10-YEAR OUTLOOK:

Ontario Demand Forecast

From January 2006 to December 2015

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Executive Summary

Under the provisions of Bill 100, the Ontario Power Authority (OPA) is responsible for long term forecasting. However, the IESO has agreed to produce the 10-year Outlook in 2005 while the OPA determines how best to address its forecasting responsibilities. This document looks at the demand forecast for the ten-year period from 2006 to 2015.

Economic Outlook

The economic assumptions that underpin the forecast have been updated to reflect the most recent outlook for the Ontario economy.

Since the last 10-Year Outlook the prospects for the Ontario economy have been revised downward in the near term. This is being driven by two main factors, the high price of oil and the relative strength of the Canadian dollar. Since Ontario has a large manufacturing sector and the economy exports a significant amount of its output to the U.S., the high oil prices and high dollar have been and will continue to be a drag on growth. Without broad based growth, the economic outlook in the near term is weaker than last year's forecast.

Over the longer term, economic growth should be fairly strong due to strong fundamentals. Low inflation – despite the higher oil prices – and low interest rates will continue to help facilitate growth over the long term. Better fiscal management by all levels of government also bodes well for long run growth.

Actual Demand

Since the release of the last 10-Year forecast the actual demand numbers - both energy and peak have generally been lower than expected. Energy demand for the period March 2004 to May 2005 was lower than expected due to the weak demand over the summer of 2004. As well, each of the monthly weather corrected peaks over the same period were all lower than expected. Weather corrected energy demand for 2004 grew by 1.3% over 2003. Growth would be a more modest 1.0% once you adjust for the impact of the leap year.

A new all-time winter-peak demand was set on December 20th, 2004 as demand reached 24,979 MW topping the previous winter record set January 15th, 2004 by 62 MW.

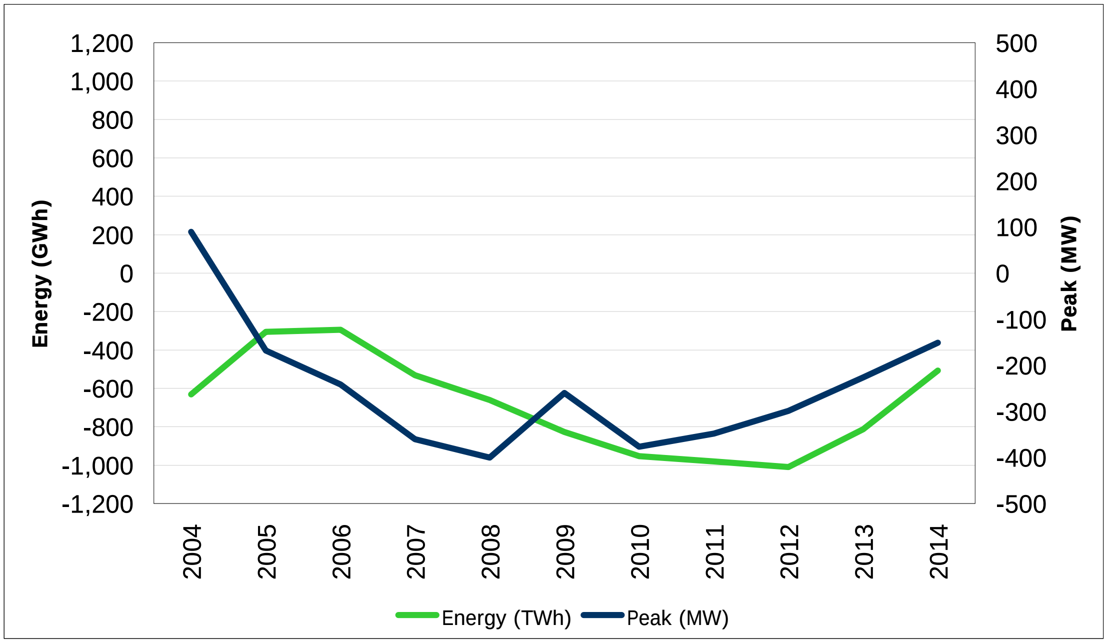
Demand Forecast

With a slightly lower economic growth outlook and lower than expected demand in 2004, the forecast of electricity demand is lower – in terms of level - than in the previous 10-Year forecast. Energy demand will show average annual growth of 0.9% over the forecast (2006-2015) which is similar to the growth rate in last year's forecast. Total energy demand is expected to increase from 157 TWh to 170 TWh by 2015.

Given the same set of circumstances, the peak demand forecast is also lower than those contained in the previous forecast. The Normal weather peak is expected to increase by nearly 1,500 MW from 24,200 MW in 2006 to just below 25,700 MW in 2015. The Normal weather summer peak is forecasted to increase by 2,900 MW from just under 24,000 MW to roughly 26,900 MW in 2015. Though the levels are changed from last year's forecast, the growth rates are very close. Both the current and previous forecasts predicted an average annual increase of 0.7% for the winter peak and the current forecast sees summer peaks increasing at 1.3% compared to last years' 1.1% average annual growth rate.

Figure 1 graphically displays the difference in annual energy and peak demand between this forecast and the previous 10-year forecast.

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



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Caution and Disclaimer

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1.0 Introduction

1.1 Outlook Documents

Under the provisions of Bill 100, the Ontario Power Authority (OPA) is responsible for long term forecasting. However, the IESO has agreed to produce the 10-Year Outlook for 2005 as the OPA builds its capabilities, and determines how best to address its forecasting responsibilities. This Ontario Demand Forecast meets this requirement and covers the 10-Year period from January 2006 to December 2015. It supersedes the previous forecast for the period January 2005 to December 2014, dated March 31, 2004.

1.2 Demand Forecast Document

This document provides a 10-Year 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" (IESO_REP_0266) (found on the IESO web site at http://www.ieso.ca/imoweb/pubs/marketReports/Methodology_RTAA_2005jun.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 IESO-controlled grid. This demand forecast was based on actual demand, weather and economic data as of March 2005. Actuals for April and May have been incorporated into the tables and figures of this document.

Section 2.0 looks at historical demand and the factors that shape it. Section 3.0 describes the assumptions used in this forecast of electricity demand and Section 4.0 presents the forecast. Appendices A through C contain additional demand forecast details and analysis. The tables in this document can be downloaded in a spreadsheet from the IESO web site.

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 IESO Customer Relations at 905-403-6900 or 1-888-448-7777 or send an email to customer.relations@ieso.ca , or to forecasts.demand@ieso.ca. Copies of the forecast, by hour and zone are available upon request.

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2.0 Historical Demand

This section looks at historical energy demand, hourly load shapes, load duration curves and peak demand. Energy and peak demand are discussed from the perspective of how they are impacted by the three classes of drivers (weather, calendar and economic).

Energy demand represents the total consumption of electricity over a specified period of time, be it an hour, day, week, month, season or year. The hourly load shape refers to the daily consumption profile and bridges the discussion from energy to peak demand. Load duration curves also relate peaks and energy by showing the percent of time that the system is at various load levels. Finally, peak demand represents the maximum requirement for electricity in an hour. Ontario measures peak demand over the course of a clock hour. Peaks are classified by the time horizon used: daily, weekly, monthly, seasonal or annual peak.

Table 2.1 shows the actual annual energy and peak demand, on a calendar basis, for the period 1987-2004.

Table 2.1: Historical Ontario Annual Energy and Peak Demand

Calendar Year	Annual Demand				
	Actual Energy (TWh)	Weather-Corrected Energy (TWh)	Actual Peak (MW)	Weather-Corrected Peak (MW)	Minimum Hour (MW)
1987	126.46		20,448		8,976
1988	134.39		22,933		8,989
1989	140.77		23,491		9,826
1990	136.74		22,272		9,554
1991	136.97		23,046		9,911
1992	134.38		23,463		9,850
1993	133.48		21,964		9,859
1994	134.87		23,857		9,952
1995	137.04	135.69	22,812	21,792	10,100
1996	137.42	136.40	22,072	21,902	10,123
1997	138.37	137.80	22,030	21,871	10,430
1998	139.93	141.32	*22,403*	21,842	10,971
1999	144.09	144.07	*23,433*	22,546	10,903
2000	146.95	147.49	23,301	22,919	11,624
2001	146.91	147.69	*25,239*	22,818	11,157
2002	152.96	151.53	*25,414*	*24,373*	11,537
2003	151.72	151.74	*24,753*	23,330	11,604
2004	153.44	153.74	24,979	24,202	11,983

Notes to Table 2.1:
Shaded boxes indicate a summer peak. For 2003, actual energy and peak demand have not been adjusted to exclude the impacts of the blackout. Weather corrected energy and peak demand do include an adjustment to estimate the amount of demand lost during the blackout and ensuing calls for conservation.

2.1 Historical Energy Demand

The historical time frame used for this analysis is 1987 through to 2004. Actual energy demand has averaged annual growth of 1.1% over that time frame. This period spans a stretch of long and sustained strong economic growth and the most severe recession Ontario had ever experienced. As well, dramatic electricity price increases in the early 1990's combined with low natural gas prices started to erode the electric heating load in the province. This trend continues today, but has slowed due to increasing natural gas penetration. Since the 1990's there has been a dramatic increase in cooling load as air conditioning has become commonplace in new homes. Therefore, the growth in energy demand has not been consistent across all seasons. Winter energy demand has averaged annual growth of 0.7% whereas summer energy demand has averaged growth of 1.3% per annum. Spring and fall energy demand have both averaged annual growth of 1.2%. Of course, this is biased by the weather of either the base or most recent year, but gives a fair representation of the fact that demand is not growing evenly throughout the year.

Energy demand is affected by all three classes of drivers but to varying degrees. The next section looks at the impact of weather, followed by calendar and economic impacts.

2.12 Weather Impacts on Energy Demand

Since energy is accrued over a period of time, the impact of weather is mitigated as the time horizon grows. The impact of weather is significant on any particular day but begins to wane in terms of seasons or years. This is due to the fact that the random nature of weather will see periods of extreme heat or cold offset by mild temperatures.

In order to remove the variance of weather from energy demand we standardize or correct demand to a common weather pattern called Normal weather. Table 2.2 shows both annual energy demand and weather-corrected demand for the period of 1995-2004. For 2003, the weather-corrected figure includes an adjustment to account for an estimate of lost demand for the period of the blackout and ensuing week when consumers were asked to reduce electricity consumption.

Table 2.2: Actual and Weather-Corrected Annual Energy Demand

Calendar Year	Annual Energy Demand				
	Actual Energy (TWh)	Annual Growth (%)	Weather-Corrected Energy (TWh)	Annual Growth (%)	Weather Correction Impact
1995	137.0	1.6%	135.7		-1.0%
1996	137.4	0.3%	136.4	0.5%	-0.7%
1997	138.4	0.7%	137.8	1.0%	-0.4%
1998	139.9	1.1%	141.3	2.6%	1.0%
1999	144.1	3.0%	144.1	2.0%	0.0%
2000	146.9	2.0%	147.5	2.4%	0.4%
2001	146.9	0.0%	147.7	0.1%	0.5%
2002	153.0	4.1%	151.5	2.6%	-0.9%
2003	151.7	-0.8%	151.7	0.1%	0.0%
2004	153.4	1.1%	153.7	1.3%	0.2%

For each year, the annual energy demand and weather-corrected energy demand in Table 2.2 were within 1.0% of each other. This reaffirms the notion that the random nature of weather effects will be offsetting given a large enough timeframe. The year with the biggest deviation is

2002. In Figure 2.1 one can see the deviation between the two lines is substantial in 2002 as it had the hottest summer in the last 30 years. Since the system is very sensitive to high temperatures it is reasonable that the years with the hottest summers would have the largest weather-correction.

Figure 2.1: Actual and Weather-Corrected Energy Demand

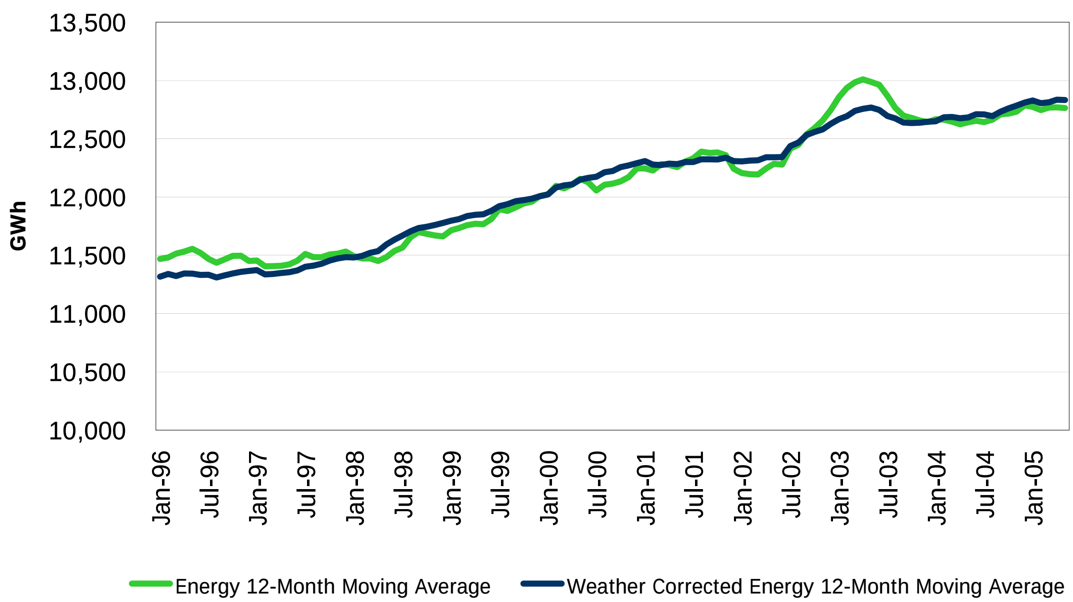


Table 2.3: Weather Impact - Months and Seasons

Rank	Hottest Months	Coldest Months	Hottest Summers	Coldest Winters
1	Jul-99	Jan-94	2002	1977
2	Jul-88	Jan-77	1988	1978
3	Jul-02	Jan-82	1995	1996
4	Jul-87	Dec-89	1999	1994
5	Aug-73	Jan-70	1983	1971
6	Jul-95	Jan-04	1973	1972
7	Aug-01	Jan-76	1998	2003
8	Jul-83	Jan-81	2001	1982
9	Aug-88	Jan-71	1987	1984
10	Aug-02	Jan-78	2003	1979

Table 2.3 shows the 10 Hottest and Coldest months and seasons since 1970. The term hottest or coldest is used to denote the weather impact on demand. The weather impact is a combination of temperature, humidity, cloud cover and wind speed. Recent history has tended to have hotter summers and milder winters. January 2004 has made an appearance on the list since the last 10-Year Outlook.

Table 2.4: Seasonal Energy Demand

Seasonal Year	Seasonal Energy Demand									
	Actual Energy Demand					Weather-Corrected Energy Demand				
	Winter (TWh)	Spring (TWh)	Summer (TWh)	Fall (TWh)	Total (TWh)	Winter (TWh)	Spring (TWh)	Summer (TWh)	Fall (TWh)	Total (TWh)
1996	62.0	21.5	32.9	21.5	137.9	60.8	21.0	32.9	21.4	136.1
1997	61.0	21.7	33.6	21.8	138.1	60.7	21.2	33.6	21.9	137.5
1998	60.5	21.8	35.7	22.2	140.2	61.5	22.1	34.9	22.4	140.9
1999	61.4	21.9	37.1	23.0	143.3	62.6	22.3	36.0	22.8	143.7
2000	62.9	22.9	36.5	23.3	145.6	64.1	22.9	36.7	23.3	147.1
2001	64.7	22.6	38.0	23.3	148.6	64.3	23.0	37.3	23.3	147.9
2002	62.4	23.7	40.0	25.0	151.1	64.2	23.3	38.8	24.4	150.7
2003	67.2	23.7	37.3	24.0	152.1	66.4	23.6	37.7	23.9	151.7
2004	66.8	23.6	37.6	24.6	152.6	67.0	23.6	37.8	24.8	153.1
2005	67.4	23.6				67.6	23.8			
Seasonal Year	Daily Energy Demand									
	Actual Energy Demand					Weather-Corrected Energy Demand				
	Winter (TWh)	Spring (TWh)	Summer (TWh)	Fall (TWh)	Total (TWh)	Winter (TWh)	Spring (TWh)	Summer (TWh)	Fall (TWh)	Total (TWh)
1996	408	352	358	353	377	400	345	358	351	372
1997	404	355	366	358	378	402	348	365	360	377
1998	401	357	388	364	384	407	362	380	367	386
1999	407	359	403	377	393	415	365	391	374	394
2000	414	375	396	382	398	422	375	399	382	402
2001	429	370	413	381	407	426	376	405	382	405
2002	414	388	434	410	414	425	382	421	400	413
2003	445	389	405	393	417	440	388	410	392	416
2004	439	387	408	403	417	441	387	411	406	418
2005	447	386				448	390			
Avg Growth	1.01%	1.04%	1.66%	1.67%	1.27%	1.27%	1.39%	1.74%	1.83%	1.48%

Table 2.4 presents energy demand from a seasonal perspective. Note that the impact of weather correction is much larger than 1% for many of the seasons. The table also illustrates the stronger relative growth in cooling load compared to heating load.

The impact of the weather correction on the individual seasons is a product of the severity of the weather for that season. For example, the impact of the summer of 2002 would be quite large as both July and August were amongst the hottest months in Table 2.2. Therefore it is not surprising to see the weather-correction impact of roughly 3% for the summer of 2002.

2.13 Calendar Impacts on Energy Demand

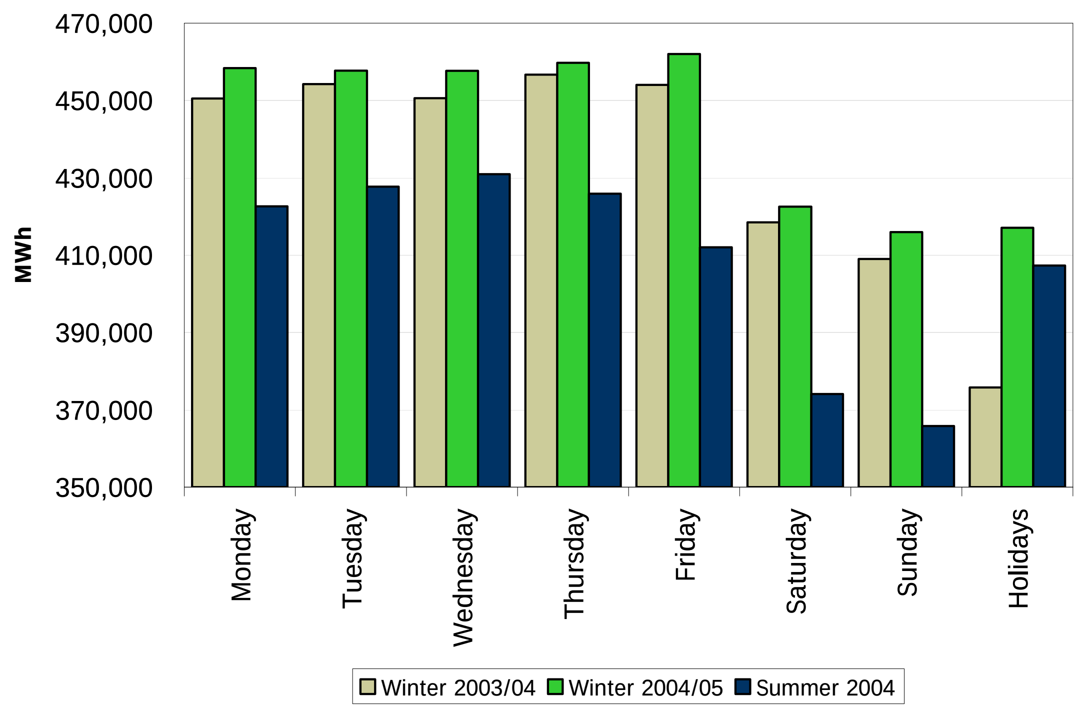
The impact of the calendar on energy demand is inexorably tied to the other two classes of drivers. As seen in Table 2.4, energy demand varies by season, which can be both weather and calendar related. Likewise, energy demand varies by day, the product of calendar and economic activity. Since economic activity is lower on holidays and weekends, energy demand is lower as well.

Figure 2.2 shows the average daily energy demand for winter 2003-04, summer 2004 and winter 2004-05. The figure shows that energy demand is indeed lower on weekends and holidays than on weekdays. The weekdays themselves are fairly consistent, though there is a bit of a drop on

Fridays during the summer. Data for the holidays is rather limited as there are only two holidays in the summer and four or five in the winter – sometimes Easter falls in the winter as it did in 2004-05 and sometimes it occurs in the spring as it did in 2003-04.

The seasonal difference in daily energy demand is due to the loading. Winter demand is less "peaky" but more consistent around the clock, whereas summer demand is much more volatile. In the winter people do not shut off their furnaces overnight as opposed to the summer where they would be inclined to shut off air conditioning overnight.

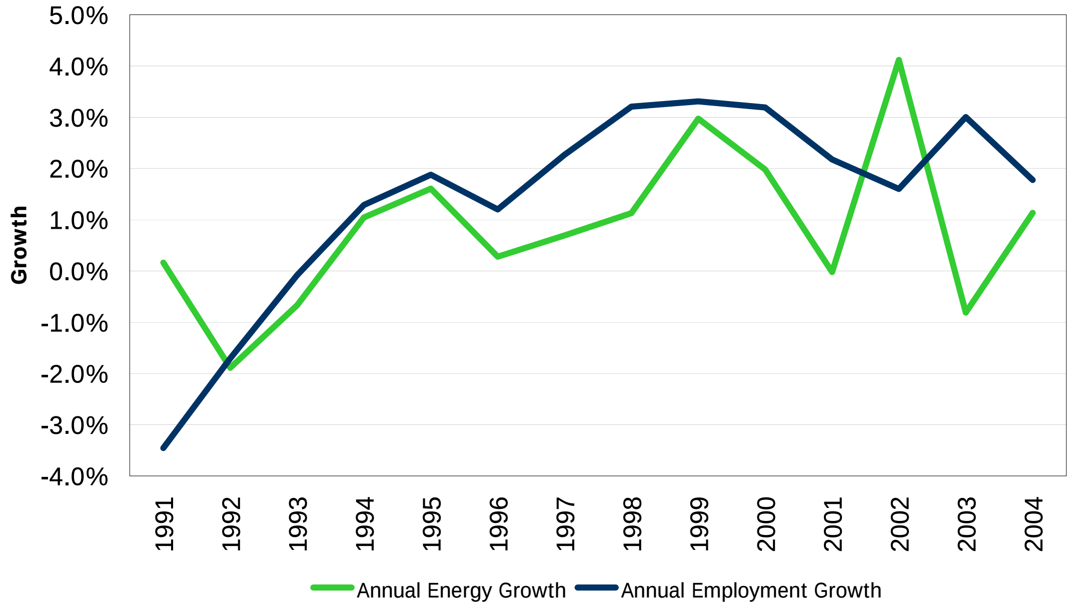
Figure 2.2: Average Daily Demand - Winter 2003-04, 2004-05 and Summer 2004



2.14 Economic Impacts on Energy Demand

In the previous section, the impacts of economic activity were evident in the weekly profiles of energy demand. On weekends and holidays when stores and factories are closed – or operate for shorter hours – energy demand is lower. This same concept can be applied to the longer-term economic cycle. Periods of economic growth and contraction have a significant impact on energy demand. Figure 2.3 shows the relationship between employment growth - a measure used in determination of economic growth - and the growth in annual energy demand. No measure is perfect in that the relationship can change through time. Using employment as a proxy for energy demand assumes that each job is equally electricity intensive. This is not true as an employee in an aluminium smelter will have a greater electricity intensity associated with that position than with a job working in retail sales. However, in aggregate and over time electricity demand and employment growth move together as shown in Figure2.3.

Figure 2.3: Annual Energy and Employment Growth



2.2 Historical Hourly Load Profiles

The three classes of drivers come together to influence the hourly load profiles. Weather has a number of impacts on the profiles. Hotter and colder temperatures will shift the load profiles up or down depending on the season. During the summer, the peak occurs late in the afternoon as air conditioners combat the build up of heat while economic activity has yet to slow down for the evening. The winter profile is heavily influenced by calendar impacts. The peak occurs late in the day and is primarily triggered by the setting of the sun and subsequent increase in demand due to lighting load. The fall and spring profiles are the flattest profiles. The fall profile shares some of the impacts of lighting load as the winter profile, but to a much subtler degree.

The profiles for weekends and holidays are similar to those for weekdays but lower and flatter. Similarly, economic activity generally shifts the profiles either up and down. Figure 2.4 shows peak load profiles for winter 2004-05. It has the average weekday and average weekend load profile from the winter of 2004-05. As well, it has the load profile for the peak day from the winter of 2003-04, January 15th, 2004. At the time the 24,937 MW peak demand was the all-time winter peak. Since that time, that peak was surpassed by the 24,979 MW of December 20th, 2004. This new all-time winter peak from winter 2004-05 is also included in the graph. The two lines for the January and December 2004 peaks are almost identical. Though the weather was slightly colder in January, the sun sets earlier in December meaning that the lighting load is coincident with economic loads prior to days end and there would also be load associated with Christmas lights.

Figure 2.4: Winter Load Profiles

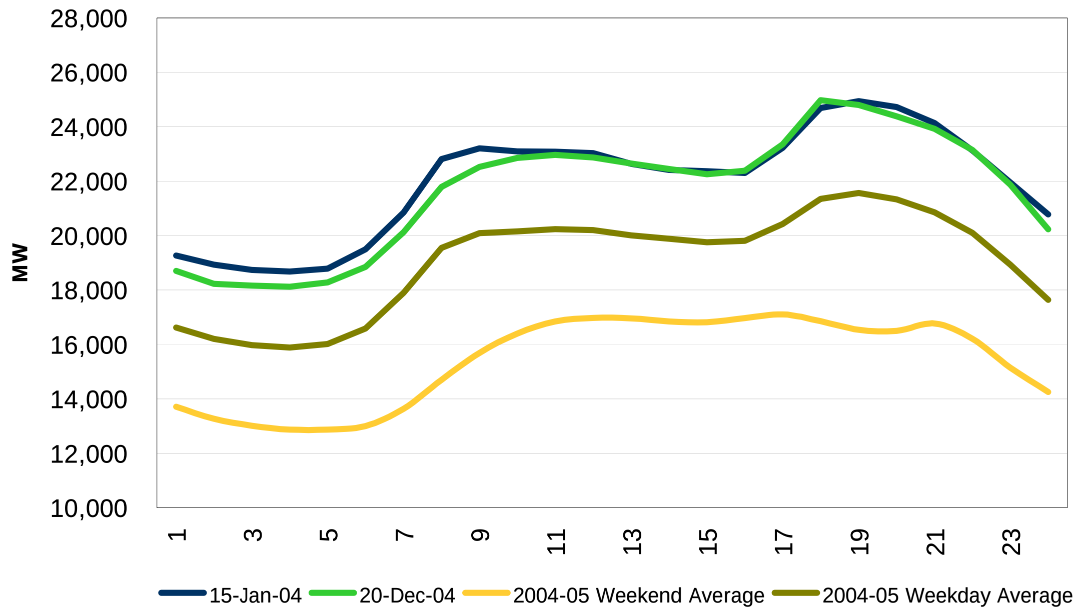
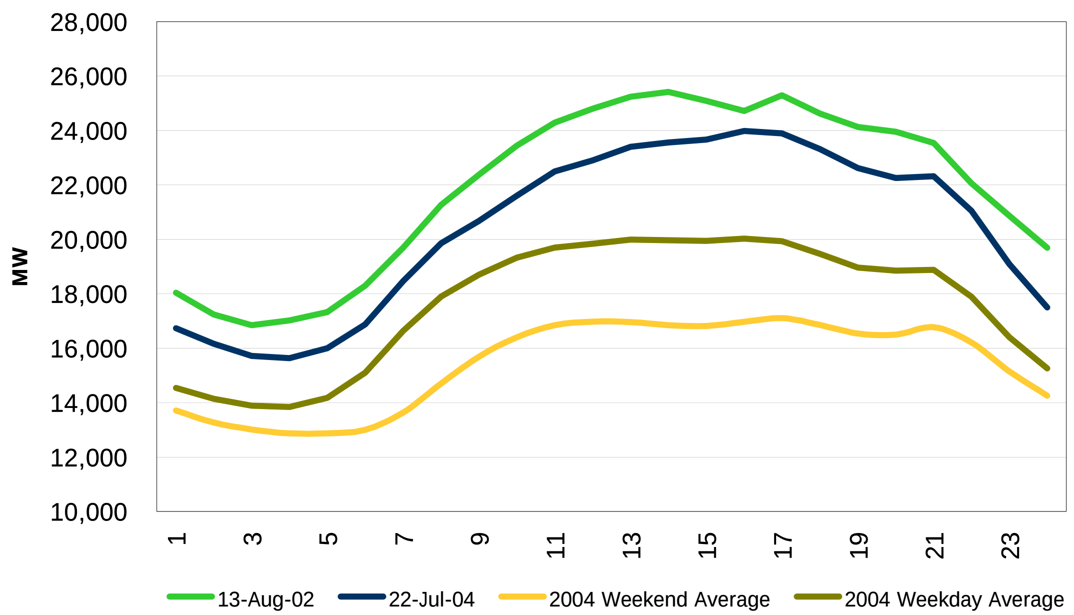


Figure 2.5 shows the summer load profiles for August 13th, 2002 (25,414 MW), the summer 2004 peak day (23,976 MW) and the average weekday and weekend load profiles for the summer of 2004. August 13th, 2002 was the all-time summer peak demand prior to the new peak set on June 27th, 2005 (26,157 MW).

Figure 2.5: Summer Load Profiles



2.3 Historical Percent of Time Analysis

Load profiles represent the pattern of consumption through the course of a day. For seasons, load duration curves give a sense of the both the peak and energy demand over that time frame. Figure 2.6 shows the demand for the summers of 2000, 2002 and 2004. There is significant contrast between these summers as 2000 was very mild, 2002 was very hot and 2004 was milder than normal.

Figure 2.6: Historical Summer Load Duration Curves

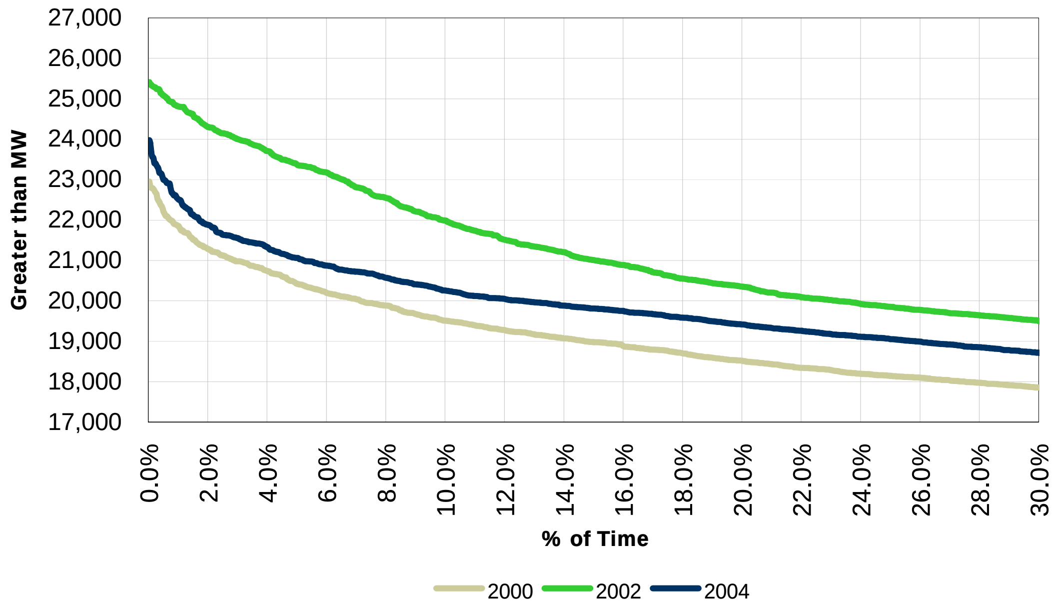


Figure 2.7 has the load duration curves for the winters of 2001-02, 2003-04 and 2004-05. The winter of 2001-02 was quite mild, whereas the winter of 2003-04 established a new all-time winter peak that was later surpassed during the winter of 2004-05. The winter duration curves are much flatter than the summer ones.

Table 2.5 has a summary of the key statistics and percent of time analysis for each of the last five summers and winters. There are a number of interesting items in the table. The summer of 2000 and the winter of 2001-02 were both quite mild as evident from the fact that neither had demand in excess of 23,000 MW. The summer of 2002 was consistently hot as shown by the very high average hour. The blackout is the reason for the low minimum hour in the summer of 2003. Note that the minimum hour and average hour are always higher in the winter. This is due to heating being used around the clock whereas air conditioning load falls off overnight.

Figure 2.7: Historical Winter Load Duration Curves

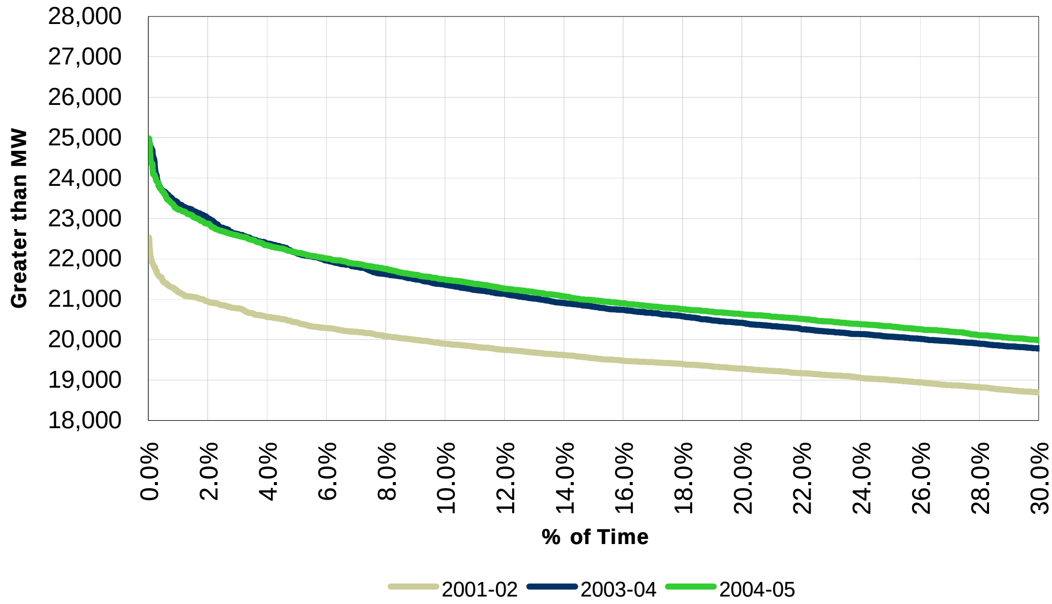


Table 2.5: Historical Percent of Time Analysis

Summer (June 1st to September 30th)	2000	2001	2002	2003	2004
Maximum Hour (MW)	22,950	24,980	25,414	24,753	23,976
Average Hour (MW)	16,418	16,909	17,951	16,766	17,053
Minimum Hour (MW)	11,624	11,157	11,537	2,270	12,059
Standard Deviation (MW)	2,438	2,789	2,992	2,776	2,544
90th Percentile (MW)	19,506	20,587	21,986	20,304	20,254
Percent above 23,000 MW	0.0%	1.9%	6.6%	1.2%	0.5%
# of Hours Above 23,000 MW	0	56	193	35	15
Winter (November 1st to March 31st)	2000-01	2001-02	2002-03	2003-04	2004-05
Maximum Hour (MW)	23,024	22,534	24,158	24,937	24,979
Average Hour (MW)	17,856	17,232	18,533	18,311	18,606
Minimum Hour (MW)	12,552	12,116	12,709	12,550	12,969
Standard Deviation (MW)	2,017	2,155	2,289	2,404	2,258
90th Percentile (MW)	20,294	19,895	21,456	21,351	21,484
Percent above 23,000 MW	0.1%	0.0%	1.1%	2.0%	1.7%
# of Hours Above 23,000 MW	4	0	40	72	62

2.4 Historical Peak Demand

Historically, Ontario's annual electricity peak demand has occurred during the winter, usually in the months of December through February and between the hours of 5 p.m. to 7 p.m. In recent years – 1998-99 and 2001-03 and 2005 - the system has peaked in the summer. The summer peaks of July and August occur late in the afternoon between 3 p.m. and 5 p.m. Peak demand is affected by the three classes of drivers but to varying degrees.

Weather variables, in conjunction with the calendar, have the largest impact on peak demand. Economic activity will push the peak demand up or down, but will have a minimal effect on the time or severity. Table 2.6 shows the actual and weather-corrected monthly peaks as well as the day of the week and the daytime and Normal high temperature (Toronto) for the peak day. The table also includes the monthly minimum demand.

Table 2.6: Monthly Peak Demands

Month	Peak Date	Day of Week	Actual Peak (MW)	Weather Corrected Peak (MW)	Actual Peak Day Temperature (°C)	Normal Peak Day Temperature (°C)	Monthly Minimum (MW)
Jan-02	14-Jan	Monday	22,191	23,230	0.7	-14.7	13,461
Feb-02	04-Feb	Monday	22,623	22,691	-10.0	-9.6	14,038
Mar-02	04-Mar	Monday	21,886	21,316	-6.8	-5.5	12,887
Apr-02	02-Apr	Tuesday	20,386	20,148	1.0	0.2	12,291
May-02	30-May	Thursday	20,068	19,680	27.9	27.2	12,092
Jun-02	26-Jun	Wednesday	23,578	23,296	30.7	28.5	11,537
Jul-02	03-Jul	Wednesday	25,226	24,373	34.7	31.5	12,348
Aug-02	13-Aug	Tuesday	25,414	23,584	33.4	29.6	13,077
Sep-02	09-Sep	Monday	25,062	22,047	33.5	29.6	12,409
Oct-02	01-Oct	Tuesday	21,216	20,098	28.8	10.1	12,244
Nov-02	28-Nov	Thursday	21,862	21,383	0.1	0.0	12,709
Dec-02	09-Dec	Monday	23,334	23,236	-1.2	-3.9	13,057
Jan-03	22-Jan	Wednesday	24,158	23,330	-13.4	-12.0	13,236
Feb-03	13-Feb	Thursday	23,469	23,103	-10.0	-6.1	14,523
Mar-03	03-Mar	Monday	23,117	21,584	-14.3	-5.5	13,289
Apr-03	03-Apr	Thursday	21,010	20,290	-1.8	0.2	12,290
May-03	05-May	Monday	18,741	19,351	13.1	12.0	11,604
Jun-03	26-Jun	Thursday	24,753	22,757	33.3	28.5	11,821
Jul-03	04-Jul	Friday	23,175	22,450	31.3	31.5	11,957
Aug-03	14-Aug	Thursday	23,891	23,164	31.0	29.6	12,690
Sep-03	11-Sep	Thursday	20,700	20,274	26.8	29.6	11,802
Oct-03	28-Oct	Tuesday	20,408	20,777	9.7	4.0	11,941
Nov-03	24-Nov	Monday	21,584	22,167	13.4	0.0	12,724
Dec-03	02-Dec	Tuesday	22,798	22,796	-5.6	-3.1	12,550
Jan-04	15-Jan	Thursday	24,937	24,202	-19.7	-14.7	13,219
Feb-04	04-Feb	Wednesday	22,608	22,854	-3.9	-9.6	14,243
Mar-04	16-Mar	Tuesday	21,634	21,645	-3.1	-1.5	13,238
Apr-04	05-Apr	Monday	19,911	19,964	3.2	5.3	12,427
May-04	13-May	Thursday	20,327	19,657	27.3	11.2	11,983
Jun-04	09-Jun	Wednesday	23,163	22,855	31.3	30.7	12,059
Jul-04	22-Jul	Thursday	23,976	23,372	30.1	27.9	12,385
Aug-04	03-Aug	Tuesday	23,159	22,823	28.6	26.6	12,223
Sep-04	15-Sep	Wednesday	21,911	20,804	25.8	19.6	12,285
Oct-04	18-Oct	Monday	19,829	20,615	8.8	5.6	12,343
Nov-04	29-Nov	Monday	22,066	22,387	5.0	-3.1	12,969
Dec-04	20-Dec	Monday	24,979	23,696	-12.3	-4.8	14,169
Jan-05	18-Jan	Tuesday	24,362	23,988	-14.5	-14.7	13,545
Feb-05	09-Feb	Wednesday	22,322	23,607	-3.9	-9.6	14,854
Mar-05	08-Mar	Tuesday	22,724	22,235	-8.5	-5.5	13,959
Apr-05	04-Apr	Monday	19,343	20,720	10.9	0.2	12,279
May-05	31-May	Tuesday	19,007	19,328	22.3	27.2	11,950

2.41 Weather Impacts on Peak Demand

Weekly or monthly peak demands usually occur during episodes of severe weather conditions. Any peak is a combination of factors, both weather and non-weather. For instance, temperature and humidity are the main factors in terms of the summer peak. However, humidity is less of a factor in the winter than wind speed. As well, timing plays a big factor in determining the peak. Consecutive days of hot or cold weather will lead to a build-up so that the peak may occur the day after the hottest/coldest day. It is extremely unusual for a peak to occur on a weekend or holiday.

Figure 2.8 shows the 12-month moving average of actual and weather-corrected peak demand. The hot summer of 2002 and the cold winter of 2002-03 are evident in the separation of the two lines. For the most part, the actual peak is higher than the weather corrected peak. Since the Normal weather peak has a 50/50 chance of being exceeded on a weekly basis, it is not surprising that more months have actual peaks higher than the weather-corrected peaks. Since 2000, 39 of the 65 months (60%) have had actual peaks higher than the weather corrected peak.

Figure 2.8: Moving Average of Actual and Weather-Corrected Peak Demand

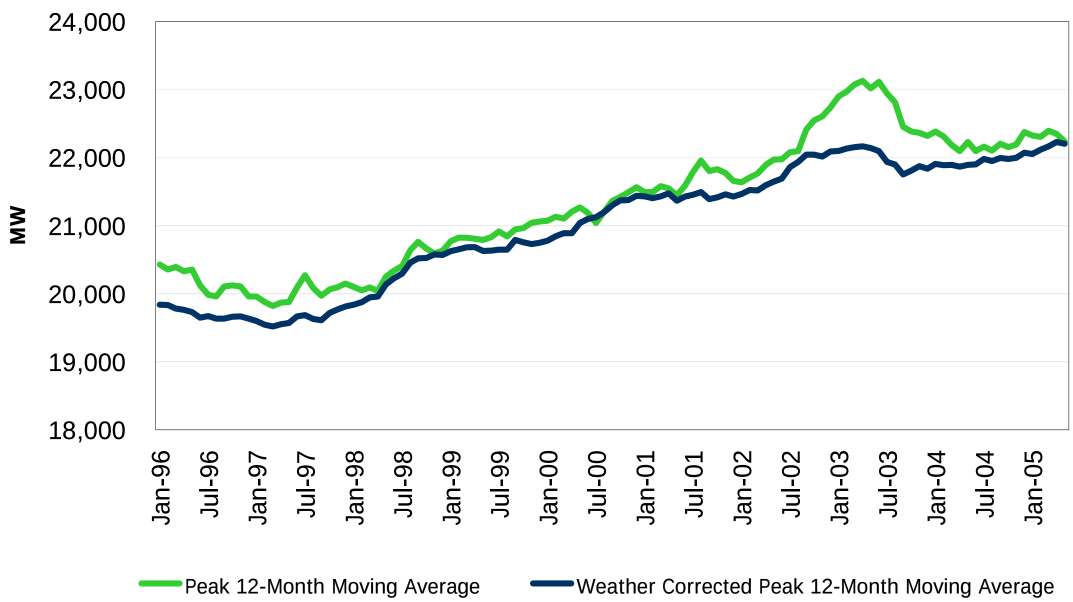


Table 2.7 contains the 25 winter days with the largest peak weather impact since 1970. The weather impact is the combination of temperature, wind speed, cloud cover and humidity that would elicit a peak in demand. The table contains the date, day of week, afternoon temperature, wind speed and cloud cover. Some of these severe weather days were days that led to weekly, monthly or seasonal peaks. An inordinate amount of these top 25 winter days occur on weekends (44%). The 2003-04 winter peak day (January 15th) is on the list but the all-time winter peak day (December 20th, 2004) is not as it ranks 56th on the list. The fact that the all-time peak day did not rank higher can be attributable to a number of factors such as economic activity and calendar impacts such as when the sun sets. There is also load associated with Christmas lights that would not occur in January. The data may seem inconsistent – the 10th ranked day is pretty warm compared to the days after it, however the data is the table is for Toronto and since Ontario is large area the Toronto data may not be representative of the weather for the province as a whole. The ranked days are based on a provincial weather impact which weights data from six weather stations across the province.

Table 2.7: Weather Impact – Top 25 Winter Days

Rank	Weather Impact Days	Day of Week	Temperature (°C)	Wind Speed (km/hr)	Cloud Cover
1	15-Jan-94	Sat	-21.4	19.5	Mainly Sunny
2	17-Jan-82	Sun	-20.8	35.8	Sunny
3	10-Jan-82	Sun	-15.8	41.3	Mainly Cloudy
4	23-Jan-76	Fri	-18.3	10.7	Overcast
5	05-Feb-95	Sun	-17.6	40.7	Mainly Cloudy
6	14-Jan-99	Thu	-17.0	24.0	Overcast
7	04-Jan-81	Sun	-14.1	32.3	Mainly Sunny
8	19-Jan-94	Wed	-19.0	35.7	Sunny
9	03-Jan-81	Sat	-20.1	15.5	Mix of Sun & Clouds
10	16-Jan-94	Sun	-13.8	15.2	Mainly Sunny
11	27-Jan-71	Wed	-17.2	47.7	Mainly Sunny
12	15-Jan-04	Thu	-19.7	23.7	Sunny
13	17-Jan-77	Mon	-15.0	33.3	Mainly Cloudy
14	11-Jan-81	Sun	-20.1	19.7	Sunny
15	26-Jan-94	Wed	-17.7	22.2	Mainly Cloudy
16	17-Feb-79	Sat	-19.4	14.7	Sunny
17	26-Dec-93	Sun	-17.0	33.0	Sunny
18	22-Jan-05	Sat	-15.6	38.5	Overcast
19	11-Jan-82	Mon	-13.8	17.7	Overcast
20	06-Feb-95	Mon	-15.4	18.7	Mainly Sunny
21	17-Jan-97	Fri	-14.2	36.8	Mainly Sunny
22	29-Jan-77	Sat	-15.2	36.3	Mainly Cloudy
23	20-Jan-85	Sun	-13.9	28.8	Overcast
24	21-Jan-84	Sat	-16.1	19.8	Mainly Sunny
25	08-Feb-94	Tue	-14.4	27.5	Overcast

Table 2.8 contains the 25 summer days with the greatest peak weather impact since 1970. As in the previous table for each weather impact date, the day of the week, the Toronto afternoon temperature, wind speed and cloud cover are shown. Additionally this table shows the humidex since it is a very important contributor to summer peaks.

As opposed to the winter where more cloud cover and higher wind speed mean a higher peak demand, in the summer more cloud cover and higher wind speed reduce peak demand. The 25 top winter days have an average wind speed of 28 km/hr whereas the 25 top summer days have an average wind speed of 19 km/hr. The summer peak days are, on average, sunnier.

Table 2.8: Weather Impact – Top 25 Summer Days

Rank	Weather Impact Days	Day of Week	Temperature (°C)	Humidex (°C)	Wind Speed (km/hr)	Cloud Cover
1	14-Jul-95	Fri	36.7	50.8	17.3	Sunny
2	02-Jul-02	Tue	34.3	43.6	21.7	Mainly Sunny
3	05-Jul-99	Mon	34.7	46.8	27.5	Mainly Sunny
4	18-Jun-94	Sat	35.2	42.1	9.8	Sunny
5	08-Jul-88	Fri	36.3	38.7	15.7	Mainly Sunny
6	03-Jul-02	Wed	34.7	44.6	21.3	Mix of Sun & Clouds
7	20-Jul-77	Wed	33.8	44.8	16.3	Sunny
8	07-Aug-01	Tue	35.3	45.4	28.0	Mix of Sun & Clouds
9	04-Jul-99	Sun	34.4	47.7	23.3	Mix of Sun & Clouds
10	09-Aug-01	Thu	35.4	43.9	30.3	Mainly Sunny
11	01-Aug-75	Fri	34.4	43.0	17.5	Sunny
12	01-Jul-02	Mon	35.1	45.7	14.7	Mainly Sunny
13	31-Jul-75	Thu	36.1	46.3	14.7	Sunny
14	12-Jul-87	Sun	33.0	44.7	15.3	Mix of Sun & Clouds
15	08-Aug-01	Wed	37.2	42.8	25.0	Sunny
16	03-Aug-88	Wed	34.2	42.6	14.7	Sunny
17	19-Jun-95	Mon	35.1	43.7	20.2	Sunny
18	17-Jun-94	Fri	32.6	40.9	12.5	Mainly Sunny
19	01-Aug-02	Thu	34.6	45.8	19.2	Sunny
20	28-Aug-73	Tue	35.6	45.8	26.7	Sunny
21	13-Aug-88	Sat	34.2	44.6	17.7	Mainly Sunny
22	20-Jul-91	Sat	34.2	42.8	15.3	Mainly Sunny
23	30-Jul-99	Fri	34.4	40.7	18.0	Sunny
24	24-Jul-01	Tue	31.8	41.0	28.2	Mainly Sunny
25	09-Jul-88	Sat	35.6	39.7	11.2	Mainly Sunny

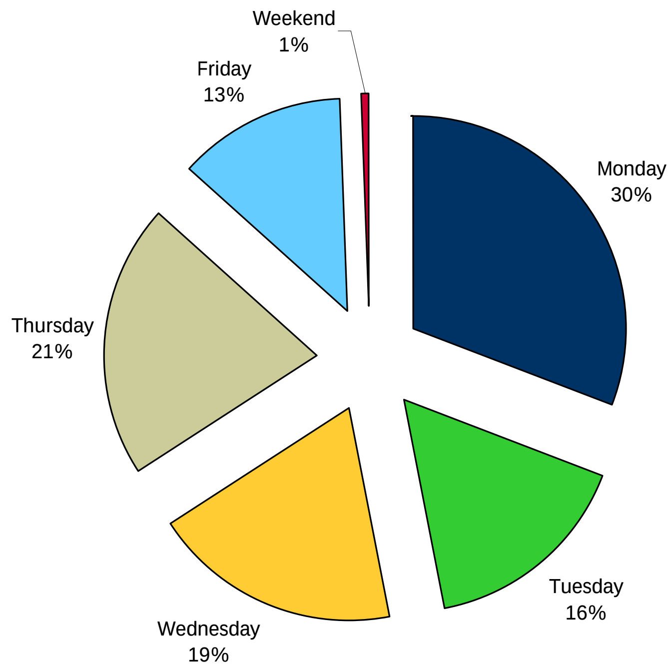
In order to more accurately assess the growth in peak demand the variances of weather need to be removed from the historical data. The peak values are corrected by adjusting demand for the difference between the actual weather and the Normal weather for that week.

2.42 Calendar Impacts on Peak Demand

The calendar impacts on peak demand have been discussed in the previous section. The weather and calendar combine to influence peak demand. Table 2.6 and Figures 2.2, 2.4 and 2.5 show that peak demands are very unlikely to occur on weekends or holidays. Generally, the peak will fall on the day with the greatest weather impact unless that day is a holiday or on a weekend. As well, if severe weather is sustained over several days, the peak can often come after the day with the greatest weather impact due to a "soak in" effect.

Another key aspect of the calendar impacts can be seen in the hourly load profiles. Since sunrise and sunset times are dependent on the calendar, the winter peak is always tied to the time of day where the lighting load starts to impact the system. In the summer, the lighting load comes too late in the day when other factors are at play to reduce demand. Figure 2.9 shows the distribution of peak days within the week. Most peak days are Mondays.

Figure 2.9: Weekly Peak Day - 1995 to Present



2.43 Economic Impacts on Peak Demand

Economics factors play the smallest part in determining peak demand. Economic activity determines the underlying non-weather sensitive base load upon which peak demand builds, but adds little in determining the day on which peak demand will occur. It could be argued that economic activity ensures that peak demands will not occur overnight, which they do not. Generally, continued economic growth will lead to higher peak demand, all other things being equal, but this will be more of a gradual trend than the variability attributable to either weather or calendar effects.

With greater price signals, there will be a growing "economic" impact on peak demand. This refers more to the financial impact to all users than that determined by the level of economic activity or the structure and/or make-up of the economic base. In financial terms, price will act as an incentive for electricity consumers to reduce demand (either permanently or temporarily) or shift consumption to another time or fuel. Over time, these actions will have an impact on peak demand and depending on the nature of the response could also impact energy demand and the hourly consumption profile.

- End of Section -

3.0 Forecasting Process and Assumptions

A detailed description of the forecasting methodology can be found in the document Methodology to Perform Long Term Assessments (IESO_REP_0266v2.0). In addition to the methodology described in the document, 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 weather, in the detail required to produce an hourly forecast of demand, is quite problematic, weather scenarios are generated based on historical data. Two scenarios – Normal and Extreme – are utilized in the IESO's assessments. As well, Load Forecast Uncertainty (LFU), a measure of demand fluctuations due to weather variability, is also a critical part of the analysis.

Normal weather is based on historical data and is composed by ranking the weather within each historical week, then taking the average of each of the ranked days. In this way, the Normal weather for each week would have both hotter and colder days.

The Extreme weather scenario is also based on historical weather but uses minimums and maximums rather than the average used in the Normal weather scenario.

Load Forecast Uncertainty (LFU) represents one standard deviation in the weather elements underpinning the peak demand. LFU could be expressed in terms of °C, km/h or MW depending on whether you are discussing temperature, wind speed or 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 "Normal" weather forecast is used in conjunction with a measure of 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 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 long time horizon.

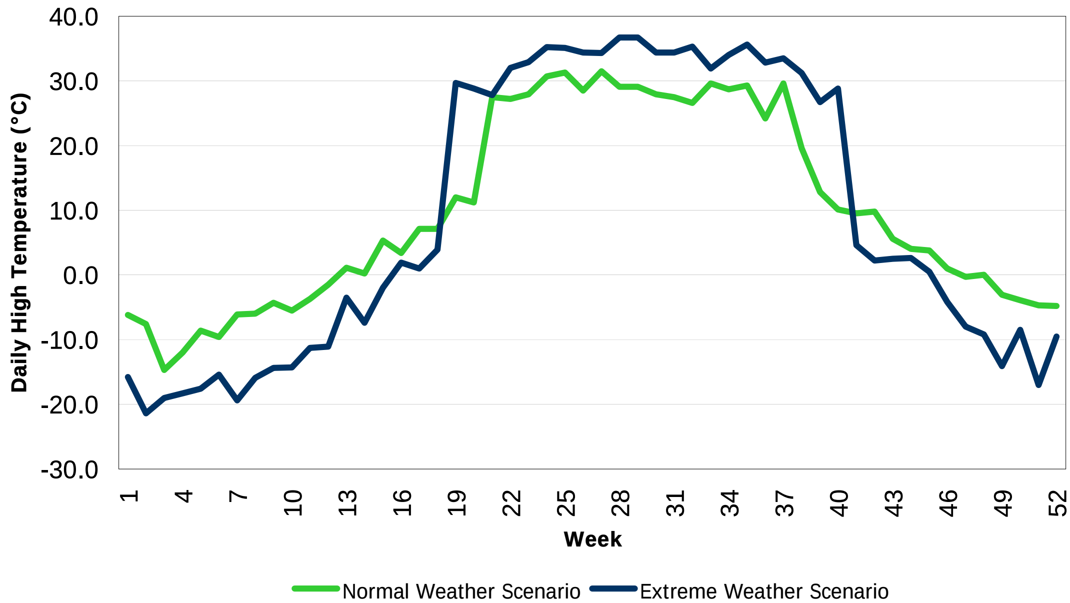
Table 3.1 shows the Normal and Extreme peak day temperature, humidex and wind speed for each of the weeks. The weather scenarios are based on the combined impact on electricity demand of the four weather elements - temperature, humidity, cloud cover and wind speed. Humidity is much less of a factor in the winter than the summer and therefore is not included for the winter weeks. Those weeks that are highlighted are the weather scenarios that will give rise to the winter and summer peaks. Some adjustment is made so that the summer peak weather does not coincide with the week containing Canada Day. The weather in the table is for Toronto. The weather scenarios are based on actual observed weather conditions since 1970 and therefore the profile is not necessarily smooth. As well, the dominant factor is temperature so the wind speed and cloud cover can vary quite.

Table 3.1: Normal and Extreme Weekly Peak Day Weather

Week	Normal Weather Scenario				Extreme Weather Scenario			
	Peak Date	Temperature (°C)	Humidex (°C)	Wind Speed (km/hr)	Peak Date	Temperature (°C)	Humidex (°C)	Wind Speed (km/hr)
1	31-Dec-90	-6.2		9.7	10-Jan-82	-15.8		41.3
2	11-Jan-96	-7.6		4.0	15-Jan-94	-21.4		19.5
3	17-Jan-03	-14.7		23.3	19-Jan-94	-19.0		35.7
4	30-Jan-93	-12.0		8.0	23-Jan-76	-18.3		10.7
5	02-Feb-89	-8.6		20.3	05-Feb-95	-17.6		40.7
6	07-Feb-84	-9.6		12.8	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	08-Mar-95	-5.5		24.0	03-Mar-03	-14.3		6.3
11	17-Mar-89	-3.7		19.0	12-Mar-84	-11.3		7.0
12	24-Mar-90	-1.5		12.2	20-Mar-86	-11.1		29.2
13	01-Apr-93	1.1		14.0	25-Mar-02	-3.5		15.2
14	08-Apr-00	0.2		38.2	06-Apr-82	-7.4		38.0
15	17-Apr-83	5.3		17.2	07-Apr-03	-2.0		35.5
16	20-Apr-78	3.4		26.7	18-Apr-83	1.9		25.7
17	27-Apr-88	7.1		27.8	22-Apr-86	1.0		19.0
18	01-May-79	7.1		25.7	26-Apr-76	3.9		33.8
19	05-May-92	12.0		13.7	09-May-79	29.7	34.9	21.5
20	19-May-00	11.2		23.2	19-May-96	28.8	36.7	38.8
21	22-May-84	27.5	33.7	26.7	23-May-75	27.8	33.6	7.3
22	30-May-94	27.2	28.8	23.0	29-May-87	32.0	37.8	18.2
23	11-Jun-78	27.9	28.4	28.7	07-Jun-99	32.9	41.9	22.2
24	13-Jun-92	30.7	32.7	26.3	18-Jun-94	35.2	42.1	9.8
25	21-Jun-94	31.3	35.4	36.7	19-Jun-95	35.1	43.7	20.2
26	26-Jun-95	28.5	36.3	26.0	04-Jul-99	34.4	47.7	23.3
27	09-Jul-01	31.5	32.1	18.7	02-Jul-02	34.3	43.6	21.7
28	30-Jun-97	29.1	37.5	18.8	14-Jul-95	36.7	50.8	17.3
29	30-Jun-97	29.1	37.5	18.8	14-Jul-95	36.7	50.8	17.3
30	28-Jul-93	27.9	37.2	16.0	30-Jul-99	34.4	40.7	18.0
31	02-Aug-00	27.5	35.4	21.5	01-Aug-75	34.4	43.0	17.5
32	04-Aug-03	26.6	34.9	18.8	07-Aug-01	35.3	45.4	28.0
33	13-Aug-91	29.6	31.4	10.7	15-Aug-95	31.9	43.8	9.2
34	26-Aug-01	28.7	37.1	24.5	27-Aug-93	34.0	44.5	25.8
35	30-Aug-79	29.3	37.3	22.3	28-Aug-73	35.6	45.8	26.7
36	01-Sep-97	24.2	29.4	10.5	03-Sep-73	32.8	41.4	9.3
37	11-Sep-78	29.6	38.4	19.3	09-Sep-02	33.5	37.2	14.8
38	15-Sep-03	19.6	26.2	16.3	16-Sep-91	31.2	41.9	30.3
39	24-Sep-76	12.8		11.7	22-Sep-70	26.7	35.8	21.3
40	04-Oct-94	10.1		20.7	01-Oct-02	28.8	36.0	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	29-Oct-83	5.6		25.0	26-Oct-79	2.5		26.7
44	30-Oct-92	4.0		10.2	07-Nov-93	2.6		26.0
45	11-Nov-79	3.8		15.8	12-Nov-95	0.5		34.3
46	20-Nov-93	1.0		35.7	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	11-Dec-78	-3.9		5.5	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

Figure 3.1 shows the peak day temperatures for each weak of the Normal and Extreme weather scenarios.

Figure 3.1: Weather Scenarios



3.2 Economic Drivers for Forecast

To produce both a peak and an energy 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 near term part of the forecast (2005-2006). For the years beyond the consensus (2007-2015), population projections from the Ontario Ministry of Finance were used as a proxy for the economic driver variables.

Since this document looks at such a long time horizon, it is valuable to look at a number of scenarios. Therefore, three economic scenarios are generated. A Median Economic Growth scenario is based on the current economic outlook for the near term and a median population growth scenario thereafter. The Low Economic Growth scenario assumes a recession in 2005-06 and then utilizes a low population projection thereafter. The High Economic Growth scenario assumes strong economic growth for 2005-06 and a high population growth projection to proxy the economic growth drivers for the remainder of the forecast horizon. For the Low Growth scenario the economic variables for 2005-06 are represented by using the two consecutive years from history that yield the poorest results. For example, employment growth was lowest for the years 1991-92 when the number of people employed shrank by -3.5% and -1.7% respectively. Conversely, the High Growth scenario uses the historical years of 1998-99 (3.2% and 3.3%) to generate employment growth as these years represent the best historical results. The population projections vary based on the assumed level of immigration, net provincial migration and birth and death rates.

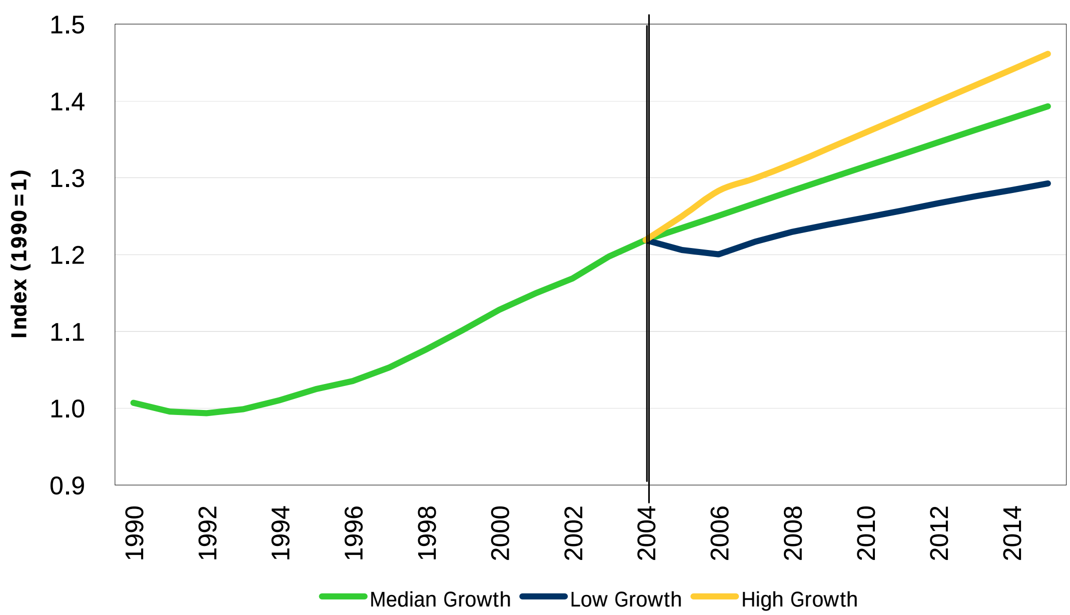
Table 3.2 shows the key economic drivers for the Median Economic Growth scenario.

Table 3.2: Forecasted Ontario Economic Drivers

Year	Ontario Employment		Ontario Housing Starts		Ontario Growth Index	
	Thousands	Annual Growth (%)	Thousands	Annual Growth (%)	Index	Annual Growth (%)
1995	5,091	2.0	31.9	-23.3	1.025	1.42
1996	5,152	1.2	39.5	23.9	1.035	1.04
1997	5,269	2.3	50.0	26.5	1.053	1.70
1998	5,438	3.2	50.1	0.2	1.077	2.23
1999	5,618	3.3	62.9	25.6	1.102	2.33
2000	5,797	3.2	67.4	7.1	1.128	2.39
2001	5,923	2.2	68.3	1.3	1.150	1.91
2002	6,018	1.6	74.8	9.4	1.169	1.69
2003	6,199	3.0	79.4	6.3	1.197	2.43
2004	6,309	1.8	80.0	0.7	1.219	1.80
2005 (f)	6,367	0.9	74.8	-6.4	1.235	1.30
2006 (f)	6,435	1.1	66.9	-10.6	1.251	1.28
2007 (f)	6,520	1.3	58.4	-12.7	1.267	1.29
2008 (f)	6,604	1.3	58.4	0.0	1.283	1.27
2009 (f)	6,686	1.2	58.3	-0.1	1.299	1.24
2010 (f)	6,767	1.2	58.2	-0.1	1.315	1.22
2011 (f)	6,848	1.2	58.1	-0.2	1.330	1.20
2012 (f)	6,930	1.2	57.9	-0.4	1.346	1.19
2013 (f)	7,011	1.2	57.6	-0.5	1.362	1.16
2014 (f)	7,091	1.1	57.2	-0.6	1.377	1.14
2015 (f)	7,171	1.1	56.9	-0.6	1.393	1.13

Figure 3.2 shows the relative levels of the three economic growth scenarios. The economic growth scenarios - in conjunction with the weather scenarios - allows for the analysis of a variety of potential outcomes.

Figure 3.2: Economic Scenarios



3.3 Calendar Drivers for Forecast

Calendar variables are relatively static and are not addressed here. For a more detailed discussion the reader is encouraged to look at the Methodology document.

3.4 Conservation and Demand Response

Conservation has occurred throughout the history used to forecast energy and peak demand. Over time, less efficient appliances are replaced by more efficient ones, homes and buildings with better insulation replace older structures and businesses have altered their operations to reduce their exposure to higher electricity prices. All of these have been occurring naturally and as such are reflected in the demand forecast. Higher levels of conservation or demand management are possible but require more direct intervention in the market through incentives, standards or other mechanisms. The results of these initiatives can be substantial. However, the ability to quantify the demand reductions requires detailed information on the programs, tools or standards. For example, changing the minimum efficiency on new air conditioners will impact summer peak and energy demand but will have no impact on demand in the winter. Increasing the insulation in new homes will reduce energy, winter peak and summer peak demand. Therefore, the demand forecast does contain an element of conservation – which is growing through time – but does not take into account future programs or goals.

Price responsive demand is treated as a resource in conducting the reliability assessments. There is an amount of dispatchable demand on the system. However, demand that is dispatchable can be switched to non-dispatchable quite easily. Therefore, in the long-term it was deemed that the uncertainty surrounding the amount of dispatchable demand was large enough that it should not be counted as a resource. For that reason, the only demand response included in the assessment was demand that was under contract and therefore would more reliable.

- End of Section -

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4.0 Demand Forecast

The demand forecast is split into three separate parts, the energy demand forecast, percent of time analysis and the peak demand forecast. This section presents information on the system, more detailed information for the individual zones can be found in Appendices A and B. As well, more detailed information can be requested by sending an email to either the customer.relations@ieso.ca or forecasts.demand@ieso.ca.

4.1 Energy Demand Forecast

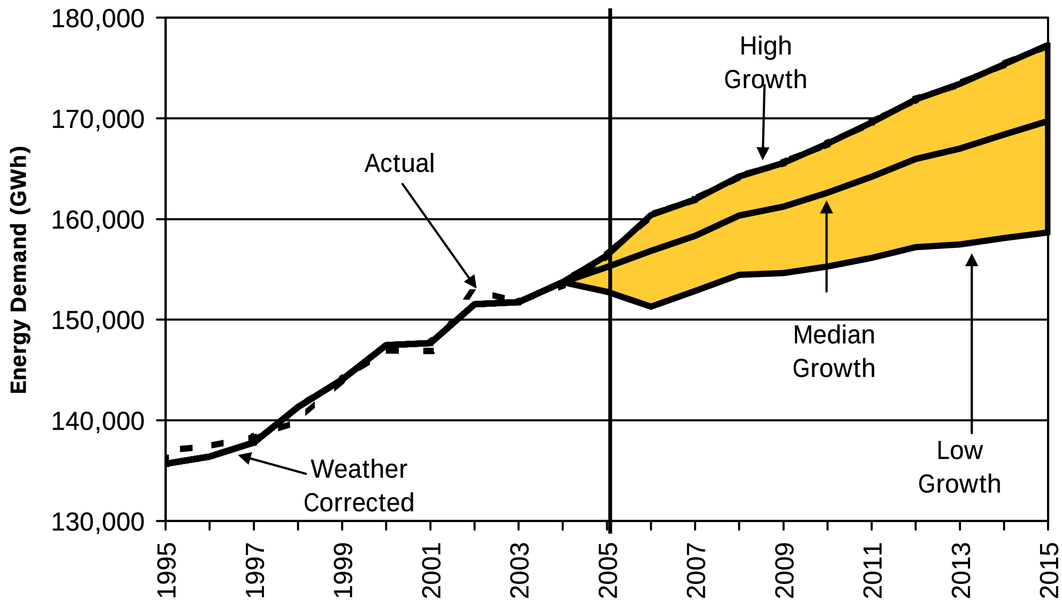
The predicted annual system energy demand for the time frame 2004 through to 2015 is contained in Table 4.1. This table contains the forecast of energy demand under the three economic growth scenarios – Low, Median and High. Although 2005 does not fall within the time frame of this document, the Median Growth values for 2005 are consistent with the 18-Month Outlook covering the period July 2005 to December 2006. Energy demand is expected to exhibit average annual growth of 0.9% throughout the forecast. Growth in demand is driven by changes in economic activity, the number of end-users and the penetration of electric powered devices. There were no explicit assumptions made regarding conservation. It was assumed that the rate of growth in conservation would follow the path set out historically with the change in end-use efficiency and with the changes in demand behaviour evident since the inception of the wholesale market.

Table 4.1: Forecasted Ontario Annual Energy Demand

Calendar Year	Energy Demand - Median Growth	Energy Demand - Low Growth	Energy Demand - High Growth
	(TWh)	(TWh)	(TWh)
2004 (WC)	153.7	153.7	153.7
2005 (18)	155.2	152.8	156.4
2006	156.8	151.3	160.4
2007	158.3	152.8	161.9
2008	160.3	154.4	164.2
2009	161.2	154.6	165.6
2010	162.6	155.3	167.5
2011	164.2	156.1	169.6
2012	166.0	157.2	171.9
2013	167.0	157.5	173.4
2014	168.4	158.1	175.4
2015	169.7	158.7	177.3
Avg Growth	0.9%	0.4%	1.3%

Figure 4.1 shows the range of potential annual energy demand under the three economic growth scenarios. Since the different scenarios are based on different growth profiles, the range of annual demands expands through time.

Figure 4.1: Annual Energy Demand – Economic Scenarios



4.2 Forecasted Percent of Time Analysis

As with the historical analysis, the forecast can be looked at from a duration curve perspective. This analysis ties information on energy and peak demand together and how they relate. The duration curves are going to be a result of the distribution of the underlying weather. As such, the Normal + 1 LFU and Extreme Weather scenarios are not going to be valuable as they would overestimate the curves as they assumed consistent deviations from the mean, which are simply not realistic. These scenarios are more valuable in studying peak demands than in energy or percent of time analysis.

In order to conduct meaningful percent of time analysis, three weather scenarios are created based on historical weather. For the summer, the actual weather from the summers of 1990, 1999 and 2002 are used as three weather scenarios. The weather for 1999 and 2002 was significantly hotter than Normal whereas the weather for 1990 was slightly above Normal. For the winters, the scenarios were created by using historical weather from 1976-77, 1989-90 and 1993-94. Once again 1989-1990 was slightly colder than Normal whereas the other two are significantly colder than Normal.

In this section we examine the load distribution for the summers of 2008 and 2010 and the winters of 2007-08 and 2009-2010. Figure 4.2 shows the load duration curves for the summer of 2008 under the Median Economic and High Economic Growth scenarios. For each of the Economic Growth scenarios, two weather scenarios are shown, Normal weather and 2002 Weather.

Figure 4.3 has the load duration curves for the winter of 2007-08 under the Median and High Growth scenarios, combined with the Normal and 1990 weather scenarios.

Figure 4.2: Load Duration Curves – Summer 2008

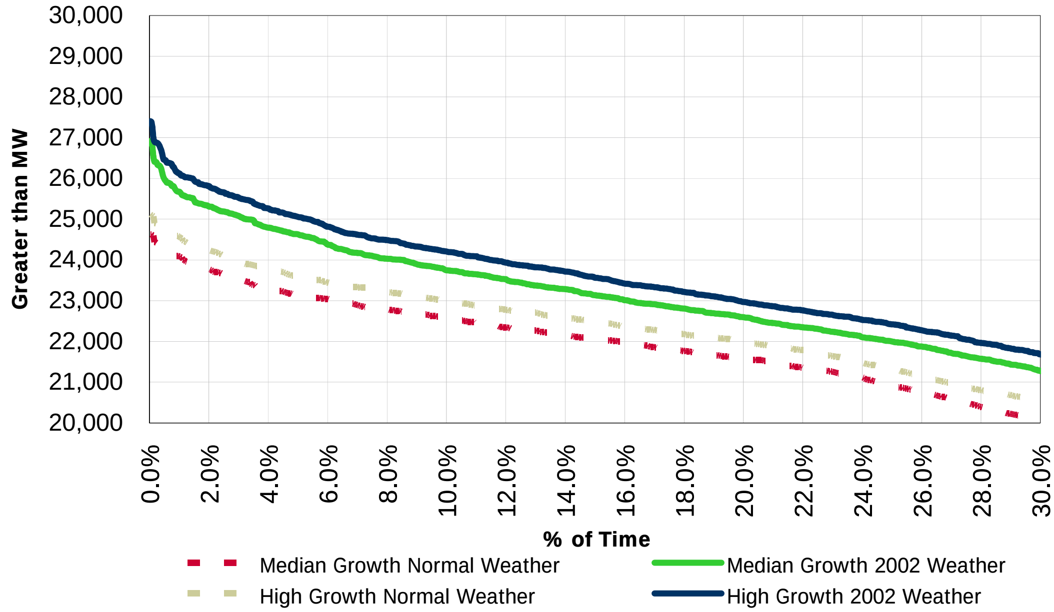


Figure 4.3: Load Duration Curves – Winter 2007-08

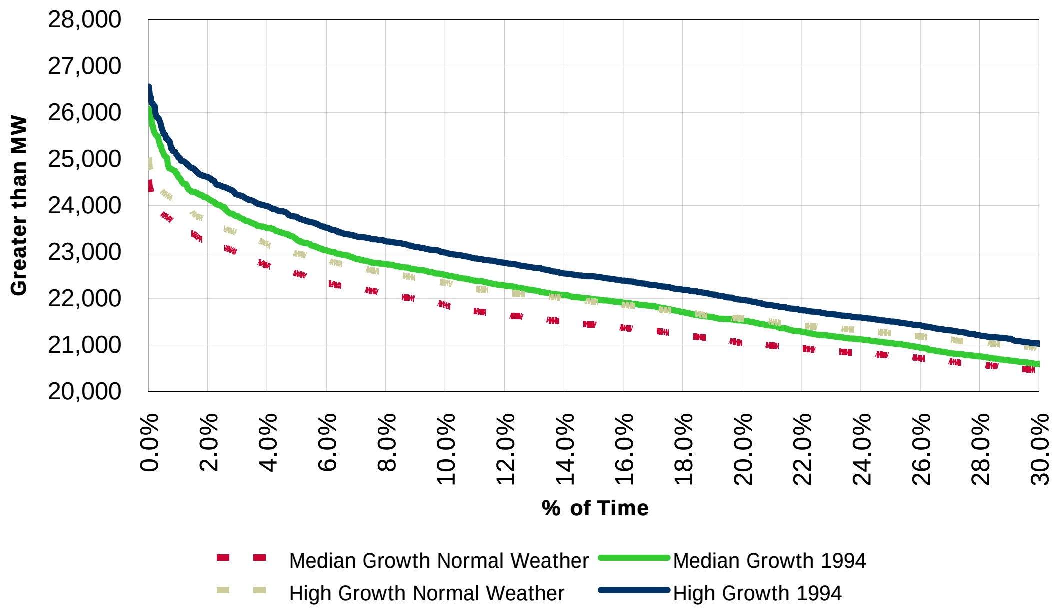


Table 4.2 compares the load distribution statistics for the summer of 2008 and winter of 2007-08 under the various weather and economic growth scenarios.

Table 4.2: Forecasted Percent of Time – Summer 2008 & Winter 2007-08

	Median Growth				High Growth			
Summer 2008 (June 1st to September 30th)	Normal Weather Scenario	1990 Weather Scenario	1999 Weather Scenario	2002 Weather Scenario	Normal Weather Scenario	1990 Weather Scenario	1999 Weather Scenario	2002 Weather Scenario
Maximum Hour (MW)	24,627	25,852	26,871	26,918	25,116	26,342	27,360	27,408
Average Hour (MW)	18,291	18,402	18,830	19,051	18,737	18,848	19,276	19,497
Minimum Hour (MW)	12,156	12,256	12,184	12,088	12,437	12,437	12,591	12,549
Standard Deviation (MW)	3,118	3,177	3,352	3,446	3,118	3,176	3,342	3,436
90th Percentile (MW)	22,559	22,714	23,492	23,746	23,006	23,127	23,942	24,204
Percent above 23,000 MW	6.4%	8.0%	14.4%	16.2%	10.1%	11.6%	17.3%	19.8%
# of Hours Above 23,000 MW	187	234	422	474	296	340	507	580
Winter 2007-08 (November 1st to March 31st)	Normal Weather Scenario	1989-90 Weather Scenario	1976-77 Weather Scenario	1993-94 Weather Scenario	Normal Weather Scenario	1989-90 Weather Scenario	1976-77 Weather Scenario	1993-94 Weather Scenario
Maximum Hour (MW)	24,549	25,819	25,469	26,080	25,030	26,274	25,950	26,561
Average Hour (MW)	18,839	18,936	19,234	19,144	19,267	19,364	19,662	19,571
Minimum Hour (MW)	12,679	12,771	12,845	12,679	13,167	13,191	13,316	13,167
Standard Deviation (MW)	2,416	2,504	2,524	2,591	2,456	2,551	2,571	2,631
90th Percentile (MW)	21,850	22,079	22,508	22,503	22,337	22,538	22,985	22,985
Percent above 23,000 MW	2.9%	4.1%	5.9%	6.3%	4.8%	6.7%	9.9%	9.9%
# of Hours Above 23,000 MW	106	150	215	230	175	244	361	361

Similar analysis was also conducted for the summer of 2010 and the winter of 2009-10. Figures are not presented as the duration curves are very similar to those in Figures 4.2 and 4.3, the exception being that the curves have shifted up due to population and economic growth over the two years in between. Table 4.3 shows the summary information for the load distribution under the various scenarios.

Table 4.3: Forecasted Percent of Time – Summer 2010 & Winter 2009-10

	Median Growth				High Growth			
Summer 2010 (June 1st to September 30th)	Normal Weather Scenario	1990 Weather Scenario	1999 Weather Scenario	2002 Weather Scenario	Normal Weather Scenario	1990 Weather Scenario	1999 Weather Scenario	2002 Weather Scenario
Maximum Hour (MW)	25,228	26,520	27,539	27,586	25,844	27,135	28,154	28,201
Average Hour (MW)	18,785	18,898	19,384	19,578	19,346	19,458	19,944	20,138
Minimum Hour (MW)	12,414	11,975	12,610	12,040	12,741	12,508	12,930	12,573
Standard Deviation (MW)	3,242	3,317	3,472	3,555	3,240	3,313	3,460	3,538
90th Percentile (MW)	23,219	23,377	24,181	24,363	23,745	23,898	24,712	24,905
Percent above 23,000 MW	12.1%	13.9%	18.7%	21.0%	17.4%	19.0%	23.0%	25.7%
# of Hours Above 23,000 MW	354	407	548	615	509	556	673	752
Winter 2009-10 (November 1st to March 31st)	Normal Weather Scenario	1989-90 Weather Scenario	1976-77 Weather Scenario	1993-94 Weather Scenario	Normal Weather Scenario	1989-90 Weather Scenario	1976-77 Weather Scenario	1993-94 Weather Scenario
Maximum Hour (MW)	24,848	26,171	25,769	26,366	25,452	26,719	26,373	26,970
Average Hour (MW)	19,193	19,306	19,621	19,518	19,722	19,835	20,150	20,047
Minimum Hour (MW)	12,924	13,016	13,069	12,924	13,414	13,449	13,558	13,414
Standard Deviation (MW)	2,405	2,496	2,519	2,604	2,472	2,561	2,584	2,666
90th Percentile (MW)	22,194	22,391	22,843	22,904	22,794	22,987	23,453	23,531
Percent above 23,000 MW	4.4%	5.6%	8.9%	9.1%	8.0%	10.0%	14.1%	14.8%
# of Hours Above 23,000 MW	159	203	323	330	290	362	511	536

4.3 Peak Demand Forecast

The summer and winter peak demands are growing at a rate different from that of overall energy. Whereas energy demand is growing at 0.9% per year, winter peak demands are growing at a slower 0.7% and summer peaks are growing at a faster rate of 1.3% per year. The summer peaks are growing faster as cooling load continues to grow with the high level of new home construction and the lack of a non-electric substitute. Heating load is growing at a lower rate as other forms of energy – notably natural gas – are the norm in new homes and conversions of existing homes and buildings.

Table 4.4 shows the forecast of seasonal peak demands. The table shows the winter and summer peaks under both Normal and Extreme weather. Under Normal weather, the system is winter peaking in 2006, dual peaking in 2007 and summer peaking thereafter. Under the Extreme weather scenario the system is summer peaking throughout the forecast. The winter peaks for 2005 in Table 4.4 are actuals and weather-corrected actuals. They were included as December 2004 produced an all-time winter peak demand of 24,979 MW.

Table 4.4: Forecasted Ontario Seasonal Peak Demand

Year	Normal Weather Winter Peak Demand (MW)	Normal Weather Summer Peak Demand (MW)	Normal +1 LFU Weather Winter Peak Demand (MW)	Normal +1 LFU Weather Summer Peak Demand (MW)	Extreme Weather Winter Peak Demand (MW)	Extreme Weather Summer Peak Demand (MW)
2003	*23,330*	*23,164*	*24,158*	*24,753*	*24,158*	*24,753*
2004	*24,202*	*23,372*	*24,937*	*23,976*	*24,937*	*23,976*
2005 (18)	*23,988*	23,672	*24,979*	24,896	*24,979*	26,430
2006	24,205	23,991	25,252	25,231	25,818	26,764
2007	24,374	24,301	25,422	25,542	26,008	27,075
2008	24,549	24,627	25,599	25,964	26,198	27,498
2009	24,724	25,045	25,772	26,397	26,408	27,930
2010	24,848	25,228	25,903	26,454	26,521	27,987
2011	25,018	25,534	26,067	26,759	26,707	28,293
2012	25,189	25,840	26,237	27,080	26,803	28,613
2013	25,360	26,158	26,410	27,495	27,009	29,029
2014	25,521	26,461	26,571	27,812	27,191	29,346
2015	25,689	26,874	26,737	28,226	27,373	29,759
Avg Growth (2005-15)	0.7%	1.3%	0.7%	1.3%	0.9%	1.2%

Notes to Table 4.4:

Shaded and Italics indicate actual peak demands. 2005 (18) indicates that these values are not in the time frame of this document but can be found in the 18-Month Outlook that covers the period July 2005 to December 2005. Avg. Growth indicates the average annual growth rate for the 2006-15.

Figure 4.4 shows the annual peak demands under three weather scenarios. The Mild weather scenario is derived from the mildest historical data. The Normal weather peak demand forecast is roughly in the center of the band and the Extreme weather scenario constitutes the upper bound of the graph.

Figure 4.5 depicts the summer and winter peaks under the Normal weather scenario. The history is represented by weather corrected peaks. Figure 4.6 shows the Extreme weather scenario peaks for summer and winter. Here the historical peaks are represented by actual peaks. The figures reflect the fact that the system is much more heat-sensitive than cold sensitive. For the Normal weather scenario, the system becomes summer peaking in 2008 whereas under the Extreme weather scenario the system is summer peaking immediately.

The resource adequacy assessments take into consideration the full range of possible weather conditions on a probabilistic basis. Results are presented assuming Normal weather as a base. Allowance for the probability of demand being higher than those assumed in the base case is made in the calculation of the required reserve level. This assessment is based on the assumption that the only price responsive demand is that which is under contract.

Figure 4.4: Annual Peak Demand – Weather Scenarios

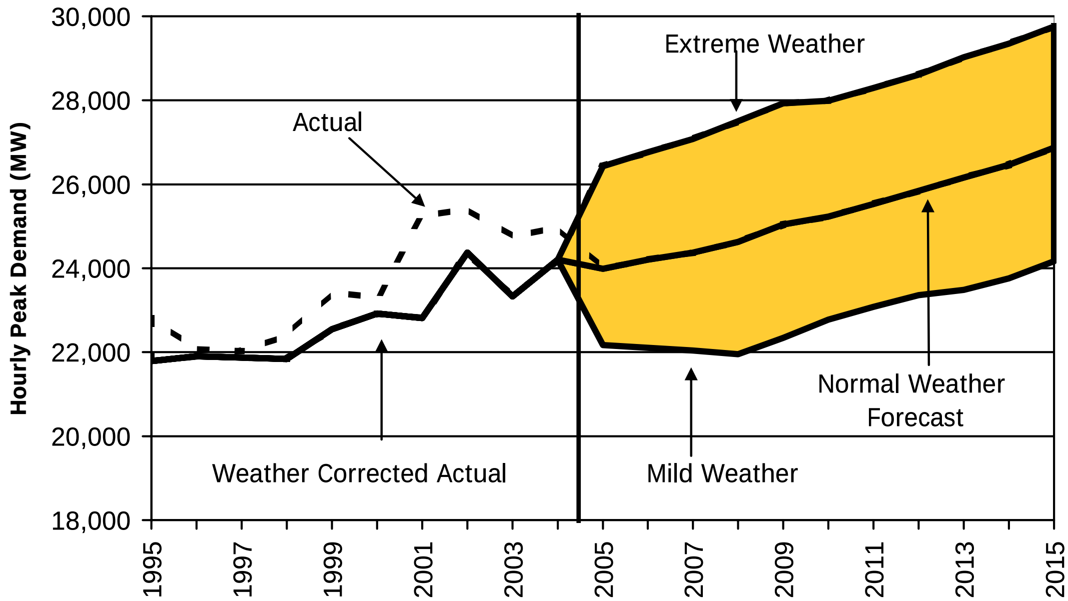


Figure 4.5: Seasonal Peak Demand – Normal Weather Scenario

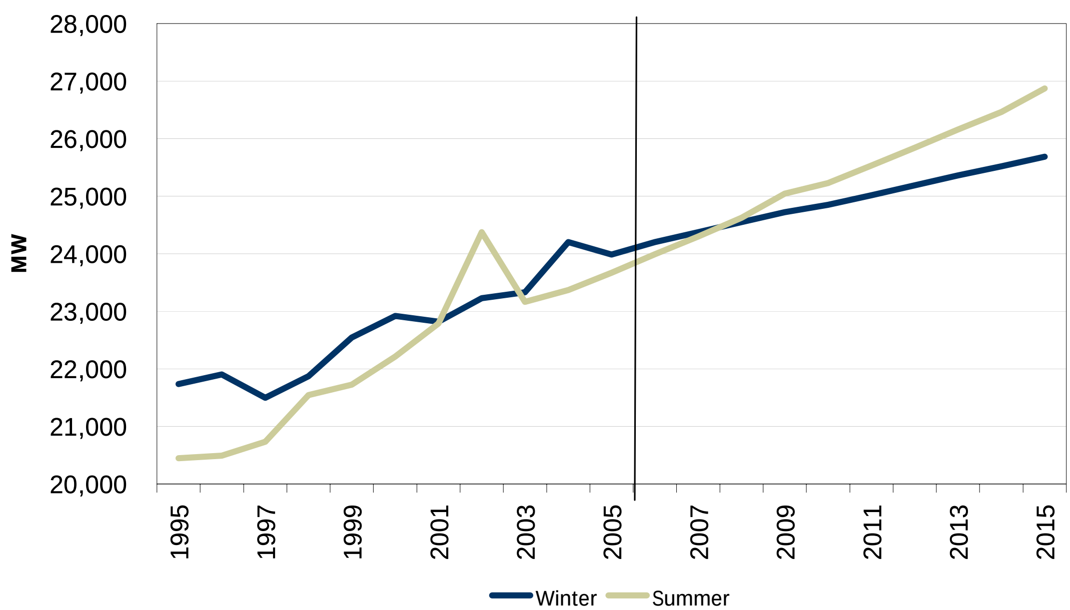
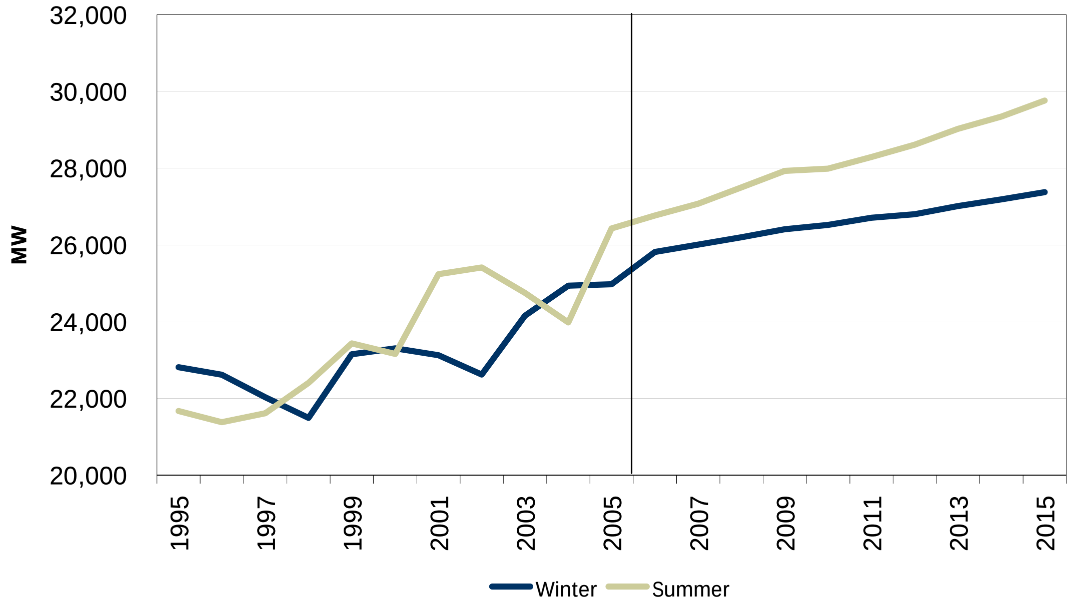


Figure 4.6: Seasonal Peak Demand – Extreme Weather Scenario



4.4 Comparison of Current Forecast to Previous 10-Year Forecast

This 10-Year forecast can be compared to the previous one published March 31, 2004, covering the period of January 2005 to December 2014. The forecasts are similar in terms of growth and drivers. The near-term economics are a little weaker, whereas the long-term economics are stronger than the previous forecast. As well, the starting points account for much of the change in the levels throughout the forecast. The system continues to exhibit increased heat sensitivity through increased space cooling penetration and growth.

With respect to the forecasting methodology, the previous forecast and the current one are basically the same. The models have been updated to reflect the most recently available demand, weather and economic data at the time of production. The weather scenarios were updated to include weather data through the end of April 2005.

The economic outlook has deteriorated as compared to the last 10-Year forecast. The higher dollar and higher oil prices have had an impact on Canada's economy. However, they have had a larger impact when one looks at the regional impacts. Where high oil prices are a boon to Alberta, they are a drag on growth in Ontario. Likewise, the higher dollar has a negative impact on the manufacturing sector in Ontario which is highly export oriented. In the near term these two items – oil prices and the dollar – will act to slow Ontario's growth.

On the positive side, strong economic fundamentals – low inflation and interest rates, as well as a generally good government budget situation bode well for long-term growth.

The inclusion of actual demand and the updated economic outlook has meant that projected energy demand is lower than in the previous 10-Year forecast. Compared to the previous forecast, energy demand is 0.3 TWh lower in 2005 and 0.5 TWh lower in 2014.

With a lower energy demand base, peak demands will also be lower than in the previous forecast. Table 4.5 shows some of the differences between the current and previous forecast.

Table 4.5: Current Vs Previous Forecast

Year	Annual Energy Demand (TWh)	Normal Weather Winter Peak Demand (MW)	Normal Weather Summer Peak Demand (MW)	Normal +1 LFU Weather Winter Peak Demand (MW)	Normal +1 LFU Weather Summer Peak Demand (MW)	Extreme Weather Winter Peak Demand (MW)	Extreme Weather Summer Peak Demand (MW)
2005	155.2	*23,988*	23,672	24,979	24,896	24,979	26,430
Difference (Current - Previous)	-0.3	-165	-475	-90	-674	-1,143	-493
2008	160.3	24,549	24,627	25,599	25,964	26,198	27,498
Difference (Current - Previous)	-0.7	-171	-401	-37	-487	-490	-310
2011	164.2	25,018	25,534	26,067	26,759	26,707	28,293
Difference (Current - Previous)	-1.0	-165	-348	-31	-547	-445	-367
2014	168.4	25,521	26,461	26,571	27,812	27,191	29,346
Difference (Current - Previous)	-0.5	-115	-151	18	-227	-414	-23

-End of Section -

Appendix A - Energy Demand Forecast Details

Table A1: Monthly Zonal Energy Forecast, Normal Weather

	Monthly Energy (GWh)										
Month	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	Total System
Jan-06	729	1,127	992	894	1,127	4,617	519	37	2,799	1,587	14,426
Feb-06	661	997	873	789	970	4,172	469	36	2,535	1,434	12,935
Mar-06	701	1,048	889	832	1,002	4,387	508	37	2,668	1,526	13,599
Apr-06	629	921	766	695	851	3,846	460	29	2,376	1,375	11,949
May-06	641	895	768	714	874	4,055	473	27	2,446	1,430	12,324
Jun-06	632	834	748	669	887	4,236	482	31	2,508	1,517	12,543
Jul-06	650	855	796	716	986	4,692	522	30	2,680	1,649	13,577
Aug-06	664	918	815	732	993	4,739	534	31	2,684	1,711	13,820
Sep-06	623	910	704	589	901	4,158	471	30	2,449	1,488	12,322
Oct-06	657	983	782	682	948	4,097	475	31	2,477	1,460	12,593
Nov-06	670	1,004	822	733	961	4,195	483	36	2,553	1,477	12,935
Dec-06	695	1,073	937	853	1,077	4,442	492	37	2,682	1,528	13,817
Jan-07	731	1,125	999	914	1,149	4,669	522	38	2,851	1,614	14,613
Feb-07	660	994	873	797	982	4,181	470	37	2,561	1,450	13,004
Mar-07	700	1,043	884	833	1,009	4,364	507	37	2,680	1,536	13,592
Apr-07	629	912	769	705	866	3,879	461	29	2,415	1,396	12,063
May-07	644	896	771	726	892	4,097	475	28	2,487	1,455	12,471
Jun-07	643	836	753	681	911	4,292	487	31	2,553	1,540	12,728
Jul-07	650	854	804	733	1,001	4,758	525	31	2,740	1,692	13,789
Aug-07	670	919	817	743	1,005	4,765	536	31	2,724	1,734	13,942
Sep-07	627	912	706	598	916	4,177	471	30	2,482	1,506	12,424
Oct-07	660	982	787	700	971	4,143	479	32	2,527	1,487	12,766
Nov-07	672	1,003	823	743	977	4,209	484	36	2,583	1,496	13,027
Dec-07	696	1,073	941	865	1,097	4,462	494	38	2,715	1,547	13,926
Jan-08	733	1,127	1,001	926	1,169	4,692	524	38	2,885	1,635	14,729
Feb-08	683	1,023	903	834	1,029	4,341	488	38	2,680	1,519	13,538
Mar-08	696	1,036	874	830	1,012	4,310	501	37	2,677	1,534	13,505
Apr-08	633	919	777	740	888	3,937	469	30	2,474	1,425	12,292
May-08	649	897	771	730	907	4,117	476	28	2,514	1,477	12,565
Jun-08	647	834	760	695	931	4,358	491	32	2,608	1,574	12,930
Jul-08	658	855	817	758	1,029	4,866	532	31	2,810	1,738	14,093
Aug-08	676	925	812	742	1,008	4,735	532	31	2,740	1,738	13,939
Sep-08	630	909	711	616	938	4,221	474	30	2,531	1,534	12,595
Oct-08	664	985	790	712	989	4,175	482	33	2,569	1,512	12,911
Nov-08	672	1,006	827	751	994	4,201	482	37	2,601	1,505	13,074
Dec-08	699	1,077	953	891	1,130	4,534	500	39	2,772	1,581	14,177
Jan-09	734	1,127	996	930	1,181	4,681	524	38	2,899	1,645	14,755
Feb-09	660	984	872	813	1,005	4,200	471	37	2,614	1,481	13,137
Mar-09	697	1,032	879	846	1,030	4,358	505	37	2,723	1,562	13,669
Apr-09	632	912	774	740	898	3,931	467	30	2,491	1,436	12,312
May-09	653	897	772	737	920	4,137	476	28	2,545	1,496	12,662
Jun-09	650	834	770	716	954	4,451	499	32	2,670	1,624	13,200
Jul-09	665	856	820	770	1,046	4,914	535	32	2,862	1,759	14,258
Aug-09	681	921	815	754	1,025	4,765	532	31	2,779	1,759	14,063
Sep-09	633	912	717	634	954	4,253	477	30	2,575	1,557	12,743
Oct-09	665	982	784	713	1,002	4,170	481	33	2,590	1,527	12,946
Nov-09	674	1,007	834	768	1,019	4,247	485	37	2,650	1,529	13,249
Dec-09	697	1,073	951	897	1,140	4,540	501	39	2,797	1,599	14,235
Jan-10	734	1,123	992	932	1,194	4,654	522	38	2,906	1,653	14,749
Feb-10	665	989	881	831	1,030	4,235	473	37	2,655	1,504	13,300
Mar-10	705	1,045	901	880	1,070	4,464	512	38	2,805	1,603	14,021
Apr-10	635	916	781	755	923	3,946	468	30	2,524	1,458	12,435
May-10	652	897	774	750	931	4,131	476	28	2,575	1,506	12,720
Jun-10	653	836	770	726	963	4,416	492	32	2,689	1,616	13,194
Jul-10	672	858	815	774	1,051	4,905	535	32	2,885	1,777	14,303
Aug-10	687	921	831	781	1,058	4,903	540	32	2,867	1,811	14,432
Sep-10	642	908	726	647	980	4,388	487	31	2,645	1,619	13,073
Oct-10	665	978	790	722	1,012	4,183	479	32	2,605	1,541	13,007
Nov-10	671	989	824	770	1,020	4,241	485	37	2,668	1,544	13,248
Dec-10	689	1,065	938	895	1,141	4,492	495	39	2,795	1,596	14,144

Table A1 – continued

	Monthly Energy (GWh)										
Month	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	Total System
Jan-11	738	1,122	998	948	1,213	4,699	526	38	2,956	1,680	14,918
Feb-11	665	988	882	839	1,044	4,241	473	37	2,679	1,518	13,366
Mar-11	706	1,039	900	888	1,082	4,476	513	38	2,834	1,620	14,097
Apr-11	635	913	778	755	930	3,945	467	30	2,543	1,472	12,468
May-11	655	895	781	768	952	4,194	480	28	2,628	1,538	12,920
Jun-11	657	836	773	738	975	4,464	497	33	2,735	1,650	13,357
Jul-11	678	860	816	782	1,065	4,914	533	32	2,914	1,791	14,386
Aug-11	695	923	842	804	1,083	5,007	548	32	2,941	1,858	14,734
Sep-11	646	910	726	656	992	4,396	487	31	2,677	1,631	13,152
Oct-11	666	976	790	732	1,029	4,195	480	32	2,637	1,560	13,097
Nov-11	674	991	828	783	1,039	4,271	487	37	2,706	1,565	13,382
Dec-11	697	1,060	946	912	1,162	4,544	498	38	2,853	1,626	14,334
Jan-12	733	1,113	1,001	957	1,218	4,703	523	38	2,988	1,695	14,971
Feb-12	689	1,022	913	878	1,091	4,411	491	39	2,806	1,589	13,929
Mar-12	703	1,033	889	886	1,083	4,429	510	38	2,835	1,625	14,031
Apr-12	635	903	778	759	940	3,962	466	30	2,571	1,488	12,530
May-12	658	893	786	785	973	4,251	484	29	2,678	1,569	13,105
Jun-12	667	837	774	745	992	4,510	499	33	2,777	1,670	13,505
Jul-12	681	860	830	805	1,087	5,020	540	32	2,990	1,847	14,691
Aug-12	701	929	844	814	1,093	5,027	551	33	2,979	1,887	14,858
Sep-12	648	913	722	655	1,003	4,376	482	31	2,691	1,632	13,152
Oct-12	669	977	801	759	1,055	4,255	485	33	2,700	1,591	13,323
Nov-12	676	992	832	795	1,054	4,289	488	37	2,737	1,585	13,486
Dec-12	699	1,062	948	918	1,179	4,537	497	39	2,873	1,638	14,391
Jan-13	737	1,116	1,009	978	1,242	4,761	528	39	3,042	1,725	15,176
Feb-13	663	980	880	853	1,061	4,254	474	37	2,730	1,547	13,479
Mar-13	703	1,028	884	882	1,086	4,392	505	38	2,837	1,627	13,982
Apr-13	639	915	785	791	961	4,017	473	31	2,632	1,518	12,763
May-13	663	895	789	796	989	4,288	486	29	2,718	1,595	13,248
Jun-13	672	841	777	754	1,005	4,540	500	33	2,813	1,699	13,634
Jul-13	687	860	841	827	1,110	5,118	548	33	3,066	1,890	14,981
Aug-13	706	927	841	820	1,101	5,027	549	33	3,004	1,900	14,907
Sep-13	652	915	729	674	1,018	4,412	484	31	2,740	1,658	13,313
Oct-13	670	976	799	766	1,071	4,278	486	33	2,736	1,612	13,427
Nov-13	677	994	832	802	1,069	4,288	487	38	2,762	1,600	13,550
Dec-13	700	1,062	954	934	1,200	4,576	501	39	2,916	1,663	14,545
Jan-14	739	1,117	1,008	988	1,256	4,770	529	39	3,070	1,742	15,257
Feb-14	664	977	880	861	1,069	4,262	475	38	2,757	1,564	13,546
Mar-14	702	1,025	886	894	1,100	4,414	507	38	2,874	1,649	14,090
Apr-14	640	910	784	795	969	4,017	472	31	2,654	1,531	12,803
May-14	667	896	790	803	1,000	4,306	486	29	2,750	1,617	13,345
Jun-14	677	840	786	772	1,024	4,614	506	33	2,875	1,740	13,867
Jul-14	694	862	848	844	1,127	5,182	550	33	3,123	1,919	15,183
Aug-14	712	930	841	826	1,109	5,040	549	33	3,040	1,918	14,997
Sep-14	655	914	733	691	1,035	4,443	487	32	2,781	1,684	13,453
Oct-14	673	976	798	773	1,083	4,294	488	34	2,772	1,634	13,525
Nov-14	677	995	834	810	1,084	4,287	486	38	2,787	1,613	13,613
Dec-14	704	1,065	961	953	1,223	4,622	505	40	2,962	1,691	14,727
Jan-15	738	1,116	1,005	992	1,264	4,760	528	39	3,088	1,754	15,287
Feb-15	664	975	880	869	1,079	4,270	475	38	2,785	1,579	13,615
Mar-15	703	1,022	888	908	1,112	4,436	509	38	2,911	1,671	14,197
Apr-15	639	905	784	801	979	4,024	472	31	2,680	1,548	12,863
May-15	672	897	791	810	1,010	4,326	486	29	2,783	1,638	13,444
Jun-15	680	840	796	794	1,043	4,711	513	34	2,944	1,789	14,144
Jul-15	702	865	850	855	1,141	5,224	552	34	3,171	1,943	15,338
Aug-15	718	931	844	839	1,122	5,064	549	33	3,081	1,940	15,121
Sep-15	657	916	737	705	1,049	4,469	489	32	2,822	1,706	13,581
Oct-15	675	977	796	778	1,093	4,290	487	34	2,796	1,651	13,577
Nov-15	679	998	843	829	1,105	4,333	489	38	2,836	1,637	13,787
Dec-15	703	1,062	959	960	1,229	4,624	505	41	2,988	1,709	14,782

- End of Section -.

Appendix B - Peak Demand Forecast Details

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

	Hourly Coincident Peak Demand (MW)											
Month	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	Total System	Load Forecast Uncertainty
Jan-06	993	1,637	1,697	1,679	2,005	7,993	849	62	4,716	2,574	24,205	1,048
Feb-06	1,041	1,607	1,660	1,625	1,928	7,835	826	62	4,597	2,515	23,696	637
Mar-06	982	1,554	1,546	1,528	1,800	7,576	816	62	4,410	2,414	22,688	721
Apr-06	915	1,353	1,339	1,249	1,619	6,939	783	56	4,129	2,330	20,712	686
May-06	903	1,231	1,360	1,255	1,483	7,835	809	43	4,112	2,609	21,640	994
Jun-06	919	1,189	1,492	1,401	1,698	8,596	930	50	4,475	3,037	23,787	1,018
Jul-06	898	1,182	1,508	1,443	1,713	8,877	853	49	4,711	2,757	23,991	1,240
Aug-06	926	1,354	1,460	1,356	1,664	8,439	924	47	4,473	3,020	23,663	1,190
Sep-06	889	1,338	1,363	1,223	1,591	8,108	860	50	4,406	2,815	22,643	1,797
Oct-06	935	1,505	1,378	1,321	1,670	7,130	779	60	4,265	2,362	21,405	772
Nov-06	1,011	1,620	1,531	1,429	1,772	7,653	818	61	4,451	2,505	22,851	561
Dec-06	966	1,552	1,645	1,625	1,875	7,890	846	63	4,619	2,534	23,615	959
Jan-07	991	1,628	1,702	1,698	2,034	8,038	852	62	4,768	2,601	24,374	1,048
Feb-07	1,004	1,542	1,618	1,603	1,924	7,910	833	62	4,663	2,546	23,705	758
Mar-07	967	1,483	1,514	1,508	1,752	7,575	820	64	4,429	2,487	22,599	940
Apr-07	910	1,342	1,340	1,260	1,653	6,988	787	53	4,176	2,353	20,862	695
May-07	911	1,228	1,387	1,274	1,505	7,945	814	44	4,197	2,658	21,963	980
Jun-07	925	1,195	1,512	1,411	1,711	8,636	933	51	4,547	3,079	24,000	1,273
Jul-07	904	1,176	1,533	1,458	1,736	8,988	858	51	4,794	2,803	24,301	1,240
Aug-07	934	1,346	1,488	1,379	1,687	8,550	930	48	4,553	3,069	23,984	1,155
Sep-07	897	1,340	1,388	1,246	1,614	8,215	865	51	4,489	2,863	22,968	1,447
Oct-07	930	1,450	1,380	1,350	1,710	7,270	792	60	4,339	2,438	21,719	631
Nov-07	979	1,562	1,571	1,553	1,822	7,616	829	64	4,508	2,514	23,018	561
Dec-07	965	1,543	1,651	1,647	1,905	7,947	849	63	4,671	2,563	23,804	937
Jan-08	989	1,617	1,710	1,718	2,065	8,082	855	63	4,820	2,630	24,549	1,050
Feb-08	1,002	1,533	1,626	1,623	1,954	7,954	836	63	4,715	2,573	23,879	721
Mar-08	964	1,476	1,520	1,523	1,784	7,626	824	62	4,484	2,517	22,780	750
Apr-08	903	1,408	1,363	1,408	1,719	7,060	794	51	4,274	2,382	21,362	667
May-08	918	1,224	1,412	1,294	1,527	8,051	819	45	4,278	2,704	22,272	994
Jun-08	933	1,191	1,537	1,428	1,734	8,744	938	51	4,627	3,126	24,309	1,273
Jul-08	911	1,172	1,559	1,474	1,760	9,100	863	51	4,897	2,840	24,627	1,338
Aug-08	941	1,340	1,514	1,399	1,710	8,657	935	51	4,628	3,115	24,290	1,150
Sep-08	905	1,341	1,414	1,269	1,639	8,325	871	51	4,566	2,912	23,293	1,447
Oct-08	929	1,444	1,385	1,370	1,739	7,314	795	61	4,390	2,465	21,892	633
Nov-08	976	1,552	1,571	1,565	1,853	7,651	830	64	4,557	2,542	23,161	561
Dec-08	962	1,532	1,656	1,665	1,936	7,993	853	63	4,724	2,591	23,975	955
Jan-09	987	1,605	1,719	1,738	2,097	8,130	859	62	4,870	2,657	24,724	1,048
Feb-09	1,000	1,526	1,636	1,644	1,986	8,000	839	64	4,765	2,599	24,059	726
Mar-09	963	1,468	1,534	1,543	1,816	7,694	830	63	4,543	2,545	22,999	727
Apr-09	902	1,382	1,369	1,431	1,745	7,109	796	53	4,328	2,412	21,527	644
May-09	925	1,219	1,436	1,315	1,548	8,154	823	47	4,359	2,751	22,577	979
Jun-09	940	1,193	1,560	1,436	1,749	8,793	943	50	4,687	3,181	24,532	1,370
Jul-09	918	1,172	1,589	1,495	1,792	9,274	868	52	5,005	2,880	25,045	1,352
Aug-09	949	1,322	1,536	1,417	1,733	8,760	938	49	4,698	3,158	24,560	1,139
Sep-09	915	1,346	1,442	1,298	1,662	8,431	877	52	4,645	2,959	23,627	1,447
Oct-09	927	1,440	1,391	1,395	1,767	7,352	797	60	4,441	2,494	22,064	629
Nov-09	957	1,548	1,596	1,602	1,911	7,736	812	61	4,639	2,481	23,343	1,393
Dec-09	961	1,521	1,660	1,682	1,965	8,051	855	66	4,775	2,620	24,156	937
Jan-10	985	1,596	1,713	1,744	2,118	8,166	859	62	4,921	2,684	24,848	1,055
Feb-10	1,034	1,565	1,674	1,686	2,039	8,008	836	65	4,801	2,625	24,333	731
Mar-10	970	1,528	1,560	1,583	1,923	7,741	829	63	4,598	2,516	23,311	827
Apr-10	905	1,332	1,361	1,315	1,743	7,111	798	52	4,333	2,442	21,392	774
May-10	931	1,222	1,461	1,314	1,570	8,268	827	47	4,430	2,794	22,864	980
Jun-10	944	1,171	1,593	1,468	1,788	9,026	968	51	4,800	3,209	25,018	1,090
Jul-10	916	1,162	1,593	1,530	1,841	9,299	875	52	5,016	2,944	25,228	1,225
Aug-10	934	1,221	1,577	1,520	1,889	8,968	884	52	4,825	3,029	24,899	1,192
Sep-10	950	1,332	1,550	1,406	1,754	8,861	941	51	4,795	3,208	24,848	1,116
Oct-10	900	1,449	1,425	1,443	1,787	7,106	784	54	4,317	2,410	21,675	595
Nov-10	951	1,459	1,571	1,582	1,886	7,788	842	64	4,684	2,646	23,473	647
Dec-10	1,002	1,498	1,669	1,692	1,999	8,034	861	65	4,779	2,673	24,272	740

Table B1 – continued

	Hourly Coincident Peak Demand (MW)											
Month	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	Total System	Load Forecast Uncertainty
Jan-11	983	1,588	1,720	1,763	2,147	8,209	863	62	4,972	2,711	25,018	1,050
Feb-11	1,031	1,557	1,685	1,708	2,070	8,053	839	65	4,850	2,651	24,509	660
Mar-11	968	1,521	1,567	1,598	1,952	7,791	833	66	4,652	2,543	23,491	751
Apr-11	901	1,322	1,363	1,325	1,774	7,155	801	55	4,383	2,466	21,545	686
May-11	937	1,219	1,486	1,333	1,590	8,373	831	47	4,511	2,840	23,167	994
Jun-11	952	1,168	1,619	1,485	1,811	9,139	954	53	4,884	3,258	25,323	1,033
Jul-11	921	1,162	1,614	1,546	1,866	9,407	880	54	5,095	2,989	25,534	1,225
Aug-11	957	1,347	1,580	1,431	1,779	8,974	947	52	4,875	3,255	25,197	1,210
Sep-11	925	1,320	1,466	1,300	1,722	8,656	883	54	4,804	3,049	24,179	2,053
Oct-11	897	1,434	1,420	1,450	1,816	7,140	786	55	4,358	2,435	21,791	1,227
Nov-11	972	1,527	1,600	1,630	1,941	7,804	842	65	4,715	2,624	23,720	561
Dec-11	956	1,505	1,674	1,716	2,026	8,116	860	64	4,874	2,670	24,461	954
Jan-12	981	1,579	1,729	1,782	2,177	8,254	866	61	5,022	2,738	25,189	1,048
Feb-12	1,029	1,550	1,693	1,726	2,098	8,096	842	65	4,901	2,678	24,678	637
Mar-12	953	1,451	1,534	1,576	1,903	7,786	837	63	4,677	2,617	23,397	940
Apr-12	897	1,311	1,365	1,333	1,805	7,202	804	56	4,433	2,489	21,695	686
May-12	944	1,216	1,511	1,351	1,610	8,476	835	49	4,593	2,886	23,471	994
Jun-12	964	1,164	1,643	1,500	1,831	9,240	958	52	4,955	3,320	25,627	1,176
Jul-12	927	1,155	1,636	1,560	1,890	9,514	883	56	5,194	3,025	25,840	1,240
Aug-12	960	1,339	1,592	1,468	1,837	9,035	956	55	4,959	3,316	25,517	1,190
Sep-12	933	1,321	1,489	1,319	1,744	8,760	888	55	4,889	3,097	24,495	1,447
Oct-12	920	1,402	1,404	1,429	1,860	7,501	806	61	4,596	2,575	22,554	633
Nov-12	970	1,517	1,600	1,640	1,970	7,839	843	66	4,763	2,650	23,858	561
Dec-12	954	1,495	1,677	1,731	2,054	8,161	863	64	4,925	2,698	24,622	959
Jan-13	978	1,572	1,737	1,800	2,204	8,296	869	64	5,074	2,766	25,360	1,050
Feb-13	984	1,484	1,653	1,741	2,096	8,135	861	63	4,974	2,696	24,687	721
Mar-13	950	1,446	1,543	1,588	1,931	7,842	842	64	4,733	2,648	23,587	750
Apr-13	887	1,375	1,384	1,474	1,870	7,276	811	54	4,526	2,514	22,171	718
May-13	952	1,213	1,538	1,372	1,629	8,580	840	49	4,680	2,935	23,788	994
Jun-13	970	1,172	1,663	1,508	1,841	9,275	961	53	5,028	3,362	25,833	1,273
Jul-13	933	1,149	1,660	1,574	1,914	9,625	888	56	5,298	3,061	26,158	1,338
Aug-13	968	1,328	1,617	1,493	1,859	9,143	962	56	5,035	3,364	25,825	1,150
Sep-13	941	1,328	1,518	1,348	1,763	8,863	893	56	4,970	3,147	24,827	1,447
Oct-13	919	1,399	1,410	1,453	1,884	7,536	809	63	4,647	2,604	22,724	633
Nov-13	967	1,508	1,598	1,648	1,997	7,872	844	65	4,812	2,679	23,990	561
Dec-13	952	1,486	1,683	1,749	2,081	8,214	866	67	4,979	2,728	24,805	954
Jan-14	976	1,562	1,742	1,816	2,230	8,337	872	65	5,127	2,794	25,521	1,050
Feb-14	982	1,480	1,657	1,756	2,124	8,180	865	63	5,025	2,724	24,856	719
Mar-14	948	1,440	1,551	1,603	1,958	7,890	847	63	4,788	2,676	23,764	746
Apr-14	886	1,362	1,391	1,491	1,895	7,321	815	56	4,579	2,543	22,339	653
May-14	950	1,217	1,535	1,409	1,692	8,640	847	49	4,765	2,984	24,088	979
Jun-14	979	1,170	1,691	1,523	1,861	9,387	967	54	5,095	3,422	26,149	1,273
Jul-14	939	1,142	1,682	1,590	1,936	9,732	892	60	5,380	3,108	26,461	1,352
Aug-14	975	1,318	1,636	1,508	1,882	9,245	965	55	5,110	3,409	26,103	1,150
Sep-14	950	1,330	1,544	1,370	1,783	8,968	898	57	5,049	3,195	25,144	1,446
Oct-14	917	1,393	1,416	1,472	1,910	7,576	811	63	4,699	2,632	22,889	633
Nov-14	964	1,499	1,601	1,662	2,023	7,916	847	67	4,863	2,706	24,148	533
Dec-14	949	1,477	1,686	1,763	2,107	8,257	869	68	5,031	2,756	24,963	959
Jan-15	974	1,539	1,705	1,857	2,255	8,396	883	63	5,194	2,823	25,689	1,048
Feb-15	980	1,475	1,663	1,770	2,151	8,222	869	64	5,076	2,751	25,021	726
Mar-15	946	1,435	1,562	1,620	1,985	7,949	851	65	4,843	2,703	23,959	727
Apr-15	884	1,346	1,395	1,509	1,918	7,362	818	55	4,632	2,572	22,491	644
May-15	957	1,214	1,556	1,426	1,712	8,743	851	50	4,848	3,031	24,388	979
Jun-15	985	1,173	1,712	1,531	1,869	9,422	970	55	5,170	3,465	26,352	1,370
Jul-15	946	1,145	1,706	1,612	1,965	9,905	898	60	5,489	3,148	26,874	1,352
Aug-15	982	1,309	1,656	1,525	1,903	9,349	969	56	5,188	3,457	26,394	1,139
Sep-15	958	1,333	1,568	1,392	1,803	9,070	903	57	5,132	3,243	25,459	1,447
Oct-15	919	1,400	1,391	1,493	1,973	7,599	823	61	4,753	2,642	23,054	629
Nov-15	944	1,498	1,628	1,701	2,077	7,994	829	67	4,947	2,645	24,330	1,393
Dec-15	948	1,470	1,692	1,782	2,133	8,310	872	67	5,084	2,785	25,143	937

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

	Hourly Non-Coincident Peak Demand (MW)											
Month	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	System	Zonal Total
Jan-06	1,136	1,822	1,719	1,718	2,044	7,993	849	66	4,716	2,608	24,205	24,671
Feb-06	1,170	1,783	1,660	1,656	1,928	7,868	835	69	4,611	2,527	23,696	24,107
Mar-06	1,110	1,749	1,546	1,535	1,800	7,598	817	69	4,413	2,486	22,688	23,123
Apr-06	1,028	1,535	1,354	1,305	1,619	6,939	786	59	4,129	2,364	20,712	21,118
May-06	991	1,423	1,372	1,271	1,544	7,835	810	64	4,114	2,609	21,640	22,033
Jun-06	1,004	1,365	1,494	1,421	1,706	8,596	983	59	4,556	3,214	23,787	24,398
Jul-06	981	1,337	1,509	1,470	1,743	8,882	945	57	4,711	3,131	23,991	24,766
Aug-06	1,001	1,471	1,491	1,450	1,783	8,588	927	53	4,505	3,028	23,663	24,297
Sep-06	996	1,493	1,366	1,223	1,842	8,144	900	55	4,407	2,956	22,643	23,382
Oct-06	1,009	1,613	1,387	1,391	1,670	7,135	779	64	4,265	2,387	21,405	21,700
Nov-06	1,072	1,687	1,568	1,535	1,792	7,683	833	65	4,475	2,550	22,851	23,260
Dec-06	1,092	1,712	1,668	1,653	1,899	7,966	850	65	4,622	2,583	23,615	24,110
Jan-07	1,166	1,824	1,727	1,735	2,073	8,038	852	66	4,768	2,633	24,374	24,882
Feb-07	1,173	1,786	1,620	1,655	1,924	7,910	840	70	4,663	2,554	23,705	24,195
Mar-07	1,113	1,681	1,515	1,513	1,779	7,575	821	68	4,429	2,515	22,599	23,009
Apr-07	1,032	1,544	1,348	1,314	1,653	6,988	789	60	4,176	2,389	20,862	21,293
May-07	1,000	1,434	1,394	1,291	1,573	7,945	815	65	4,200	2,658	21,963	22,375
Jun-07	1,014	1,372	1,512	1,432	1,724	8,736	1,000	59	4,679	3,224	24,000	24,752
Jul-07	992	1,339	1,535	1,487	1,770	8,994	949	59	4,794	3,179	24,301	25,098
Aug-07	1,012	1,465	1,516	1,472	1,812	8,694	933	53	4,581	3,078	23,984	24,616
Sep-07	1,002	1,506	1,394	1,246	1,876	8,250	906	56	4,490	3,005	22,968	23,731
Oct-07	1,024	1,618	1,384	1,399	1,715	7,291	792	65	4,339	2,438	21,719	22,065
Nov-07	1,076	1,688	1,571	1,553	1,822	7,701	835	65	4,524	2,572	23,018	23,407
Dec-07	1,095	1,708	1,673	1,657	1,930	8,003	853	66	4,675	2,606	23,804	24,266
Jan-08	1,169	1,824	1,736	1,753	2,104	8,082	855	67	4,820	2,660	24,549	25,070
Feb-08	1,176	1,771	1,627	1,673	1,954	7,954	844	70	4,717	2,582	23,879	24,368
Mar-08	1,117	1,690	1,522	1,525	1,811	7,626	824	69	4,484	2,546	22,780	23,214
Apr-08	1,034	1,609	1,363	1,455	1,719	7,060	794	58	4,274	2,413	21,362	21,779
May-08	1,010	1,446	1,419	1,310	1,606	8,051	820	65	4,281	2,704	22,272	22,712
Jun-08	1,027	1,343	1,537	1,449	1,753	8,850	1,005	61	4,764	3,290	24,309	25,079
Jul-08	1,003	1,342	1,559	1,502	1,797	9,100	954	61	4,897	3,226	24,627	25,441
Aug-08	1,021	1,461	1,539	1,489	1,841	8,802	938	54	4,660	3,125	24,290	24,930
Sep-08	1,008	1,519	1,423	1,269	1,911	8,361	911	57	4,567	3,054	23,293	24,080
Oct-08	1,028	1,623	1,389	1,411	1,750	7,314	795	66	4,390	2,467	21,892	22,233
Nov-08	1,079	1,690	1,571	1,565	1,853	7,728	837	66	4,574	2,595	23,161	23,558
Dec-08	1,099	1,797	1,676	1,683	2,035	8,030	855	71	4,726	2,629	23,975	24,601
Jan-09	1,170	1,825	1,727	1,769	2,136	8,130	859	67	4,870	2,687	24,724	25,240
Feb-09	1,180	1,780	1,636	1,690	1,986	8,000	848	71	4,768	2,608	24,059	24,567
Mar-09	1,119	1,700	1,535	1,543	1,842	7,694	830	70	4,543	2,577	22,999	23,453
Apr-09	1,037	1,602	1,369	1,472	1,745	7,109	796	60	4,328	2,433	21,527	21,951
May-09	1,021	1,456	1,444	1,331	1,639	8,154	825	65	4,364	2,751	22,577	23,050
Jun-09	1,037	1,353	1,560	1,461	1,774	8,951	1,011	63	4,834	3,351	24,532	25,395
Jul-09	1,016	1,347	1,589	1,516	1,828	9,274	959	61	5,005	3,253	25,045	25,848
Aug-09	1,030	1,459	1,562	1,508	1,871	8,909	941	55	4,734	3,168	24,560	25,237
Sep-09	1,013	1,533	1,454	1,304	1,945	8,469	917	59	4,645	3,105	23,627	24,444
Oct-09	1,033	1,625	1,396	1,405	1,784	7,352	797	66	4,441	2,505	22,065	22,404
Nov-09	1,083	1,696	1,596	1,602	1,911	7,772	838	67	4,639	2,616	23,343	23,820
Dec-09	1,102	1,804	1,682	1,704	2,071	8,067	859	71	4,779	2,652	24,156	24,791
Jan-10	1,155	1,836	1,719	1,781	2,157	8,166	861	68	4,926	2,704	24,848	25,373
Feb-10	1,180	1,811	1,675	1,716	2,039	8,026	853	72	4,821	2,710	24,333	24,903
Mar-10	1,119	1,784	1,560	1,591	1,923	7,741	830	71	4,598	2,577	23,311	23,794
Apr-10	1,046	1,593	1,361	1,431	1,761	7,111	801	62	4,333	2,475	21,392	21,974
May-10	1,032	1,468	1,463	1,334	1,639	8,268	828	67	4,431	2,794	22,864	23,324
Jun-10	1,054	1,372	1,594	1,490	1,817	9,026	1,004	63	4,877	3,395	25,018	25,692
Jul-10	1,027	1,356	1,610	1,544	1,855	9,321	966	62	5,019	3,328	25,228	26,088
Aug-10	1,046	1,489	1,594	1,520	1,913	9,035	915	57	4,838	3,142	24,899	25,549
Sep-10	1,031	1,499	1,550	1,420	1,995	8,861	944	60	4,796	3,218	24,848	25,374
Oct-10	1,026	1,652	1,425	1,477	1,787	7,250	784	58	4,317	2,559	21,675	22,335
Nov-10	1,068	1,692	1,596	1,598	1,886	7,801	846	67	4,684	2,646	23,473	23,884
Dec-10	1,103	1,717	1,681	1,701	2,032	8,047	861	72	4,779	2,674	24,272	24,667

Table B2 - continued

	Hourly Non-Coincident Peak Demand (MW)											
Month	Northwest	Northeast	East	Essa	Ottawa	Toronto	Niagara	Bruce	Southwest	West	System	Zonal Total
Jan-11	1,157	1,845	1,727	1,797	2,186	8,209	866	69	4,980	2,732	25,018	25,568
Feb-11	1,183	1,820	1,685	1,734	2,070	8,063	857	72	4,871	2,737	24,509	25,092
Mar-11	1,122	1,791	1,567	1,605	1,952	7,791	834	72	4,652	2,606	23,491	23,992
Apr-11	1,049	1,584	1,363	1,357	1,774	7,156	804	63	4,383	2,499	21,545	22,032
May-11	1,043	1,479	1,493	1,353	1,702	8,373	833	68	4,513	2,840	23,167	23,697
Jun-11	1,069	1,385	1,619	1,507	1,845	9,139	1,011	64	4,956	3,447	25,323	26,042
Jul-11	1,040	1,356	1,635	1,560	1,882	9,430	970	62	5,098	3,374	25,534	26,407
Aug-11	1,057	1,490	1,618	1,538	1,945	9,138	950	58	4,913	3,266	25,197	25,973
Sep-11	1,033	1,557	1,489	1,337	2,028	8,690	933	61	4,806	3,207	24,179	25,141
Oct-11	1,028	1,657	1,420	1,482	1,816	7,313	787	64	4,369	2,598	21,791	22,534
Nov-11	1,084	1,710	1,600	1,630	1,947	7,834	848	68	4,733	2,674	23,720	24,128
Dec-11	1,106	1,702	1,694	1,737	2,051	8,116	864	68	4,876	2,701	24,461	24,915
Jan-12	1,153	1,853	1,752	1,813	2,216	8,254	870	69	5,033	2,771	25,189	25,784
Feb-12	1,186	1,828	1,693	1,750	2,098	8,104	861	73	4,922	2,687	24,678	25,202
Mar-12	1,124	1,727	1,536	1,579	1,930	7,786	838	71	4,677	2,636	23,397	23,904
Apr-12	1,052	1,590	1,365	1,368	1,805	7,202	807	64	4,433	2,524	21,695	22,210
May-12	1,055	1,495	1,521	1,371	1,738	8,476	837	68	4,595	2,886	23,471	24,042
Jun-12	1,077	1,374	1,643	1,523	1,871	9,283	1,026	66	5,094	3,467	25,627	26,424
Jul-12	1,052	1,358	1,660	1,574	1,910	9,535	974	63	5,199	3,420	25,840	26,745
Aug-12	1,068	1,500	1,641	1,555	1,974	9,242	956	59	4,991	3,316	25,517	26,302
Sep-12	1,037	1,568	1,513	1,357	2,059	8,795	930	63	4,891	3,244	24,495	25,457
Oct-12	1,036	1,663	1,417	1,490	1,883	7,501	808	68	4,596	2,639	22,554	23,101
Nov-12	1,088	1,718	1,600	1,640	1,979	7,867	851	68	4,783	2,701	23,858	24,295
Dec-12	1,109	1,708	1,700	1,744	2,080	8,161	867	69	4,929	2,729	24,622	25,096
Jan-13	1,182	1,861	1,764	1,829	2,244	8,299	874	70	5,086	2,798	25,360	26,007
Feb-13	1,190	1,815	1,653	1,741	2,096	8,142	865	73	4,974	2,714	24,687	25,263
Mar-13	1,129	1,735	1,545	1,588	1,960	7,842	842	73	4,733	2,670	23,587	24,117
Apr-13	1,054	1,666	1,384	1,517	1,870	7,276	811	62	4,526	2,547	22,171	22,713
May-13	1,067	1,506	1,546	1,402	1,769	8,580	842	69	4,683	2,936	23,788	24,400
Jun-13	1,089	1,387	1,663	1,531	1,895	9,385	1,031	67	5,169	3,535	25,833	26,752
Jul-13	1,063	1,361	1,685	1,585	1,935	9,639	979	64	5,304	3,467	26,158	27,082
Aug-13	1,077	1,508	1,664	1,577	2,000	9,340	962	60	5,064	3,364	25,825	26,616
Sep-13	1,042	1,582	1,546	1,390	2,085	8,903	935	64	4,970	3,294	24,827	25,811
Oct-13	1,041	1,666	1,415	1,489	1,915	7,536	814	69	4,647	2,677	22,724	23,269
Nov-13	1,092	1,730	1,598	1,648	2,011	7,903	854	69	4,830	2,728	23,990	24,463
Dec-13	1,112	1,742	1,703	1,758	2,152	8,214	872	73	4,981	2,758	24,805	25,365
Jan-14	1,184	1,870	1,752	1,843	2,271	8,349	879	71	5,142	2,826	25,521	26,187
Feb-14	1,193	1,825	1,657	1,756	2,124	8,180	869	74	5,025	2,740	24,856	25,443
Mar-14	1,131	1,746	1,556	1,603	1,986	7,890	847	74	4,788	2,698	23,764	24,319
Apr-14	1,057	1,673	1,391	1,533	1,895	7,321	815	63	4,579	2,570	22,339	22,897
May-14	1,079	1,518	1,573	1,430	1,802	8,680	847	69	4,765	2,984	24,088	24,747
Jun-14	1,098	1,402	1,691	1,548	1,929	9,484	1,036	69	5,241	3,584	26,149	27,082
Jul-14	1,076	1,364	1,711	1,605	1,964	9,745	984	66	5,386	3,505	26,461	27,406
Aug-14	1,087	1,513	1,689	1,601	2,029	9,444	965	61	5,144	3,409	26,103	26,942
Sep-14	1,052	1,601	1,576	1,423	2,113	9,004	941	66	5,050	3,344	25,144	26,170
Oct-14	1,045	1,680	1,418	1,492	1,946	7,576	819	69	4,699	2,719	22,889	23,463
Nov-14	1,095	1,737	1,601	1,662	2,042	7,935	858	70	4,881	2,756	24,148	24,637
Dec-14	1,115	1,846	1,709	1,784	2,232	8,257	876	74	5,036	2,786	24,963	25,715
Jan-15	1,186	1,879	1,760	1,857	2,299	8,396	883	71	5,194	2,853	25,689	26,378
Feb-15	1,197	1,834	1,663	1,770	2,151	8,222	873	75	5,076	2,765	25,021	25,626
Mar-15	1,134	1,755	1,563	1,620	2,012	7,949	851	75	4,843	2,728	23,959	24,530
Apr-15	1,060	1,685	1,395	1,546	1,918	7,362	818	64	4,632	2,594	22,491	23,074
May-15	1,091	1,530	1,597	1,459	1,828	8,780	851	70	4,848	3,031	24,388	25,085
Jun-15	1,111	1,412	1,712	1,566	1,957	9,586	1,042	70	5,322	3,646	26,352	27,424
Jul-15	1,089	1,379	1,741	1,626	1,988	9,914	988	68	5,495	3,543	26,874	27,831
Aug-15	1,097	1,521	1,713	1,626	2,058	9,546	969	62	5,221	3,457	26,394	27,270
Sep-15	1,062	1,621	1,604	1,457	2,138	9,109	944	67	5,135	3,388	25,459	26,525
Oct-15	1,049	1,694	1,421	1,493	1,973	7,601	823	70	4,753	2,758	23,054	23,635
Nov-15	1,099	1,748	1,628	1,701	2,100	7,994	861	70	4,947	2,782	24,330	24,930
Dec-15	1,118	1,855	1,714	1,805	2,263	8,310	881	75	5,092	2,814	25,143	25,927

End of Section

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		
	> 16º C	1ºC Increase	6,730 MWh Increase
	10ºC > and < 16º C	1ºC Increase	70 MWh Increase
	< 10ºC	1ºC Decrease	2,940 MWh Increase
	Daily Avg Humidity - Dewpoint		
	> 16º C	1ºC Increase	2,450 MWh Increase
	10ºC > and < 16º C	1ºC Increase	20 MWh Increase
	< 10ºC	1ºC Decrease	1,070 MWh Increase
	Wind		
	Summer	1 km/hr Decrease	390 MWh Increase
	Winter	1 km/hr Increase	160 MWh Increase
	Cloud		
	Summer	Decrease of 1 on Scale	1,080 MWh Decrease
	Winter	Increase of 1 on Scale	1,580 MWh Increase
Economic	Employment	Increase of 1,000 jobs	30 MWh Increase
	Housing Stock	Increase of 1,000 houses	45 MWh Increase
Calendar	Holidays	New Year's Day	67,000 MWh Decrease
		Good Friday	43,000 MWh Decrease
		Victoria Day	52,000 MWh Decrease
		Canada Day	41,000 MWh Decrease
		August Civic Holiday	37,000 MWh Decrease
		Labour Day	59,000 MWh Decrease
		Thanksgiving Day	55,000 MWh Decrease
		Remembrance Day	7,000 MWh Decrease
		Christmas	80,000 MWh Decrease
		Boxing Day	77,000 MWh Decrease
		New Year's Eve	9,000 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		
	> 16º C	1ºC Increase	380 MW Increase
	10ºC > and < 16º C	1ºC Increase	50 MW Increase
	< 10ºC	1ºC Decrease	120 MW Increase
	Humidity - Dewpoint		
	> 16º C	1ºC Increase	140 MW Increase
	10ºC > and < 16º C	1ºC Increase	20 MW Increase
	< 10ºC	1ºC Decrease	40 MW Increase
	Wind		
	Summer	1 km/hr Decrease	21 MW Increase
	Winter	1 km/hr Increase	10 MW Increase
	Cloud		
	Summer	Decrease of 1 on Scale	90 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	3,100 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	2,500 MW Decrease
		Thanksgiving Day	2,600 MW Decrease
		Remembrance Day	200 MW Decrease
		Christmas	4,300 MW Decrease
		Boxing Day	3,600 MW Decrease
		New Year's Eve	700 MW Decrease
	Day of Week	Monday vs Sunday	2,100 MW Increase
		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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