	-1.2	33.0	15-Dec-89	-8.5	17.8
51	17-Dec-02	-4.7	12.3	26-Dec-93	-17.0	33.0
52	25-Dec-96	-4.8	21.0	27-Dec-93	-9.5	22.5

3.2 Calendar Drivers for Forecast

Calendar variables are addressed in the Methodology document.

3.3 Economic Drivers for Forecast

To produce both an energy and peak demand forecast, an economic forecast of various drivers is required. A consensus of four major, publicly available provincial forecasts was utilized to generate the economic drivers used in the demand forecast. Table 3.1 summarizes the key economic drivers for energy and peak demand on the IMO-controlled grid. The Ontario growth index is a weighting of the economic drivers as they relate to electricity demand. The 18-Month outlook only considers the median economic growth scenario. High and low scenarios are used only in the 10-Year assessment.

Table 3.2: Forecast of Ontario Economic Drivers

Year	Ontario Employment		Ontario Housing Starts		Ontario Growth Index	
	Thousands	Annual Growth (%)	Thousands	Annual Growth (%)	Index	Annual Growth (%)
1995	5,129	2.0	31.9	-23.3	1.029	1.49
1996	5,176	0.9	39.5	23.9	1.038	0.89
1997	5,298	2.4	50.0	26.5	1.056	1.75
1998	5,476	3.4	50.1	0.2	1.081	2.31
1999	5,672	3.6	62.9	25.6	1.108	2.47
2000	5,856	3.2	67.4	7.1	1.134	2.41
2001	5,962	1.8	70.3	4.2	1.154	1.73
2002	6,052	1.5	79.6	13.3	1.173	1.64
2003	6,219	2.8	80.9	1.7	1.200	2.31
2004 (f)	6,312	1.5	71.3	-11.8	1.219	1.62
2005 (f)	6,388	1.2	66.2	-7.1	1.236	1.37

- End of Section -

4.0 Demand Forecast

This section presents information on the total system, more detailed information for the individual zones can be found in Appendices A and B.

The predicted weekly system energy demand forecast is illustrated in Figure 4.1. Also in the chart are the actual and weather-corrected peak demands. The large decline just before the mid-point of the winter is the week between Christmas and New Years Day. The large divergence between the weather-corrected and actual values in late summer is the impact of the blackout. The weather-corrected values have been adjusted to include an estimate of unsupplied demand (a result of the blackout) whereas the actuals do not.

Figure 4.1: Weekly Energy Demand – History and Forecast

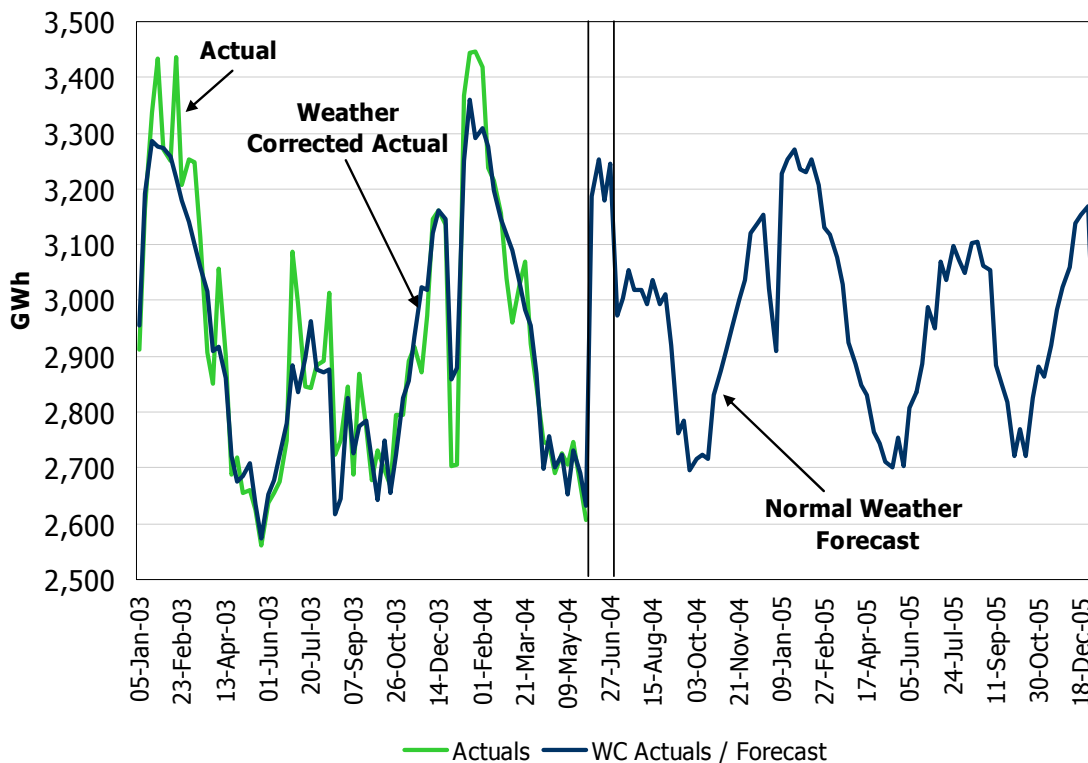
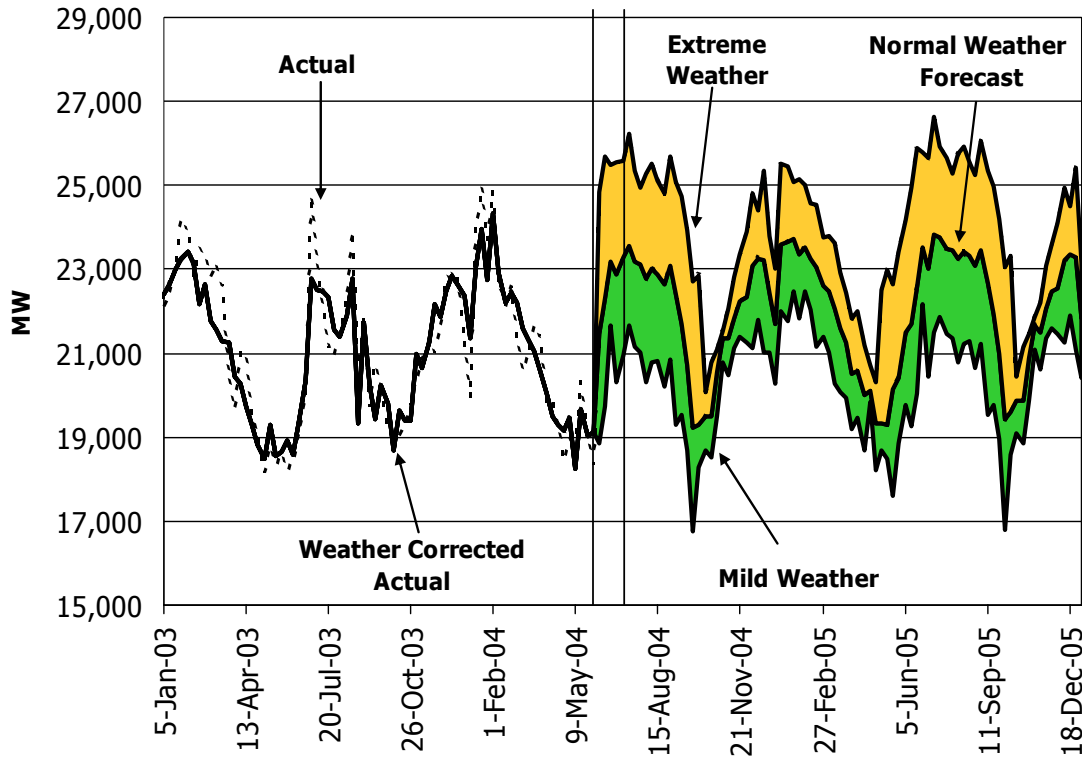


Figure 4.2 shows the range of weekly peak demands. The bottom of the peak demand range is generated via a Mild weather scenario. The Mild weather scenario is the opposite of the Extreme weather scenario, based on warm temperatures in the winter and cool summer temperatures. The middle of the range (the heavy line) represents the Normal weather peak demand. The top of the range is representative of the Extreme weather scenario. In general, it is the top half of the range that is the thrust of the analysis in the resource and transmission assessments.

Figure 4.2: Weekly Peak Demand Forecast – Weather Scenarios



The resource adequacy assessments take into consideration the full range of possible weather conditions on a probabilistic basis for each week. Allowance for the probability of demand being higher than that under Normal weather is made in the calculation of the required reserve. In order to illustrate the variability that weather can have on peak demand several case studies are presented in Table 4.1. The top half of the table presents the peak and energy demand for July 7th, 2004 given six different sets of weather conditions. The six sets of weather conditions are drawn from various weather scenarios. The table contains the weather conditions for Toronto and Thunder Bay for that weather scenario. The table also shows the weathers' contribution to that day's peak and energy demand. The second part of the table is similar to the first except that the case studies are for the January 19th, 2005.

This table illustrates many important concepts. For example:

- The larger the normalization period, the higher the demand.
- Weather impacts on peak demand are greater in the summer than the winter. This is due to fact that heating load has more fuel diversity than cooling load. As well, the winter peak demands also contains significant lighting load.
- Weather impacts on energy demand are greater in the winter than the summer. This is due to the fact that cooling load may dissipate overnight whereas heating load is more consistent around the clock.
- Ontario represents a large geographic area and as such weather can vary significantly from region to region.

Table 4.1: Case Study: Weather Impacts on Demand

Case Study: Weather Impacts on Demand for July 7, 2004	Weekly Normal Weather	Weekly Extreme Weather	Monthly Mild Weather	Monthly Normal Weather	Seasonal Mild Weather	Seasonal Normal Weather
Weather Scenario: Normalization Period:	Normal Weekly	Extreme Weekly	Mild Monthly	Normal Monthly	Mild Season	Normal Season
Toronto Weather						
Weather Data Date:	June 30, 1997	July 14, 1995	July 9, 1992	July 9, 1993	August 25, 1992	July 8, 1981
Afternoon High (°C):	29.1	36.7	26.3	31.7	27.3	32.0
Humidex (°C):	37.5	50.8	31.4	39.5	37.2	41.5
Afternoon Wind Speed (km/hr):	18.8	17.3	30.5	24.3	12.2	21.2
Afternoon Cloud Cover:	Clear	Clear	Partly Cloudy	Clear	Mainly Cloudy	Partly Cloudy
Thunder Bay Weather						
Weather Data Date:	June 30, 1997	July 14, 1995	July 9, 1992	July 9, 1993	August 25, 1992	July 8, 1981
Afternoon High (°C):	18.8	23.4	22.9	22.9	11.5	31.2
Humidex (°C):	22.5	30.9	26.7	29.3	9.6	41.8
Afternoon Wind Speed (km/hr):	9.8	8.0	9.3	25.5	9.5	19.7
Afternoon Cloud Cover:	Mainly Cloudy	Overcast	Partly Cloudy	Overcast	Overcast	Partly Cloudy
Demand Impacts						
Peak Demand:	23,558	26,238	21,868	24,723	23,476	24,679
Weather Impact on Peak:	5,558	8,238	3,868	6,723	5,476	6,679
Daily Energy Demand:	480,270	523,943	450,598	497,402	479,662	500,079
Weather Impact on Energy Demand:	90,270	133,943	60,598	107,402	89,662	110,079

Case Study: Weather Impacts on Demand for January 19, 2005	Weekly Normal Weather	Weekly Extreme Weather	Monthly Mild Weather	Monthly Normal Weather	Seasonal Mild Weather	Seasonal Normal Weather
Weather Scenario: Normalization Period:	Normal Weekly	Extreme Weekly	Mild Monthly	Normal Monthly	Mild Season	Normal Season
Toronto Weather						
Weather Data Date:	January 20, 1978	January 10, 1982	January 31, 2002	January 21, 1991	March 4, 2002	January 23, 2003
Afternoon High (°C):	-10.8	-15.8	-5.0	-13.5	-6.8	-14.6
Afternoon Wind Speed (km/hr):	28.7	41.3	22.3	20.8	33.5	27.2
Afternoon Cloud Cover:	Overcast	Overcast	Overcast	Mainly Cloudy	Mainly Cloudy	Overcast
Thunder Bay Weather						
Weather Data Date:	January 20, 1978	January 10, 1982	January 31, 2002	January 21, 1991	March 4, 2002	January 23, 2003
Afternoon High (°C):	-11.0	-21.4	-3.9	-15.9	-7.5	-14.4
Afternoon Wind Speed (km/hr):	8.3	41.3	6.2	14.0	8	19.7
Afternoon Cloud Cover:	Clear	Overcast	Overcast	Clear	Mainly Cloudy	Partly Cloudy
Demand Impacts						
Peak Demand:	23,734	25,501	22,958	24,247	23,358	24,414
Weather Impact on Peak:	3,734	5,501	2,958	4,247	3,358	4,414
Daily Energy Demand:	499,868	537,770	482,501	514,699	491,795	516,989
Weather Impact on Energy Demand:	90,270	127,770	72,501	104,699	81,795	106,989

Table 4.2 contains the weekly forecast of energy and peak demand. As well, the table includes the week number and the Weekly Normal weather peak day temperature for Toronto. The table has the weekly peak demands for each of the Normal, Normal + 1 Load Forecast Uncertainty and Extreme weather scenarios (Weekly normalized). The last column of the table has the weekly energy demand forecast under Normal weather. Up to 300 MW of price sensitive demand is treated as an additional resource in the assessments.

Table 4.2: Forecasted Ontario Weekly Demand

Week Number	Week Ending	Normal Peak Day Temperature (°C)	Normal Peak (MW)	Normal + 1 LFU Peak (MW)	Extreme Peak (MW)	Normal Energy (GWh)
27	04-Jul-04	30.4	23,275	24,444	25,598	2,974
28	11-Jul-04	28.1	23,558	24,505	26,238	3,003
29	18-Jul-04	31.8	23,198	24,226	25,355	3,054
30	25-Jul-04	28.7	23,129	24,187	24,939	3,020
31	01-Aug-04	27.5	22,768	23,989	25,280	3,020
32	08-Aug-04	26.6	23,000	24,102	25,503	2,993
33	15-Aug-04	29.6	22,876	23,898	25,107	3,037
34	22-Aug-04	28.0	22,631	23,839	24,791	2,992
35	29-Aug-04	29.3	23,077	24,191	25,689	3,011
36	05-Sep-04	24.2	22,415	23,979	25,074	2,919
37	12-Sep-04	26.9	21,693	22,777	24,728	2,762
38	19-Sep-04	19.6	20,714	21,736	23,917	2,786
39	26-Sep-04	12.8	19,232	20,468	22,725	2,696
40	03-Oct-04	10.1	19,299	19,808	22,842	2,717
41	10-Oct-04	9.5	19,484	19,876	20,064	2,723
42	17-Oct-04	9.8	19,509	20,010	20,793	2,716
43	24-Oct-04	8.3	20,533	21,042	21,100	2,831
44	31-Oct-04	4.8	21,351	21,641	21,524	2,873
45	07-Nov-04	3.5	21,361	21,806	22,082	2,912
46	14-Nov-04	1.0	21,826	22,180	22,814	2,954
47	21-Nov-04	-0.3	22,231	22,657	23,366	3,001
48	28-Nov-04	0.0	22,341	22,884	23,904	3,038
49	05-Dec-04	-3.1	23,069	24,049	24,791	3,121
50	12-Dec-04	-1.2	23,248	23,976	24,410	3,139
51	19-Dec-04	-4.7	23,216	24,315	25,353	3,155
52	26-Dec-04	-4.8	22,442	23,149	23,787	3,022
53	02-Jan-05	-4.8	21,683	22,390	23,027	2,908
1	09-Jan-05	-8.3	23,600	24,402	25,501	3,228
2	16-Jan-05	-10.3	23,641	24,587	25,433	3,253
3	23-Jan-05	-14.7	23,734	24,365	25,077	3,271
4	30-Jan-05	-9.5	23,344	24,098	25,157	3,235
5	06-Feb-05	-10.6	23,524	24,048	25,020	3,229
6	13-Feb-05	-9.4	23,262	23,871	24,569	3,253
7	20-Feb-05	-6.1	23,039	23,986	24,527	3,208
8	27-Feb-05	-6.0	22,606	23,216	23,764	3,132
9	06-Mar-05	-4.3	22,487	23,217	23,806	3,118
10	13-Mar-05	-4.9	22,064	22,961	23,629	3,078
11	20-Mar-05	-2.4	21,604	22,364	22,904	3,030
12	27-Mar-05	-2.1	21,246	21,903	22,455	2,926
13	03-Apr-05	-0.2	20,514	21,180	21,842	2,888

(Table 4.2 – continued)

Week Number	Week Ending	Normal Peak Day Temperature (°C)	Normal Peak (MW)	Normal + 1 LFU Peak (MW)	Extreme Peak (MW)	Normal Energy (GWh)
14	10-Apr-05	0.2	20,565	21,121	21,988	2,848
15	17-Apr-05	1.9	20,016	20,676	21,178	2,830
16	24-Apr-05	5.0	20,099	20,226	20,704	2,763
17	01-May-05	7.1	19,313	19,856	20,301	2,745
18	08-May-05	14.0	19,316	19,625	22,496	2,712
19	15-May-05	12.0	19,309	19,725	22,965	2,701
20	22-May-05	11.2	20,141	21,410	22,640	2,753
21	29-May-05	27.5	20,414	21,192	23,407	2,703
22	05-Jun-05	27.2	21,482	22,344	24,155	2,808
23	12-Jun-05	24.5	21,695	22,917	24,929	2,835
24	19-Jun-05	30.7	22,573	23,848	25,899	2,886
25	26-Jun-05	31.3	23,522	24,200	25,798	2,989
26	03-Jul-05	28.5	23,009	24,295	25,642	2,951
27	10-Jul-05	30.4	23,828	24,997	26,649	3,071
28	17-Jul-05	28.1	23,750	24,697	25,932	3,036
29	24-Jul-05	31.8	23,503	24,531	25,661	3,099
30	31-Jul-05	28.7	23,461	24,519	25,271	3,072
31	07-Aug-05	27.5	23,239	24,460	25,750	3,050
32	14-Aug-05	26.6	23,427	24,529	25,930	3,103
33	21-Aug-05	29.6	23,319	24,341	25,550	3,106
34	28-Aug-05	28.0	23,079	24,287	25,238	3,062
35	04-Sep-05	29.3	23,438	24,552	26,050	3,056
36	11-Sep-05	24.2	22,674	24,238	25,332	2,884
37	18-Sep-05	26.9	21,945	23,029	24,981	2,852
38	25-Sep-05	19.6	20,997	22,019	24,200	2,819
39	02-Oct-05	12.8	19,446	20,775	23,037	2,722
40	09-Oct-05	10.1	19,599	20,108	23,322	2,769
41	16-Oct-05	9.5	19,865	20,257	20,437	2,723
42	23-Oct-05	9.8	19,867	20,368	21,151	2,825
43	30-Oct-05	8.3	20,891	21,400	21,458	2,882
44	06-Nov-05	4.8	21,676	21,966	21,849	2,863
45	13-Nov-05	3.5	21,495	21,940	22,216	2,920
46	20-Nov-05	1.0	22,078	22,432	23,066	2,984
47	27-Nov-05	-0.3	22,460	22,886	23,595	3,024
48	04-Dec-05	0.0	22,542	23,085	24,105	3,060
49	11-Dec-05	-3.1	23,205	24,185	24,927	3,139
50	18-Dec-05	-1.2	23,356	24,084	24,518	3,155
51	25-Dec-05	-4.7	23,279	24,378	25,415	3,169
52	01-Jan-06	-4.8	21,815	22,522	23,160	2,904

4.1 Comparison of Current and Previous Forecast

This section compares the current forecast with that released March 25, 2004. Whereas, the previous forecast was consistent with the 10-Year Outlook released March 31, 2004; this forecast is an update to both of those documents.

There were a number of updates and modifications that have had an impact on the demand forecast. In addition to the regular activities of re-estimating the models and updated the underlying economic forecast, some structural changes were made to the forecasting system. These changes are the inclusion of data from January 1990 to December 1994, modification to the specification of fixed holidays and a re-specification of some of the weather elements.

Originally, the data for the period January 1990 to December 1994 was excluded from the model. This was due to the fact that zonal demand data was not available for this time period. Using a

variety of sources a proxy for this time period has been developed and included in the model. This allows for more robust model estimation.

The fixed holidays of Christmas, Boxing Day, New Years Day and Canada Day have been further refined to acknowledge the impact on weekdays prior to and immediately after of these holidays. This has led to a better representation of these days between the weekend and the holiday in question.

Finally, the wind and cloud variables were previously defined on a seasonal basis. They have been revised to be weather defined such that we now have hot or cold wind as opposed to the winter or summer wind. This rectifies some "seam" issues that arose as the forecast moved between seasons.

All combined these structural changes have had the biggest impact on those weeks with the Christmas and Canada Day holidays and on the weekly profile of demand.

In terms of the "regular" changes to the forecasting system, the model has been updated to include the actual data from the February to April 2004 time frame. Since this time frame represents a period of lower than expected demand, it has had a downward impact on forecasted peak and energy demand. Add to this a slightly more pessimistic economic outlook and we have a lower peak and energy demand forecast. Finally, there is an additional downward impact on peak and energy demand due to the start of the Imperial Oil 100 MW embedded generator. Since the generator is not part of the grid it has the impact of reducing demand on the grid by an amount equivalent to its output. All in all, the forecast is lower as evidenced in Table 4.3, which shows the difference between the current and previous forecast.

Table 4.3: Current Versus Previous Forecast

Week Ending	Energy Demand	Normal Weather Peak Demand	Extreme Weather Peak Demand
	(GWh)	(MW)	(MW)
11-Jul-04	3,003	23,558	26,238
Difference (Current - Previous)	-379	-110	306
10-Oct-04	2,723	19,484	20,064
Difference (Current - Previous)	-150	-339	-293
09-Jan-05	3,228	23,600	25,501
Difference (Current - Previous)	-261	-78	137
10-Apr-05	2,848	20,565	21,988
Difference (Current - Previous)	-234	40	651
10-Jul-05	3,071	23,828	26,649
Difference (Current - Previous)	-301	61	-90

- End of Section -

Appendix A - Energy Demand Forecast Details

Table A1: Weekly Zonal Energy Forecast, Normal Weather

Week Ending	Weekly Energy (GWh)										Total System
	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	
04-Jul-04	138	181	173	149	220	1,035	127	7	597	346	2,974
11-Jul-04	138	183	173	151	230	1,053	127	7	600	342	3,003
18-Jul-04	139	187	178	155	234	1,073	129	6	594	360	3,054
25-Jul-04	139	187	172	152	230	1,055	128	6	579	371	3,020
01-Aug-04	140	185	173	153	233	1,057	126	6	581	365	3,020
08-Aug-04	143	189	171	150	233	1,045	126	7	575	355	2,993
15-Aug-04	142	193	171	150	232	1,059	129	7	584	369	3,037
22-Aug-04	144	195	168	147	229	1,036	129	7	575	363	2,992
29-Aug-04	143	201	170	147	230	1,035	132	7	576	370	3,011
05-Sep-04	143	208	165	144	214	990	126	7	566	355	2,919
12-Sep-04	137	205	156	131	208	940	116	7	538	324	2,762
19-Sep-04	146	209	156	129	216	948	115	7	543	316	2,786
26-Sep-04	144	207	154	128	211	908	111	7	523	302	2,696
03-Oct-04	146	207	155	128	216	921	111	7	526	300	2,717
10-Oct-04	146	211	162	137	214	914	111	7	524	299	2,723
17-Oct-04	146	213	167	144	211	901	110	7	523	294	2,716
24-Oct-04	149	221	179	156	215	935	115	7	547	308	2,831
31-Oct-04	150	225	185	164	214	944	116	7	557	311	2,873
07-Nov-04	155	233	180	163	228	952	118	9	556	317	2,912
14-Nov-04	156	232	184	167	231	969	119	9	564	322	2,954
21-Nov-04	158	234	190	173	232	986	120	9	573	325	3,001
28-Nov-04	158	238	195	179	236	994	120	9	581	327	3,038
05-Dec-04	161	239	207	190	244	1,022	121	9	599	327	3,121
12-Dec-04	162	240	209	193	245	1,022	123	9	602	334	3,139
19-Dec-04	161	241	211	196	247	1,026	123	9	605	336	3,155
26-Dec-04	152	236	204	192	240	972	116	8	574	328	3,022
02-Jan-05	153	239	198	184	235	928	111	8	546	307	2,908
09-Jan-05	168	252	216	201	257	1,047	125	8	612	342	3,228
16-Jan-05	169	255	220	205	260	1,049	125	9	617	344	3,253
23-Jan-05	169	255	223	207	262	1,055	126	9	621	345	3,271
30-Jan-05	168	253	216	201	254	1,047	126	9	617	344	3,235
06-Feb-05	167	254	219	204	253	1,040	126	9	615	342	3,229
13-Feb-05	168	249	220	204	255	1,053	127	9	621	346	3,253
20-Feb-05	169	246	216	200	248	1,039	126	9	614	341	3,208
27-Feb-05	165	245	209	193	240	1,017	125	9	597	331	3,132
06-Mar-05	164	241	206	193	241	1,014	125	10	594	332	3,118
13-Mar-05	163	240	200	191	233	1,001	124	9	588	329	3,078
20-Mar-05	159	233	196	190	230	985	123	9	583	324	3,030
27-Mar-05	153	228	189	186	225	942	119	8	563	313	2,926
03-Apr-05	152	224	183	177	220	937	118	7	557	313	2,888

(Table A1 – continued)

	Weekly Energy (GWh)										Total System
	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	
10-Apr-05	153	218	179	159	213	940	116	7	548	314	2,848
17-Apr-05	152	215	181	165	208	930	116	7	547	309	2,830
24-Apr-05	148	209	176	164	198	906	114	7	537	303	2,763
01-May-05	148	204	172	161	195	907	113	6	537	302	2,745
08-May-05	148	196	171	162	193	890	113	6	531	303	2,712
15-May-05	146	198	172	163	191	887	111	6	530	297	2,701
22-May-05	146	202	173	160	193	909	115	6	539	311	2,753
29-May-05	145	204	173	156	193	882	114	7	522	307	2,703
05-Jun-05	143	194	168	147	210	953	119	6	543	325	2,808
12-Jun-05	143	189	165	142	217	967	121	7	553	331	2,835
19-Jun-05	143	183	167	143	215	991	124	7	575	338	2,886
26-Jun-05	146	185	174	150	221	1,042	124	8	604	337	2,989
03-Jul-05	139	180	172	149	223	1,025	124	7	596	334	2,951
10-Jul-05	139	183	177	152	230	1,079	131	7	616	356	3,071
17-Jul-05	138	183	173	151	232	1,071	128	6	598	354	3,036
24-Jul-05	140	188	179	156	236	1,093	130	6	596	375	3,099
31-Jul-05	140	186	174	153	233	1,077	130	6	589	383	3,072
07-Aug-05	143	187	173	151	234	1,067	129	7	585	373	3,050
14-Aug-05	145	191	176	155	241	1,091	129	7	599	370	3,103
21-Aug-05	144	197	174	152	237	1,086	133	7	598	380	3,106
28-Aug-05	146	199	171	148	233	1,062	132	7	589	375	3,062
04-Sep-05	145	209	174	152	231	1,040	132	7	589	377	3,056
11-Sep-05	139	208	162	138	212	981	123	7	559	354	2,884
18-Sep-05	143	205	158	131	214	981	119	8	558	335	2,852
25-Sep-05	148	208	155	126	220	966	115	7	551	322	2,819
02-Oct-05	145	207	154	127	214	921	111	7	528	306	2,722
09-Oct-05	148	209	160	134	217	939	112	7	536	306	2,769
16-Oct-05	146	212	165	141	211	906	110	7	524	300	2,723
23-Oct-05	147	215	176	153	215	942	113	7	548	308	2,825
30-Oct-05	149	222	184	163	215	950	116	7	559	316	2,882
06-Nov-05	154	224	170	155	218	943	118	9	552	320	2,863
13-Nov-05	155	230	180	163	229	958	118	9	559	321	2,920
20-Nov-05	156	230	187	171	232	981	120	9	571	328	2,984
27-Nov-05	157	233	192	177	232	993	121	9	581	330	3,024
04-Dec-05	159	237	197	182	236	1,000	121	9	588	331	3,060
11-Dec-05	162	238	208	193	245	1,027	121	9	605	332	3,139
18-Dec-05	161	239	210	195	245	1,027	123	9	606	339	3,155
25-Dec-05	160	240	211	197	248	1,031	123	9	608	341	3,169
01-Jan-06	145	230	196	188	234	929	109	8	549	315	2,904

- End of Section -

Appendix B - Peak Demand Forecast Details

Table B1: Weekly Zonal Coincident Peak Demand Forecast, Normal Weather

Week Ending	Hourly Coincident Peak Demand (MW)											Load Forecast Uncertainty
	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	Total System	
04-Jul-04	868	1,124	1,408	1,404	1,729	8,419	928	54	4,641	2,700	23,275	1,169
11-Jul-04	849	1,160	1,465	1,459	1,811	8,657	888	52	4,714	2,503	23,558	947
18-Jul-04	842	1,153	1,426	1,438	1,818	8,384	935	47	4,503	2,652	23,198	1,028
25-Jul-04	834	1,133	1,335	1,408	1,734	8,347	975	44	4,415	2,904	23,129	1,058
01-Aug-04	843	1,105	1,318	1,374	1,691	8,171	979	44	4,353	2,890	22,768	1,221
08-Aug-04	874	1,158	1,400	1,452	1,873	8,264	899	47	4,414	2,619	23,000	1,102
15-Aug-04	878	1,189	1,393	1,391	1,847	8,153	925	48	4,377	2,675	22,876	1,022
22-Aug-04	890	1,163	1,335	1,331	1,763	8,221	899	49	4,387	2,593	22,631	1,208
29-Aug-04	881	1,220	1,375	1,326	1,775	8,267	965	50	4,425	2,793	23,077	1,114
05-Sep-04	890	1,305	1,365	1,316	1,669	7,888	923	56	4,313	2,690	22,415	1,564
12-Sep-04	873	1,256	1,240	1,177	1,554	7,737	917	54	4,185	2,700	21,693	1,084
19-Sep-04	909	1,280	1,198	1,120	1,652	7,315	826	54	4,011	2,349	20,714	1,022
26-Sep-04	919	1,285	1,150	1,043	1,586	6,624	751	49	3,763	2,062	19,232	1,236
03-Oct-04	911	1,275	1,128	1,054	1,552	6,714	748	50	3,824	2,043	19,299	509
10-Oct-04	930	1,325	1,184	1,195	1,577	6,618	765	46	3,774	2,070	19,484	392
17-Oct-04	906	1,326	1,231	1,243	1,569	6,600	758	44	3,796	2,036	19,509	501
24-Oct-04	946	1,409	1,388	1,346	1,564	6,877	794	48	3,997	2,164	20,533	509
31-Oct-04	947	1,422	1,491	1,485	1,609	7,159	809	49	4,168	2,212	21,351	290
07-Nov-04	984	1,434	1,397	1,412	1,653	7,172	834	62	4,138	2,275	21,361	445
14-Nov-04	1,011	1,449	1,445	1,479	1,718	7,309	839	63	4,207	2,306	21,826	354
21-Nov-04	1,006	1,462	1,509	1,539	1,749	7,427	858	62	4,271	2,348	22,231	426
28-Nov-04	1,014	1,516	1,536	1,580	1,773	7,387	850	65	4,312	2,308	22,341	543
05-Dec-04	1,043	1,510	1,610	1,672	1,845	7,619	870	66	4,465	2,369	23,069	980
12-Dec-04	1,025	1,504	1,644	1,729	1,880	7,600	883	66	4,493	2,424	23,248	728
19-Dec-04	1,002	1,515	1,626	1,716	1,842	7,685	868	63	4,525	2,374	23,216	1,099
26-Dec-04	997	1,504	1,596	1,685	1,799	7,310	848	60	4,292	2,351	22,442	707
02-Jan-05	971	1,548	1,564	1,673	1,771	6,967	810	58	4,107	2,214	21,683	707
09-Jan-05	1,051	1,578	1,669	1,772	1,861	7,733	889	61	4,494	2,492	23,600	802
16-Jan-05	1,054	1,588	1,710	1,811	1,918	7,722	864	61	4,514	2,399	23,641	946
23-Jan-05	1,047	1,578	1,716	1,796	1,871	7,789	878	62	4,554	2,443	23,734	631
30-Jan-05	1,046	1,585	1,665	1,759	1,888	7,613	871	61	4,452	2,404	23,344	754
06-Feb-05	1,032	1,589	1,713	1,779	1,891	7,726	867	62	4,508	2,357	23,524	524
13-Feb-05	1,045	1,552	1,682	1,727	1,851	7,617	879	62	4,453	2,394	23,262	609
20-Feb-05	1,039	1,511	1,651	1,707	1,894	7,530	880	62	4,391	2,374	23,039	947
27-Feb-05	1,040	1,522	1,535	1,657	1,797	7,455	862	64	4,316	2,358	22,606	610
06-Mar-05	1,031	1,500	1,537	1,669	1,814	7,446	849	64	4,289	2,288	22,487	730
13-Mar-05	996	1,491	1,481	1,615	1,720	7,291	853	60	4,230	2,327	22,064	897
20-Mar-05	990	1,463	1,472	1,607	1,697	7,105	827	61	4,160	2,222	21,604	760
27-Mar-05	953	1,425	1,440	1,576	1,637	7,021	823	54	4,116	2,201	21,246	657
03-Apr-05	912	1,395	1,378	1,519	1,571	6,699	820	53	3,972	2,195	20,514	666

(Table B1 – continued)

Week Ending	Hourly Coincident Peak Demand (MW)											Load Forecast Uncertainty
	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	Total System	
10-Apr-05	967	1,391	1,353	1,321	1,593	6,878	817	51	3,968	2,226	20,565	556
17-Apr-05	947	1,389	1,337	1,298	1,462	6,676	815	47	3,883	2,162	20,016	660
24-Apr-05	947	1,366	1,349	1,316	1,493	6,690	815	47	3,898	2,178	20,099	127
01-May-05	945	1,256	1,239	1,194	1,440	6,617	742	46	3,805	2,029	19,313	543
08-May-05	922	1,199	1,243	1,194	1,423	6,714	747	42	3,767	2,065	19,316	309
15-May-05	934	1,229	1,252	1,214	1,417	6,669	741	43	3,771	2,039	19,309	416
22-May-05	896	1,233	1,245	1,205	1,440	6,971	833	42	3,896	2,380	20,141	1,269
29-May-05	916	1,269	1,319	1,262	1,593	6,870	852	43	3,864	2,426	20,414	778
05-Jun-05	888	1,198	1,314	1,263	1,709	7,630	850	45	4,152	2,433	21,482	862
12-Jun-05	897	1,197	1,342	1,267	1,710	7,759	869	47	4,222	2,385	21,695	1,222
19-Jun-05	890	1,140	1,358	1,341	1,745	8,091	916	51	4,472	2,569	22,573	1,275
26-Jun-05	885	1,142	1,410	1,412	1,797	8,385	981	51	4,633	2,826	23,522	678
03-Jul-05	873	1,121	1,393	1,370	1,709	8,368	932	56	4,611	2,576	23,009	1,286
10-Jul-05	849	1,129	1,454	1,434	1,786	8,722	945	54	4,787	2,668	23,828	1,169
17-Jul-05	852	1,155	1,467	1,462	1,830	8,748	894	48	4,704	2,590	23,750	947
24-Jul-05	848	1,157	1,434	1,453	1,834	8,520	945	45	4,514	2,753	23,503	1,028
31-Jul-05	841	1,125	1,344	1,418	1,748	8,475	986	44	4,487	2,993	23,461	1,058
07-Aug-05	856	1,101	1,343	1,376	1,718	8,367	998	47	4,454	2,979	23,239	1,221
14-Aug-05	882	1,176	1,420	1,450	1,901	8,436	915	49	4,502	2,696	23,427	1,102
21-Aug-05	886	1,208	1,414	1,390	1,876	8,329	943	50	4,468	2,755	23,319	1,022
28-Aug-05	900	1,183	1,357	1,332	1,789	8,396	918	49	4,481	2,674	23,079	1,208
04-Sep-05	888	1,238	1,380	1,312	1,801	8,422	976	53	4,503	2,865	23,438	1,114
11-Sep-05	899	1,302	1,358	1,295	1,700	8,031	926	56	4,362	2,745	22,674	1,564
18-Sep-05	882	1,254	1,231	1,154	1,585	7,880	921	56	4,238	2,744	21,945	1,084
25-Sep-05	920	1,282	1,199	1,111	1,682	7,454	830	54	4,071	2,394	20,997	1,022
02-Oct-05	943	1,311	1,075	1,050	1,584	6,672	771	48	3,848	2,144	19,446	1,329
09-Oct-05	926	1,280	1,154	1,088	1,562	6,821	752	52	3,879	2,085	19,599	509
16-Oct-05	934	1,331	1,229	1,235	1,580	6,747	774	47	3,868	2,120	19,865	392
23-Oct-05	889	1,320	1,345	1,316	1,569	6,700	755	44	3,877	2,052	19,867	501
30-Oct-05	946	1,409	1,435	1,399	1,561	6,992	800	48	4,084	2,217	20,891	509
06-Nov-05	973	1,428	1,419	1,448	1,677	7,296	840	62	4,212	2,321	21,676	290
13-Nov-05	987	1,419	1,399	1,417	1,663	7,233	835	62	4,167	2,313	21,495	445
20-Nov-05	1,011	1,440	1,475	1,516	1,731	7,392	847	62	4,252	2,352	22,078	354
27-Nov-05	1,001	1,451	1,533	1,571	1,756	7,488	864	63	4,346	2,387	22,460	426
04-Dec-05	1,010	1,507	1,556	1,607	1,779	7,443	855	63	4,375	2,347	22,542	543
11-Dec-05	1,037	1,500	1,623	1,693	1,846	7,655	872	65	4,510	2,404	23,205	980
18-Dec-05	1,019	1,494	1,655	1,746	1,880	7,636	884	68	4,515	2,459	23,356	728
25-Dec-05	996	1,505	1,631	1,729	1,840	7,706	868	64	4,532	2,408	23,279	1,099
01-Jan-06	968	1,533	1,568	1,676	1,773	7,020	811	60	4,160	2,246	21,815	707

Table B2: Weekly Zonal Non-Coincident Peak Demand Forecast, Normal Weather

Week	Hourly Non-Coincident Peak Demand (MW)											Zonal Total
	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	System	
04-Jul-04	902	1,214	1,428	1,404	1,735	8,464	934	55	4,641	2,700	23,275	23,477
11-Jul-04	885	1,226	1,473	1,459	1,811	8,686	946	52	4,714	2,677	23,558	23,929
18-Jul-04	899	1,253	1,433	1,438	1,818	8,408	980	48	4,503	2,833	23,198	23,613
25-Jul-04	883	1,233	1,388	1,417	1,831	8,376	977	46	4,415	2,907	23,129	23,473
01-Aug-04	899	1,263	1,348	1,374	1,776	8,205	981	47	4,353	2,890	22,768	23,136
08-Aug-04	916	1,263	1,407	1,452	1,873	8,299	924	50	4,414	2,751	23,000	23,349
15-Aug-04	910	1,292	1,397	1,391	1,847	8,234	948	48	4,377	2,798	22,876	23,242
22-Aug-04	911	1,292	1,344	1,331	1,809	8,263	919	49	4,387	2,617	22,631	22,922
29-Aug-04	916	1,291	1,375	1,366	1,887	8,311	979	50	4,425	2,873	23,077	23,473
05-Sep-04	905	1,373	1,365	1,316	1,669	7,931	929	55	4,313	2,696	22,415	22,552
12-Sep-04	908	1,359	1,259	1,177	1,585	7,779	924	55	4,185	2,707	21,693	21,938
19-Sep-04	938	1,375	1,207	1,120	1,665	7,352	833	54	4,011	2,353	20,714	20,908
26-Sep-04	934	1,400	1,157	1,095	1,586	6,658	772	52	3,793	2,118	19,232	19,565
03-Oct-04	968	1,372	1,179	1,117	1,552	6,810	766	51	3,826	2,122	19,299	19,763
10-Oct-04	948	1,417	1,245	1,196	1,580	6,618	774	51	3,774	2,125	19,484	19,728
17-Oct-04	960	1,443	1,297	1,263	1,569	6,600	777	51	3,796	2,130	19,509	19,886
24-Oct-04	968	1,448	1,388	1,346	1,580	6,877	798	50	3,997	2,182	20,533	20,634
31-Oct-04	960	1,449	1,491	1,485	1,611	7,159	810	51	4,168	2,223	21,351	21,407
07-Nov-04	995	1,535	1,481	1,412	1,691	7,172	834	63	4,138	2,279	21,361	21,600
14-Nov-04	1,014	1,572	1,513	1,479	1,736	7,309	839	64	4,207	2,317	21,826	22,050
21-Nov-04	1,018	1,569	1,584	1,539	1,772	7,427	859	62	4,271	2,348	22,231	22,449
28-Nov-04	1,031	1,603	1,613	1,580	1,789	7,387	855	65	4,312	2,317	22,341	22,552
05-Dec-04	1,050	1,658	1,688	1,672	1,861	7,619	870	65	4,465	2,369	23,069	23,317
12-Dec-04	1,045	1,656	1,716	1,729	1,894	7,600	883	67	4,493	2,424	23,248	23,507
19-Dec-04	1,028	1,652	1,723	1,723	1,858	7,685	868	66	4,525	2,374	23,216	23,502
26-Dec-04	1,037	1,681	1,650	1,685	1,799	7,310	848	63	4,292	2,360	22,442	22,725
02-Jan-05	1,053	1,742	1,617	1,673	1,800	6,967	810	59	4,107	2,218	21,683	22,046
09-Jan-05	1,066	1,728	1,753	1,782	1,942	7,733	889	61	4,494	2,492	23,600	23,940
16-Jan-05	1,068	1,699	1,780	1,811	1,944	7,722	866	62	4,514	2,425	23,641	23,891
23-Jan-05	1,073	1,676	1,770	1,796	1,962	7,789	878	62	4,554	2,443	23,734	24,003
30-Jan-05	1,069	1,664	1,693	1,759	1,899	7,613	871	63	4,452	2,406	23,344	23,489
06-Feb-05	1,058	1,721	1,715	1,779	1,900	7,726	880	63	4,508	2,442	23,524	23,792
13-Feb-05	1,072	1,594	1,682	1,727	1,855	7,617	879	66	4,453	2,412	23,262	23,357
20-Feb-05	1,073	1,583	1,662	1,720	1,894	7,530	880	68	4,391	2,397	23,039	23,198
27-Feb-05	1,053	1,599	1,648	1,657	1,809	7,455	867	68	4,316	2,358	22,606	22,830
06-Mar-05	1,064	1,537	1,578	1,669	1,822	7,446	851	69	4,289	2,325	22,487	22,650
13-Mar-05	1,052	1,559	1,517	1,615	1,725	7,291	853	65	4,230	2,327	22,064	22,234
20-Mar-05	1,005	1,520	1,473	1,607	1,701	7,105	830	62	4,160	2,236	21,604	21,699
27-Mar-05	978	1,472	1,464	1,576	1,640	7,021	823	60	4,116	2,201	21,246	21,351
03-Apr-05	990	1,510	1,378	1,519	1,585	6,699	820	56	3,972	2,195	20,514	20,724

(Table B2 – continued)

Week	Hourly Non-Coincident Peak Demand (MW)											Zonal Total
	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	System	
10-Apr-05	998	1,455	1,353	1,321	1,593	6,931	825	55	3,968	2,271	20,565	20,770
17-Apr-05	980	1,414	1,379	1,329	1,543	6,786	822	53	3,897	2,215	20,016	20,418
24-Apr-05	971	1,385	1,349	1,325	1,493	6,772	826	51	3,898	2,240	20,099	20,310
01-May-05	958	1,387	1,246	1,274	1,440	6,675	794	47	3,805	2,143	19,313	19,769
08-May-05	966	1,332	1,270	1,296	1,453	6,714	790	46	3,773	2,152	19,316	19,792
15-May-05	944	1,342	1,252	1,285	1,417	6,718	788	44	3,771	2,163	19,309	19,724
22-May-05	929	1,374	1,279	1,285	1,440	7,003	837	43	3,896	2,388	20,141	20,474
29-May-05	931	1,368	1,321	1,313	1,593	6,901	856	63	3,864	2,433	20,414	20,643
05-Jun-05	931	1,310	1,348	1,263	1,709	7,662	866	51	4,152	2,446	21,482	21,738
12-Jun-05	919	1,243	1,343	1,267	1,721	7,789	872	48	4,222	2,418	21,695	21,842
19-Jun-05	914	1,204	1,364	1,341	1,745	8,135	919	52	4,472	2,575	22,573	22,721
26-Jun-05	935	1,197	1,419	1,412	1,797	8,433	984	55	4,633	2,833	23,522	23,698
03-Jul-05	916	1,191	1,393	1,395	1,798	8,368	1,030	54	4,619	2,923	23,009	23,687
10-Jul-05	882	1,197	1,474	1,434	1,795	8,751	956	54	4,787	2,726	23,828	24,056
17-Jul-05	893	1,236	1,474	1,462	1,830	8,771	950	49	4,704	2,750	23,750	24,119
24-Jul-05	902	1,253	1,441	1,453	1,834	8,538	991	46	4,514	2,938	23,503	23,910
31-Jul-05	886	1,224	1,393	1,429	1,842	8,500	987	46	4,487	2,993	23,461	23,787
07-Aug-05	915	1,271	1,374	1,376	1,805	8,401	999	48	4,454	2,979	23,239	23,622
14-Aug-05	924	1,281	1,425	1,450	1,901	8,472	941	49	4,502	2,827	23,427	23,772
21-Aug-05	922	1,319	1,416	1,390	1,876	8,406	966	49	4,468	2,879	23,319	23,691
28-Aug-05	924	1,315	1,366	1,332	1,836	8,438	939	50	4,481	2,698	23,079	23,379
04-Sep-05	930	1,366	1,381	1,360	1,914	8,463	981	56	4,503	2,865	23,438	23,819
11-Sep-05	917	1,356	1,358	1,295	1,700	8,069	932	56	4,362	2,748	22,674	22,793
18-Sep-05	925	1,350	1,250	1,154	1,617	7,916	928	55	4,238	2,748	21,945	22,181
25-Sep-05	953	1,375	1,205	1,111	1,696	7,484	835	54	4,071	2,395	20,997	21,179
02-Oct-05	943	1,398	1,166	1,096	1,600	6,728	773	51	3,848	2,144	19,446	19,747
09-Oct-05	979	1,387	1,216	1,151	1,562	6,868	777	51	3,879	2,150	19,599	20,020
16-Oct-05	949	1,422	1,299	1,255	1,583	6,747	784	51	3,868	2,169	19,865	20,127
23-Oct-05	963	1,460	1,345	1,316	1,569	6,708	788	51	3,877	2,183	19,867	20,260
30-Oct-05	966	1,448	1,435	1,399	1,578	6,992	804	50	4,084	2,228	20,891	20,984
06-Nov-05	989	1,465	1,480	1,448	1,689	7,296	840	65	4,212	2,328	21,676	21,812
13-Nov-05	1,000	1,528	1,487	1,417	1,698	7,233	835	63	4,167	2,313	21,495	21,741
20-Nov-05	1,014	1,565	1,544	1,516	1,744	7,392	847	64	4,252	2,361	22,078	22,299
27-Nov-05	1,011	1,560	1,611	1,571	1,776	7,488	864	63	4,346	2,387	22,460	22,677
04-Dec-05	1,046	1,598	1,635	1,607	1,791	7,443	858	66	4,375	2,349	22,542	22,768
11-Dec-05	1,044	1,648	1,703	1,693	1,860	7,655	872	66	4,510	2,404	23,205	23,455
18-Dec-05	1,041	1,649	1,729	1,746	1,893	7,636	884	66	4,515	2,459	23,356	23,618
25-Dec-05	1,023	1,641	1,729	1,733	1,855	7,706	868	65	4,532	2,408	23,279	23,560
01-Jan-06	1,015	1,608	1,619	1,676	1,797	7,020	811	59	4,160	2,252	21,815	22,017

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Appendix C - Analytical Factors

Table C1: Factors Affecting Demand

Factors Affecting Daily Energy Demand			
Variable Class	Variable	Change in Variable	Impact On Daily Energy Demand (MWh)
Weather	Daily Avg Temperature > 16° C 10°C > and < 16° C < 10°C	1°C Increase	6,670 MWh Increase
		1°C Increase	140 MWh Decrease
		1°C Decrease	2,970 MWh Increase
	Daily Avg Humidity - Dewpoint > 16° C 10°C > and < 16° C < 10°C	1°C Increase	2,420 MWh Increase
		1°C Increase	50 MWh Decrease
		1°C Decrease	940 MWh Increase
	Wind Summer Winter	1 km/hr Decrease	410 MWh Increase
		1 km/hr Increase	160 MWh Increase
	Cloud Summer Winter	Decrease of 1 on Scale	1,060 MWh Decrease
		Increase of 1 on Scale	1,630 MWh Increase
Economic	Employment	Increase of 1,000 jobs	25 MWh Increase
	Housing Stock	Increase of 1,000 houses	35 MWh Increase
Calendar	Holidays	New Year's Day	70,000 MWh Decrease
		Good Friday	43,000 MWh Decrease
		Victoria Day	53,000 MWh Decrease
		Canada Day	41,000 MWh Decrease
		August Civic Holiday	37,000 MWh Decrease
		Labour Day	61,000 MWh Decrease
		Thanksgiving Day	56,000 MWh Decrease
		Remembrance Day	7,000 MWh Decrease
		Christmas	84,000 MWh Decrease
		Boxing Day	75,000 MWh Decrease
	New Year's Eve	9,000 MWh Decrease	
	Week Between Christmas and New Years Eve	45,000 MWh Decrease	
	Day of Week	Monday vs Sunday	45,000 MWh Increase
		Tuesday vs Sunday	47,000 MWh Increase
		Wednesday vs Sunday	47,000 MWh Increase
Thursday vs Sunday		47,000 MWh Increase	
Friday vs Sunday		44,000 MWh Increase	
Saturday vs Sunday	11,000 MWh Increase		

(Table C1 – continued)

Factors Affecting Daily Peak Demand			
Variable Class	Variable	Change in Variable	Impact On Daily Peak Demand (MW)
Weather	Temperature		
	> 16° C	1° C Increase	370 MW Increase
	10° C > and < 16° C	1° C Increase	50 MW Increase
	< 10° C	1° C Decrease	120 MW Increase
	Humidity - Dewpoint		
	> 16° C	1° C Increase	140 MW Increase
	10° C > and < 16° C	1° C Increase	20 MW Increase
	< 10° C	1° C Decrease	50 MW Increase
	Wind		
	Summer	1 km/hr Decrease	20 MW Increase
Winter	1 km/hr Increase	10 MW Increase	
Cloud			
Summer	Decrease of 1 on Scale	80 MW Increase	
Winter	Increase of 1 on Scale	80 MW Increase	
Economic	Employment	Increase of 1,000 jobs	1 MW Increase
	Housing Stock	Increase of 1,000 houses	2 MW Increase
Calendar	Holidays	New Year's Day	3,200 MW Decrease
		Good Friday	2,100 MW Decrease
		Victoria Day	2,500 MW Decrease
		Canada Day	1,900 MW Decrease
		August Civic Holiday	1,600 MW Decrease
		Labour Day	2,600 MW Decrease
		Thanksgiving Day	2,600 MW Decrease
		Remembrance Day	200 MW Decrease
		Christmas	4,500 MW Decrease
		Boxing Day	3,400 MW Decrease
		New Year's Eve	700 MW Decrease
		Week Between Christmas and New Years Eve	1,900 MW Decrease
		Day of Week	Monday vs Sunday
	Tuesday vs Sunday		2,100 MW Increase
	Wednesday vs Sunday		2,100 MW Increase
	Thursday vs Sunday		2,000 MW Increase
Friday vs Sunday	1,800 MW Increase		
Saturday vs Sunday	300 MW Increase		

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