18-MONTH OUTLOOK

From December 2010 to May 2012

ieso
Power to Ontario. On Demand.

Ontario Demand Forecast

Executive Summary

The IESO is responsible for forecasting electricity demand on the IESO-controlled grid and for assessing whether transmission and generation facilities are adequate to meet Ontario's needs. This document presents the demand forecast for the period from December 2010 to May 2012 and supersedes the previous forecast released in August 2010.

Economic Outlook

Economic growth in the post-recession period has been weak and there remain a number of areas of concern. Coming out of the recession, growth seemed to be fairly robust but has faltered over the latter half of 2010. The U.S. Federal Reserve is embarking on a second round of stimulus activity in order to solidify the recovery. However, this move has met with some criticism as some see this as exacerbating concerns over high debt levels, higher commodity prices and leading to currency devaluation. The impacts on long-term growth, inflation and interest rates are being debated. At the same time, governments are being put under increasing pressure to curb spending on the heels of their stimulus programs. This combination of contravening market interventions will add uncertainty and volatility to a weak recovery.

While there is no clear consensus on the projected path of the global economy, there are likely to be a number of trends that will affect Ontario. These include:

- Exchange rate – The Canadian dollar will remain strong against the U.S. dollar as the Federal Reserve pursues a policy of "quantitative easing."
- Weak growth – High debt loads – both public and private – will force both governments and consumers to curb spending, hampering economic growth.
- Uncertainty and volatility – Intervention in the economy by central banks and governments will play a key role in how the global economy evolves over the next 18 months.

The impacts of these themes will vary across Ontario's industrial sectors – mining and petrochemicals will benefit from higher commodity prices but export-oriented manufacturers will struggle with a lower U.S. dollar.

Actual Weather and Demand

Since the last Ontario Demand Forecast document was released six months of actual demand and weather data have been reported.

For the period May through October 2010, the weather was generally hotter than normal, the exception being June. All of the months showed a year-over-year increase in demand with the exception being October. From January to the end of October, actual

demand was up 2.4% compared to 2009 (1.9% weather corrected). However, demand is still 4.5% below that of the pre-recession levels of 2008 (4.7% weather corrected).

A heat wave at the end of May pushed peak demand to just under 23,000 MW. This was below the record May peak of 24,857 MW, set under similar weather conditions but prior to the recession (2006). Although not a record, the May 2010 peak still surpassed the winter peak for 2009-10 by nearly 1,000 MW. The hot summer weather also brought a peak demand of 25,075 MW – the first summer peak over 25,000 MW since August 2007. As well, September's peak demand of 24,444 MW was the highest September peak since 2002. A warmer summer with higher levels of economic activity boosted electricity demand all around.

Although the lowest minimum demand since market opening was recorded in April 2010, minimum demand levels have been higher than in 2009. This reflects a resumption of baseload demand from the manufacturing sector.

Demand Forecast

The 18-Month Outlook's demand forecast includes the impact of additional conservation savings and demand reductions from projected off-grid generation. The Ontario Power Authority (OPA) and local distribution companies (LDCs) will be the organizations driving these impacts through their program offerings. In the 18-Month Outlook the impacts of conservation and off-grid generation are decremented from demand, whereas the OPA's demand response programs are included in our analysis as a resource. Conservation, off-grid generation and demand response are discussed in section 4.4 of this document.

Table 1 summarizes the annual peak and energy demand forecast for the period covered in this 18-month forecast. Peak demands are expected to remain fairly flat over the forecast horizon as conservation, embedded generation and time-of-use prices offset the demand growth attributable to the economic recovery, demographic growth and increases in the number of electric end-use devices.

Energy demand is expected to show very slight increases over the next two years with conservation and embedded generation limiting demand growth.

Table 1: Peak and Energy Demand Forecast

Season	Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Winter 2010-11	22,271	23,346
Summer 2011	23,481	25,861
Winter 2011-12	22,249	23,386
Year	**Normal Weather Energy (TWh)**	**% Growth in Energy**
2006 Energy	152.3	-1.9%
2007 Energy	151.6	-0.5%
2008 Energy	148.9	-1.8%
2009 Energy	140.4	-5.7%
2010 Energy (Forecast)	142.4	1.4%
2011 Energy (Forecast)	142.9	0.3%
2012 Energy (Forecast)	143.7	0.6%

- End of Section

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1.0 Introduction

1.1 Outlook Documents

The Ontario Electricity Market Rules (Chapter 5 Section 7.1) require that a demand forecast for the next 18 months be produced and published on a quarterly basis. This Ontario Demand Forecast meets this requirement and covers the period from December 2010 to May 2012. It supersedes the previous forecast released August 2010.

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 "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_2010dec.pdf. Readers may envision other 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.

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 through the end of August 2010. Data for September and October have been incorporated into the tables and figures of this document. This document is divided into the following sections:

- Section 2.0 summarizes the forecast results
- Section 3.0 looks at historical demand
- Section 4.0 describes the assumptions used in this forecast of electricity demand
- All the tables in this report are contained in the 18-Month Outlook Tables (http://www.ieso.ca/imoweb/pubs/marketReports/18MonthOutlookTables_2010dec.xls) spreadsheet posted alongside the Outlook documents. The spreadsheet's historical tables contain data right back to market opening which would not be practical in a printed document.

Readers are invited to provide comments or suggestions regarding the content of this or 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.

Electronic copies of the forecast and weather scenarios are available upon request.

- End of Section -

2.0 Demand Forecast

This section presents the demand forecast for the Outlook period. Additional tables are included in the 18-Month Outlook Tables spreadsheet.

Table 2.1 contains the forecast of system weekly peak and energy demand. It also includes the load forecast uncertainty (LFU) for the weekly peak. The LFU is a measure of variability in load due to the volatility of weather.

Table 2.1: Weekly Peak and Energy Demand Forecast

Week Ending	Normal Peak (MW)	Extreme Peak (MW)	Load Forecast Uncertainty (MW)	Normal Energy Demand (GWh)	Week Ending	Normal Peak (MW)	Extreme Peak (MW)	Load Forecast Uncertainty (MW)	Normal Energy Demand (GWh)
05-Dec-10	20,940	22,324	776	2,858	04-Sep-11	21,435	24,301	1,222	2,701
12-Dec-10	21,581	22,626	482	2,933	11-Sep-11	20,335	24,210	1,687	2,577
19-Dec-10	21,589	22,636	195	2,918	18-Sep-11	19,586	24,391	1,474	2,557
26-Dec-10	20,877	21,902	443	2,843	25-Sep-11	19,059	23,586	1,414	2,578
02-Jan-11	20,332	22,146	438	2,773	02-Oct-11	18,525	22,188	754	2,515
09-Jan-11	22,053	22,645	589	3,000	09-Oct-11	17,678	21,978	594	2,509
16-Jan-11	21,981	23,159	525	3,020	16-Oct-11	18,422	18,718	463	2,526
23-Jan-11	22,271	23,346	494	3,044	23-Oct-11	18,441	19,011	569	2,616
30-Jan-11	22,140	23,464	382	3,038	30-Oct-11	18,891	19,100	683	2,675
06-Feb-11	21,982	22,984	308	2,999	06-Nov-11	19,214	19,628	665	2,707
13-Feb-11	21,479	22,558	952	3,005	13-Nov-11	19,890	20,034	777	2,703
20-Feb-11	21,362	22,340	469	3,017	20-Nov-11	19,829	20,691	642	2,744
27-Feb-11	20,983	22,304	461	2,970	27-Nov-11	20,154	21,119	707	2,769
06-Mar-11	20,518	21,607	693	2,931	04-Dec-11	20,943	22,280	635	2,856
13-Mar-11	20,245	21,927	667	2,847	11-Dec-11	21,321	22,547	534	2,947
20-Mar-11	19,601	20,974	737	2,759	18-Dec-11	21,437	22,435	188	2,930
27-Mar-11	19,172	20,662	840	2,738	25-Dec-11	21,170	22,340	412	2,910
03-Apr-11	18,785	20,103	789	2,677	01-Jan-12	20,731	22,279	513	2,760
10-Apr-11	18,178	20,041	869	2,610	08-Jan-12	22,156	22,677	581	2,988
17-Apr-11	18,130	19,318	756	2,586	15-Jan-12	22,116	23,371	516	3,043
24-Apr-11	17,755	21,697	688	2,492	22-Jan-12	22,249	23,386	613	3,064
01-May-11	17,344	21,604	777	2,498	29-Jan-12	22,213	23,337	418	3,055
08-May-11	17,309	20,790	857	2,491	05-Feb-12	22,080	23,030	276	3,021
15-May-11	17,846	21,808	582	2,473	12-Feb-12	21,599	22,732	957	3,012
22-May-11	18,076	21,364	814	2,474	19-Feb-12	21,322	22,329	402	3,010
29-May-11	18,460	22,418	1,403	2,417	26-Feb-12	20,995	22,412	427	2,955
05-Jun-11	19,609	24,358	1,614	2,557	04-Mar-12	21,114	21,899	329	2,965
12-Jun-11	19,617	22,854	1,315	2,540	11-Mar-12	20,296	21,832	863	2,860
19-Jun-11	21,436	24,110	1,015	2,676	18-Mar-12	19,731	21,277	706	2,776
26-Jun-11	22,169	24,980	1,442	2,723	25-Mar-12	19,262	20,787	876	2,752
03-Jul-11	21,794	24,416	1,258	2,706	01-Apr-12	18,855	20,545	862	2,715
10-Jul-11	22,253	24,052	1,143	2,804	08-Apr-12	18,337	20,132	784	2,583
17-Jul-11	22,956	24,758	909	2,799	15-Apr-12	17,911	19,364	736	2,593
24-Jul-11	23,481	25,861	1,433	2,927	22-Apr-12	17,762	21,518	663	2,550
31-Jul-11	23,013	24,939	890	2,855	29-Apr-12	17,186	21,352	668	2,497
07-Aug-11	21,905	24,655	1,044	2,783	06-May-12	17,329	20,926	898	2,473
14-Aug-11	22,740	25,790	1,125	2,852	13-May-12	17,406	21,501	756	2,453
21-Aug-11	22,810	25,055	917	2,818	20-May-12	17,512	20,934	866	2,455
28-Aug-11	21,459	24,301	977	2,757	27-May-12	18,148	22,041	1,643	2,396

Compared to the previous forecast, weekly peak demands are lower in the shoulder months and winter and about the same across the summer. Energy demand is slightly lower, reflecting the weakness in the economy. Figures 2.1 and 2.2 show the projected energy and peak demand for the outlook period.

Figure 2.1: Weekly Energy Demand – History and Forecast

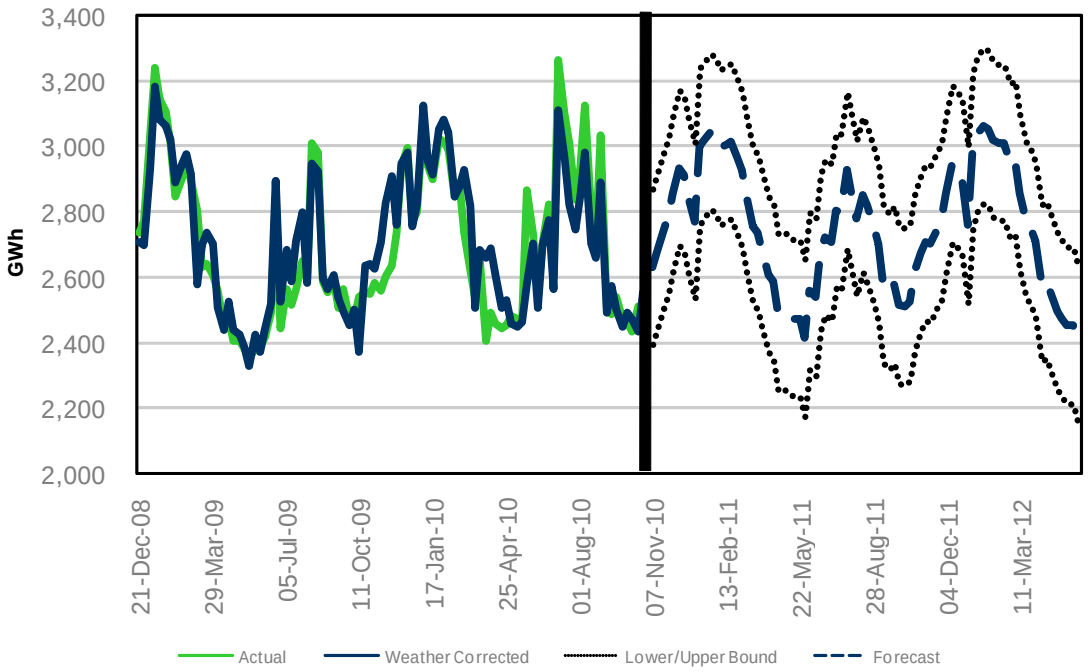
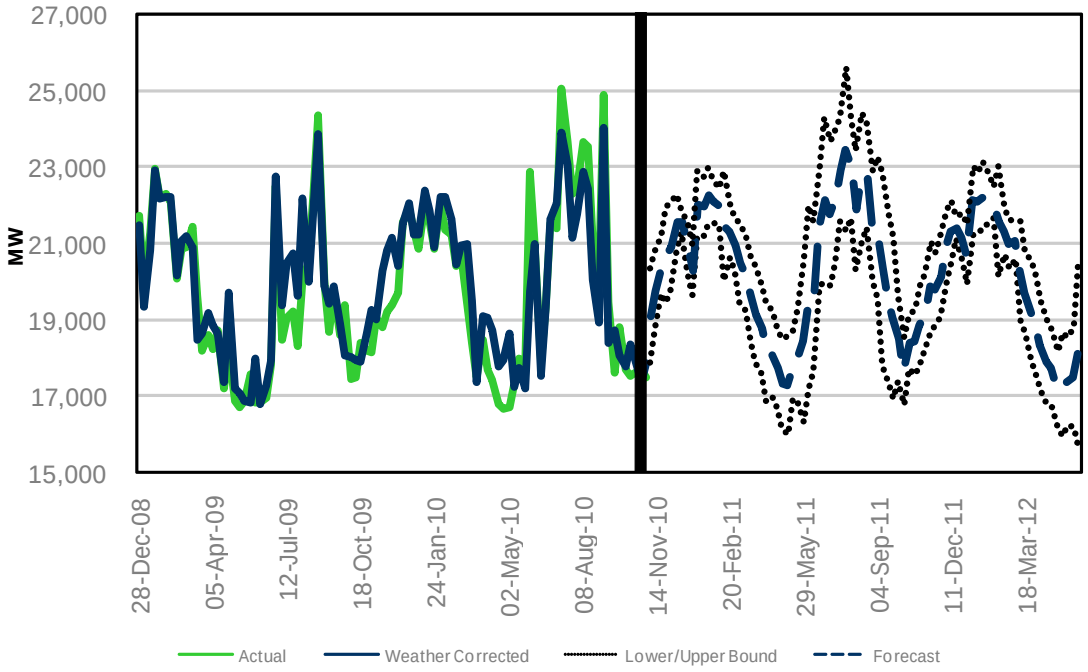


Figure 2.2: Weekly Peak Demand – History and Forecast



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3.0 Historical Review

This section discusses historical electricity demand. The weather-corrected numbers are generated based on Normal weather.

3.1 Six Month Review - May to October

The weather was warmer than normal throughout the summer of 2010. Demand started to show significant year-over-year improvement in the spring. Most of the actual monthly peaks and energy demand were higher than expected. Demand data for September and October started to show some weakness, reflecting the concerns about the economic recovery waning.

May

- May was much warmer than normal, with a significant heat wave the last week of the month. It was the second warmest May over the last 40 years. The peak day temperature was 31.4°C (Toronto).
- Despite the high temperature, peak demand was 22, 904 MW (20,939 MW weather-corrected). This is significantly below the May peak of 2006 which was 24,857 MW under similar weather.
- Actual energy demand for the month was 11.4 TWh and the weather-corrected energy demand was 11.1 TWh. Weather-corrected demand was up 4.9% over the previous May.
- Wholesale industrial energy demand was 7.9% higher than the previous May.

June

- June was the mildest month of the summer. The month did not experience any significantly hot or humid weather.
- Peak demand for the month was 21,527 MW (22,051 MW weather-corrected).
- Actual energy demand for the month was 11.6 TWh (11.4 TWh weather-corrected). Weather-corrected energy demand was up 4.1% over the previous year, signalling continued economic recovery.
- Wholesale industrial customers' consumption was up 10.7% compared to the previous June.

July

- July's weather was much warmer than normal and was very similar to July 2002 and 2005. The peak occurred on the hottest day (July 8th).
- The monthly peak was 25,075 MW (23,916 MW weather-corrected), marking the first time demand had topped 25,000 MW since August 2007. The July peak was also the peak for the entire summer.
- Actual energy demand for the month was 13.3 TWh (12.7 TWh weather-corrected). Weather-corrected energy demand was up 6.9% over the previous year, the highest year-over-year increase in 2010.
- Wholesale industrial customers' consumption continued to show strength with a 12.3% increase over the previous year.

August

- The weather for August was also reminiscent of the summer of 2005. It was consistently and significantly warmer than normal. The monthly peak demand occurred on August 31st, which followed the hottest day of the month (August 30th).
- The peak for August was 24,917 MW (23,886 MW weather-corrected).
- Actual energy demand for the month was 12.9 TWh (12.5 TWh weather-corrected). Weather-corrected demand was up 3.1% over the previous year.
- Wholesale industrial customers' consumption continued to show strength, with a 6.0% increase over the previous year.

September

- Like July and August, September was warmer than normal with weather similar to that experienced in 2005. The peak occurred on September 1st, the hottest day of the month, and followed the peak day for August.
- The 24,444 MW peak was the highest September peak since 2002. The weather-corrected value was a much lower 22,009 MW and was the highest value since 2000.
- Actual energy demand for the month was 11.0 TWh (11.0 TWh weather-corrected). September showed a 0.7% over the previous year.
- Wholesale industrial customers' consumption was up 10.0% over the previous year. However, this is still 22.3% below the pre-recessionary value from September 2008.

October

- October's weather was close to normal. As a shoulder month, weather plays less of a factor than in winter or summer. The peak occurred on October 18th which was neither cold nor warm but just average.
- The peak was 17,704 MW (18,354 MW weather-corrected). This is the lowest October peak since market opening.
- October's energy demand (10.9 TWh actual and 11.0 TWh weather-corrected) was also the lowest since market opening. Demand was 2.0% lower than a year earlier.
- Wholesale industrial customers' consumption continued to grow, increasing by 12.3% over the previous year.

Table 3.3.2 of the 18-Month Outlook Tables spreadsheet contains similar information going back to market opening. Table 3.1 contains a summary of the weather and demand for the past six months.

Table 3.1: Historical 2010 Weather and Demand Summary

Historical Analysis		May	June	July	August	September	October
Actual	Average Temperature (°C)	20.6	23.1	27.9	26.9	20.7	14.3
	Minimum Temperature (°C)	8.0	14.0	21.5	20.6	14.2	5.2
	Maximum Temperature (°C)	31.4	29.3	33.8	34.2	32.4	23.4
Monthly Normal	Normal Average Temperature (°C)	17.1	23.8	26.4	24.4	20.9	12.6
	Normal Minimum Temperature (°C)	8.7	13.4	20.0	18.2	9.5	4.0
	Normal Maximum Temperature (°C)	27.2	31.3	30.9	30.8	29.8	21.1
Actual	Peak Demand (MW)	22,904	21,527	25,075	24,917	24,444	17,704
	Average Hour (MW)	15,266	16,050	17,886	17,368	15,346	14,690
	Minimum Hour (MW)	10,914	11,506	11,400	11,813	11,124	10,816
	90th Percentile (MW)	18,076	19,165	22,220	21,949	17,784	16,635
	Percent above 20,000 (MW)	5.9%	6.1%	30.1%	20.8%	4.8%	0.0%
	# of Hours Above 20,000 (MW)	44	44	224	155	35	0
	Energy Demand (GWh)	11,358	11,556	13,307	12,922	11,049	10,929
Weather Corrected	Peak Demand (MW)	20,939	22,051	23,916	23,886	22,009	18,354
	Energy Demand (GWh)	11,076	11,443	12,714	12,484	11,005	10,962
Forecast	Peak Demand (MW)	18,844	22,551	23,498	22,973	21,443	18,855
	Energy Demand (GWh)	10,815	11,411	12,442	12,302	11,056	11,229

Notes for Table 3.1 – Weather is for Toronto. Temperature is the daily high. Forecast is the most recent for that period.

3.2 Historical Energy Demand

Actual energy demand was 2.4% higher for the first 10 months of 2010 compared to 2009. After adjusting for weather variation demand was 1.9% higher than the same months of 2009. The warm summer has bumped up demand and the consistent growth in the industrial segment indicates the beginnings of a recovery in electricity demand. Although electricity demand has shown growth over the first 10 months of 2010, demand is still 4.5% below the pre-recessionary levels of 2008.

Figure 3.1 shows the year-over-year change in wholesale customers' consumption. Consumption had been on a downward trend since the spring of 2005, a result of the appreciating Canadian dollar. Demand had just started to show a reversal just prior to the financial crisis of late 2008 and the ensuing recession throughout 2009. In the spring of 2010, wholesale consumers' loads started showing year-over-year gains which have strengthened throughout the year. Wholesale customers' average hourly consumption is still roughly 400 MW lower than prior to the recession but it is up about 200 MW from the lows of 2009. Wholesale consumption for the first 10 months is up 4.6% over the previous year – however it still remains 22.1% below the same 10 months of 2008.

Figure 3.2 shows the change in wholesale customers' consumption for the first 10 months of 2009 and 2010. The graph shows the variety in performance across the different industrial segments over the past two years as they are subject to different drivers.

Figure 3.1: Wholesale Customers' Year-over-Year Change in Consumption

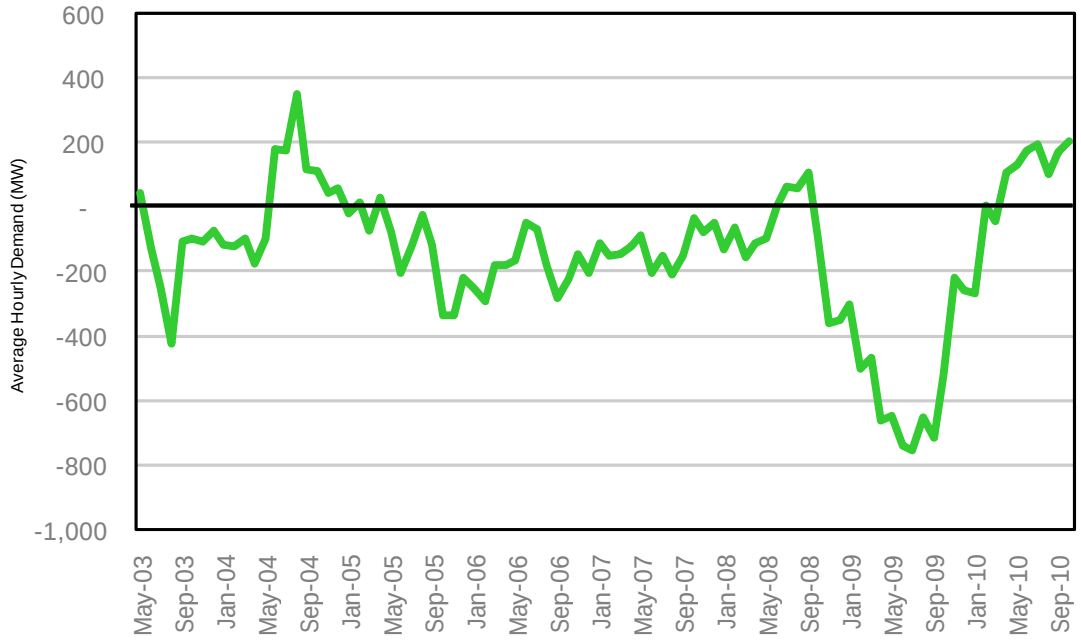
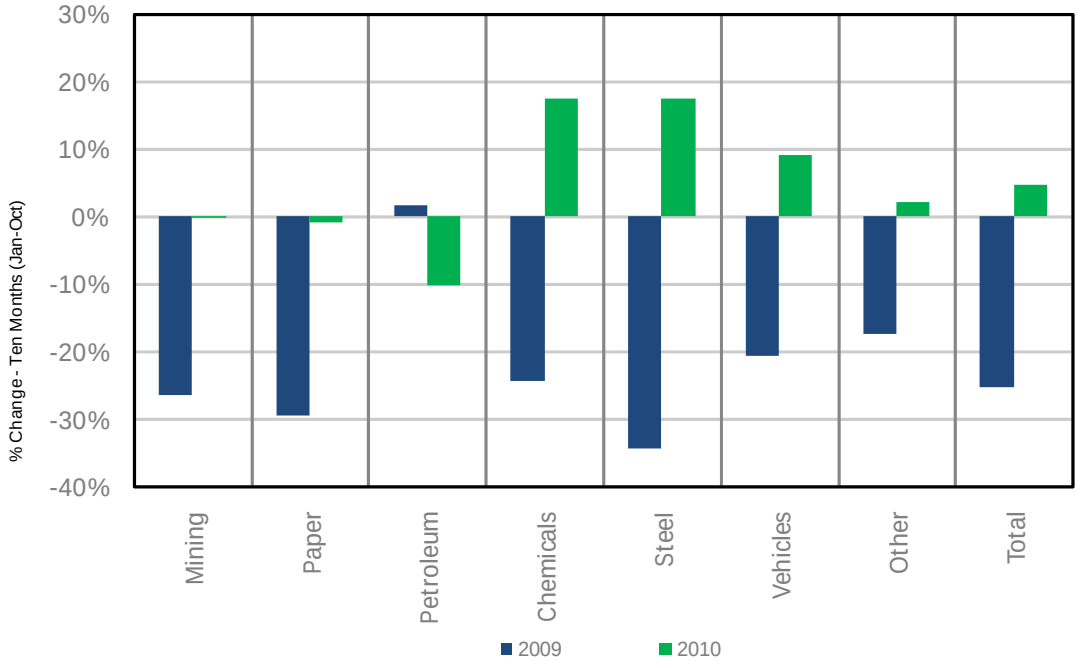


Figure 3.2: Wholesale Customers' Change in Consumption by Industry Segment



Overall energy demand has followed a similar path to that of the industrial sector. Though not as volatile, energy demand growth has been flat or negative since 2005. Part of this is due to

economic factors but the growth in conservation, and, lately, embedded generation, has further eroded the demand for electricity on the IESO-controlled grid.

Figure 3.3 displays a moving average of weekly demand. The graph depicts the general decline in energy demand since the summer of 2005 and the steep decline due to the recession. The tail end shows the recent economic rebound.

Figure 3.3: Energy Demand – 52-Week Moving Average

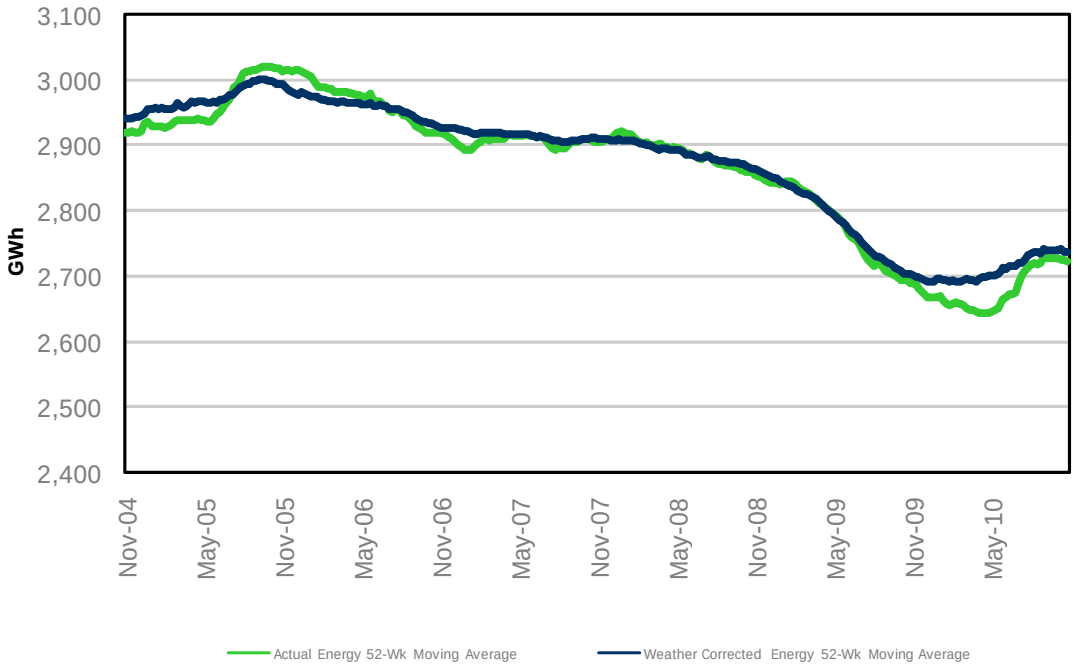


Table 3.2 contains the weekly energy demand for the past six months. The table has the actual and weather-corrected demand for each week and notes any item of significance for the week. If the weather-corrected demand is greater than the actual demand, it means that the actual weather was milder than normal. Additional history is available in the 18-Month Outlook Tables spreadsheet in Table 3.3.1.

Table 3.2: Historical Weekly Energy Demand

Week Number	Week Ending	Peak Day	Actual Energy (GWh)	Corrected Energy (GWh)	Notes
17	02-May-10	27-Apr-10	2,454	2,534	
18	09-May-10	05-May-10	2,482	2,461	
19	16-May-10	14-May-10	2,475	2,454	
20	23-May-10	20-May-10	2,471	2,467	
21	30-May-10	26-May-10	2,867	2,583	Victoria Day
22	06-Jun-10	31-May-10	2,735	2,704	
23	13-Jun-10	11-Jun-10	2,547	2,508	
24	20-Jun-10	18-Jun-10	2,706	2,699	
25	27-Jun-10	23-Jun-10	2,823	2,778	
26	04-Jul-10	28-Jun-10	2,605	2,567	Canada Day
27	11-Jul-10	08-Jul-10	3,268	3,113	
28	18-Jul-10	15-Jul-10	3,105	2,972	
29	25-Jul-10	21-Jul-10	3,012	2,828	
30	01-Aug-10	27-Jul-10	2,841	2,748	
31	08-Aug-10	04-Aug-10	2,936	2,848	Civic Holiday
32	15-Aug-10	10-Aug-10	3,126	2,983	
33	22-Aug-10	16-Aug-10	2,801	2,708	
34	29-Aug-10	29-Aug-10	2,722	2,662	
35	05-Sep-10	31-Aug-10	3,035	2,893	
36	12-Sep-10	07-Sep-10	2,505	2,495	Labour Day
37	19-Sep-10	13-Sep-10	2,489	2,578	
38	26-Sep-10	24-Sep-10	2,541	2,506	
39	03-Oct-10	27-Sep-10	2,474	2,450	
40	10-Oct-10	05-Oct-10	2,465	2,494	
41	17-Oct-10	13-Oct-10	2,436	2,478	
42	24-Oct-10	18-Oct-10	2,514	2,436	
43	31-Oct-10	26-Oct-10	2,499	2,556	

3.3 Historical Peak Demand

Peak demands are generally weather-driven, weekday events. Peak demands have declined as industrial loads fell during the recession. The lower levels of economic activity impacts minimum, peak and overall energy demand. Figure 3.4 shows the wholesale customers' consumption at the time of the monthly peak and the average hourly consumption for the month. The graph clearly shows the economic impact on peak demands. It also illustrates that average and peak demands are highly correlated.

The same pattern can be seen at the system level as the recession impacted overall demand. Figure 3.5 shows the 52-week moving average of peak demand. Here a drop similar to that seen in the wholesale customers' consumption is evident. Roughly 1,200 MW of total demand was lost during the recession followed by a modest rebound of 500 MW over the recovery period to date.

Table 3.3 shows the actual and weather-corrected weekly peak demand for the past six months.

Figure 3.4: Wholesale Customers' Coincident Peak and Average Hourly Consumption

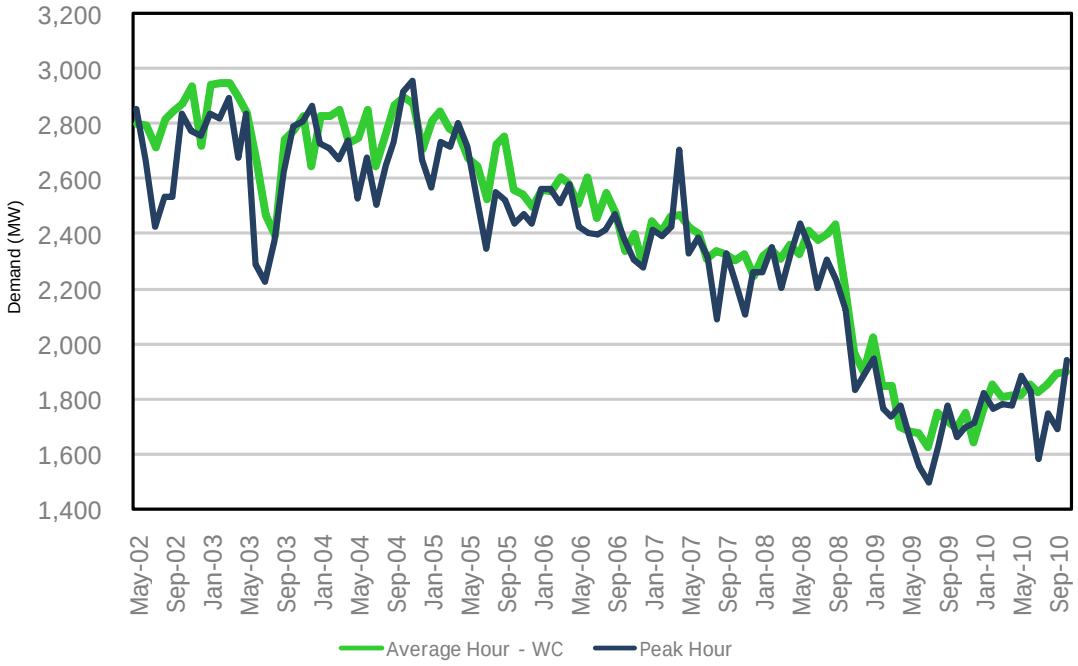


Figure 3.5: Peak Demand – 52-Week Moving Average

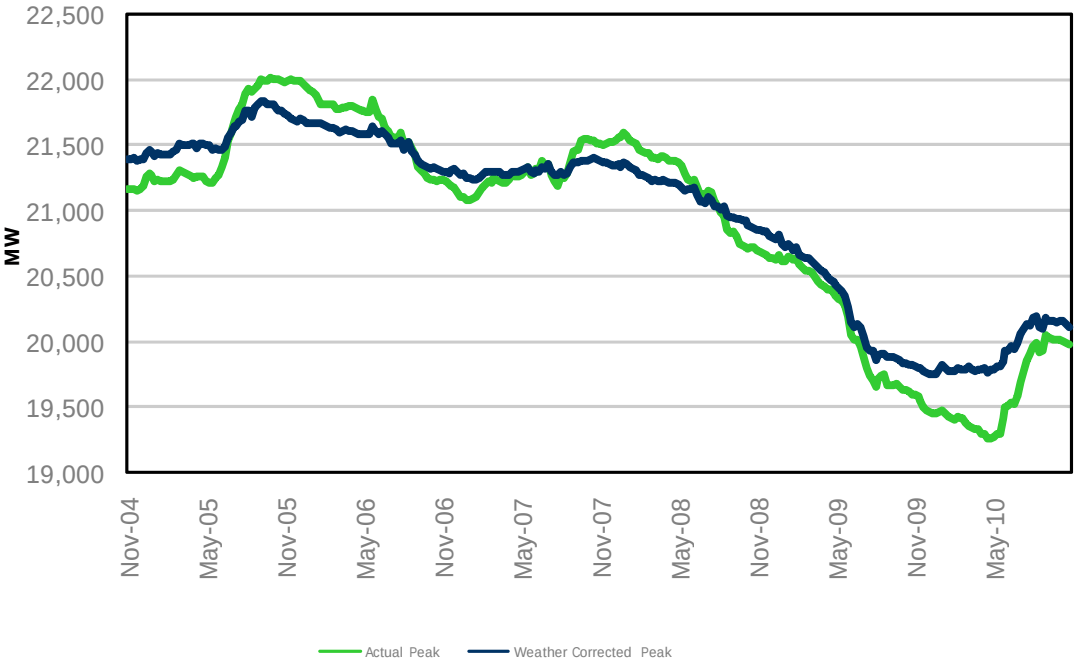


Table 3.3: Weekly Peak Demand

Week Number	Week Ending	Peak Day	Actual Peak (MW)	Weather Corrected Peak (MW)	Peak Day Temperature
17	02-May-10	Tue-Apr-27	16,709	18,648	9.4
18	09-May-10	Wed-May-5	17,332	17,269	26.9
19	16-May-10	Fri-May-14	17,988	17,749	20.4
20	23-May-10	Thu-May-20	17,812	17,226	28.3
21	30-May-10	Wed-May-26	22,904	19,757	31.4
22	06-Jun-10	Mon-May-31	20,993	20,999	27.6
23	13-Jun-10	Fri-Jun-11	17,858	17,560	22.7
24	20-Jun-10	Fri-Jun-18	19,340	19,295	25.0
25	27-Jun-10	Wed-Jun-23	21,527	21,654	28.3
26	04-Jul-10	Mon-Jun-28	21,415	22,051	28.9
27	11-Jul-10	Thu-Jul-8	25,075	23,916	33.3
28	18-Jul-10	Thu-Jul-15	23,661	23,022	28.9
29	25-Jul-10	Wed-Jul-21	22,329	21,163	30.1
30	01-Aug-10	Tue-Jul-27	22,472	21,768	28.3
31	08-Aug-10	Wed-Aug-4	23,661	22,879	31.5
32	15-Aug-10	Tue-Aug-10	23,531	22,427	29.4
33	22-Aug-10	Mon-Aug-16	21,052	20,038	27.0
34	29-Aug-10	Sun-Aug-29	20,151	18,924	30.1
35	05-Sep-10	Tue-Aug-31	24,917	24,024	32.9
36	12-Sep-10	Tue-Sep-7	19,476	18,419	29.6
37	19-Sep-10	Mon-Sep-13	17,627	18,728	23.6
38	26-Sep-10	Fri-Sep-24	18,811	18,054	30.5
39	03-Oct-10	Mon-Sep-27	17,718	17,785	15.7
40	10-Oct-10	Tue-Oct-5	17,528	18,354	15.0
41	17-Oct-10	Wed-Oct-13	17,631	17,967	14.8
42	24-Oct-10	Mon-Oct-18	17,704	17,386	11.4
43	31-Oct-10	Tue-Oct-26	17,510	17,867	20.5

3.4 Load Duration Curves

The following graphs display the load duration curves for the summer months – June, July and August - for the past three years. From an economic perspective, we would expect to see the highest demand in 2008 (pre-recession), next highest in 2010 (post-recession) and lowest in 2009 (recession). However, the figures are not weather-corrected so the weather and the level of economic activity will influence the shape of each of the graphs (Figures 3.6 to 3.8).

For June, the 2008 curve is the highest of the past three years. June 2008 was the warmest and not subject to the recessionary impacts felt in 2009 and 2010. With the coolest weather and in the depths of the recession, June 2009 is the lowest line.

For July, the 2010 curve is the highest as it was warmer than both 2009 and 2010. The 2009 curve is significantly lower than the other two curves as July 2009 was very mild and subject to the full effects of the recession.

August 2010 was the warmest of the three previous Augusts, slightly warmer than 2009 and significantly warmer than 2008. Once again this is borne out in the graph.

Figure 3.6: June Load Duration Curve

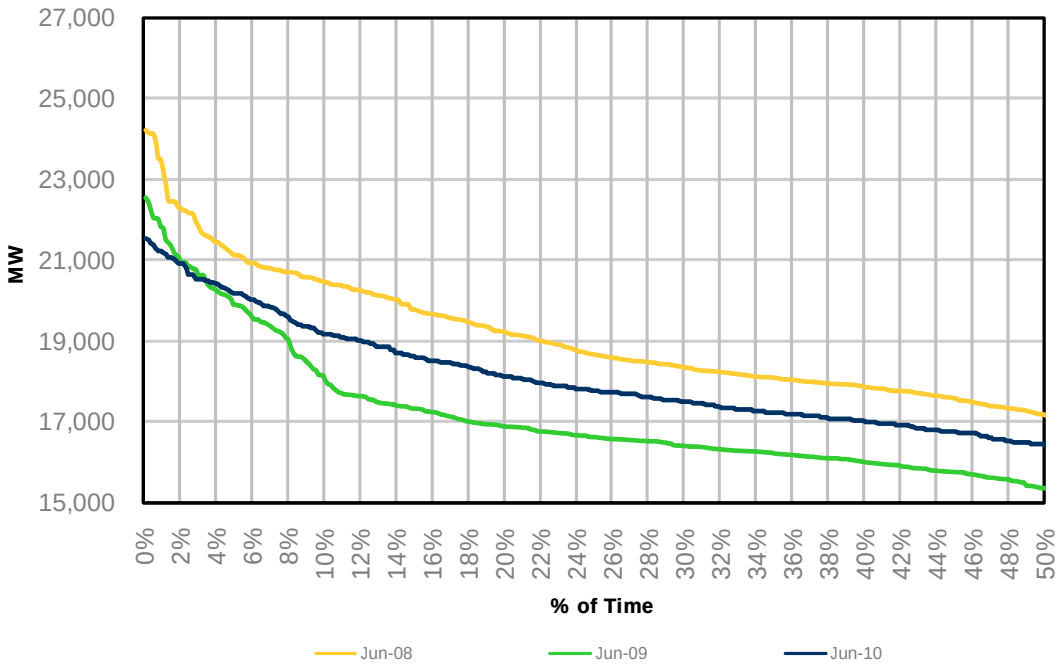


Figure 3.7: July Load Duration Curve

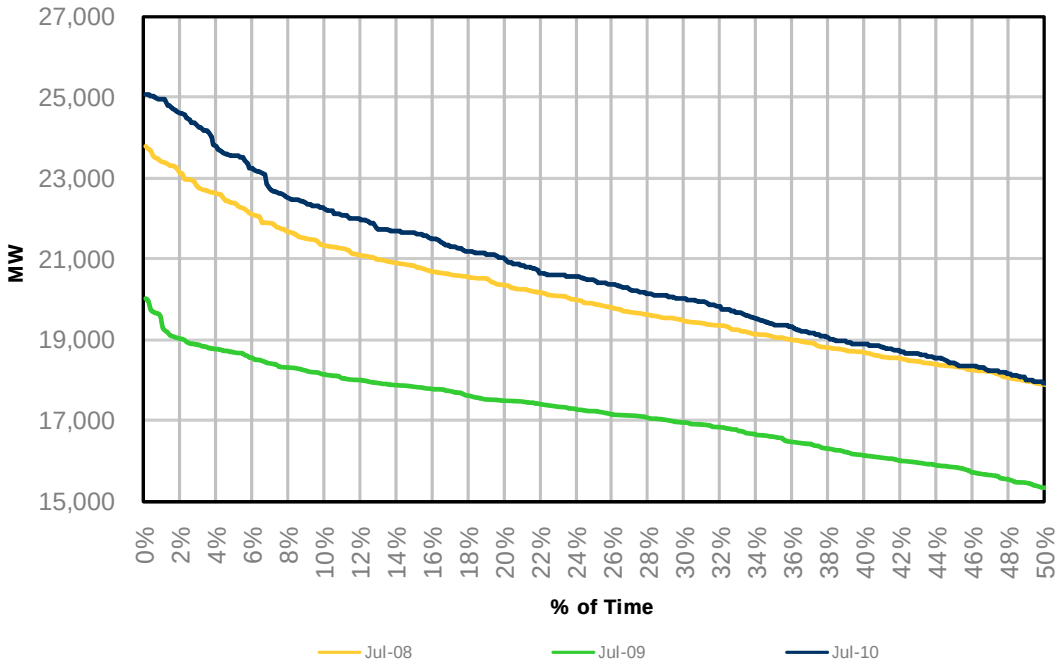
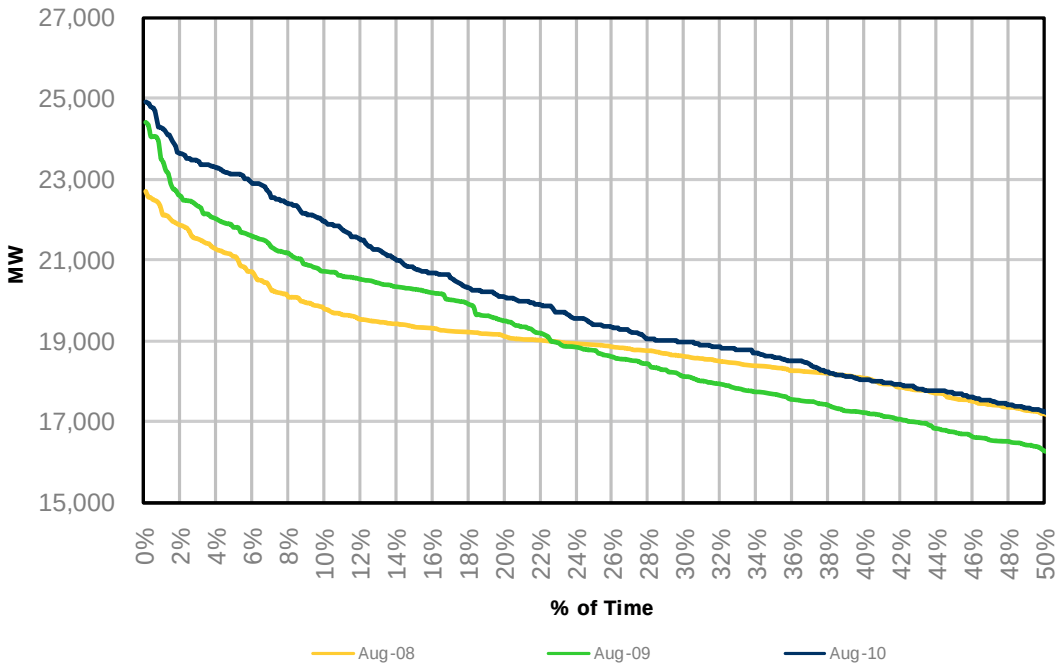


Figure 3.8: August Load Duration Curve



Data for 2009 and 2010 show the impact – to varying degrees – of the recession. Beyond that the weather influenced the load duration curves. June 2009, June 2010 and August 2008 were cooler than normal whereas July 2010 and August 2010 were much warmer than normal.

3.5 Historical Minimum Demand

Due to operational concerns about surplus baseload generation this section was added to examine historical minimum demand. Except for the winter period where minimum demands are higher, minimums are driven by economics rather than weather impacts. Minimums usually occur on weekends or holidays (and in many cases holiday weekends) during the early hours of the morning. Figure 3.9 shows the minimum demands for each season for the past 16 years. The fall and spring are most interesting as they would have very little weather impact and would be illustrative of the underlying economic demand.

The graph clearly illustrates the trajectory of the economy over the past 16 years. Demand increased through the latter half of the 90s and the early part of this decade before peaking in 2004-05. Since that time both minimum and industrial demands have been declining.

Figure 3.10 shows the spring minimum and the annual weather-corrected energy demand. As stated above, both lines follow the path highly influenced by the Ontario economy.

Figure 3.9: Seasonal Minimum Demands

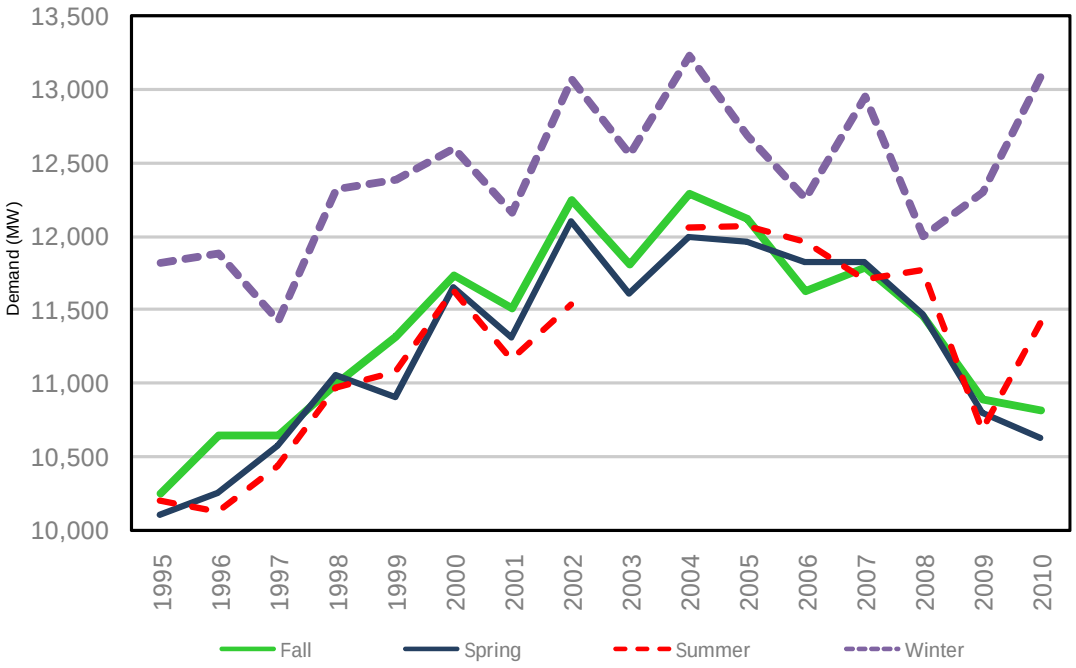
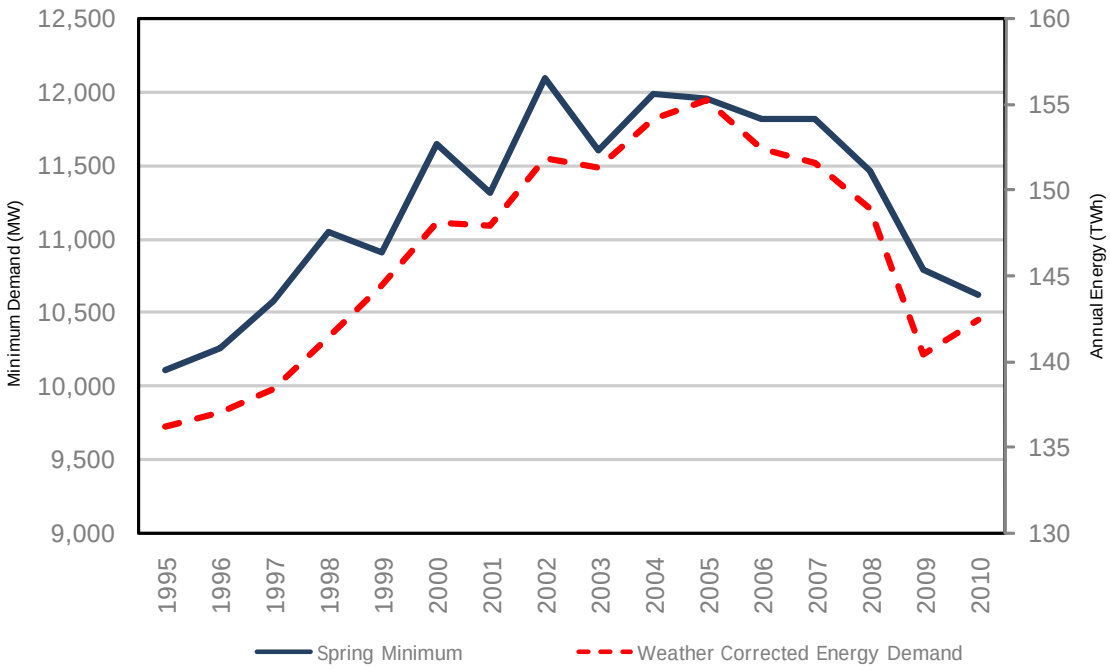


Figure 3.10: Spring Minimum and Annual Energy Demands



- End of Section -

4.0 Forecasting Process and Assumptions

A detailed description of the forecasting methodology can be found in the document entitled "Methodology to Perform Long Term Assessments" (IESO_REP_0266) (found on the IESO web site at http://www.ieso.ca/imoweb/pubs/marketReports/Methodology_RTAA_2010dec.pdf).

The form and structure of the model has not changed since the last Outlook. The most recent demand, weather and economic data were incorporated into the model, which was re-estimated based on this information.

The forecast of demand requires inputs and this section covers each class of drivers.

4.1 Calendar Drivers for Forecast

Calendar variables are addressed in the Methodology document. Essentially, forecasting the calendar – days of the week, holidays, sunrise and sunset – is pretty straightforward.

4.2 Economic Drivers for Forecast

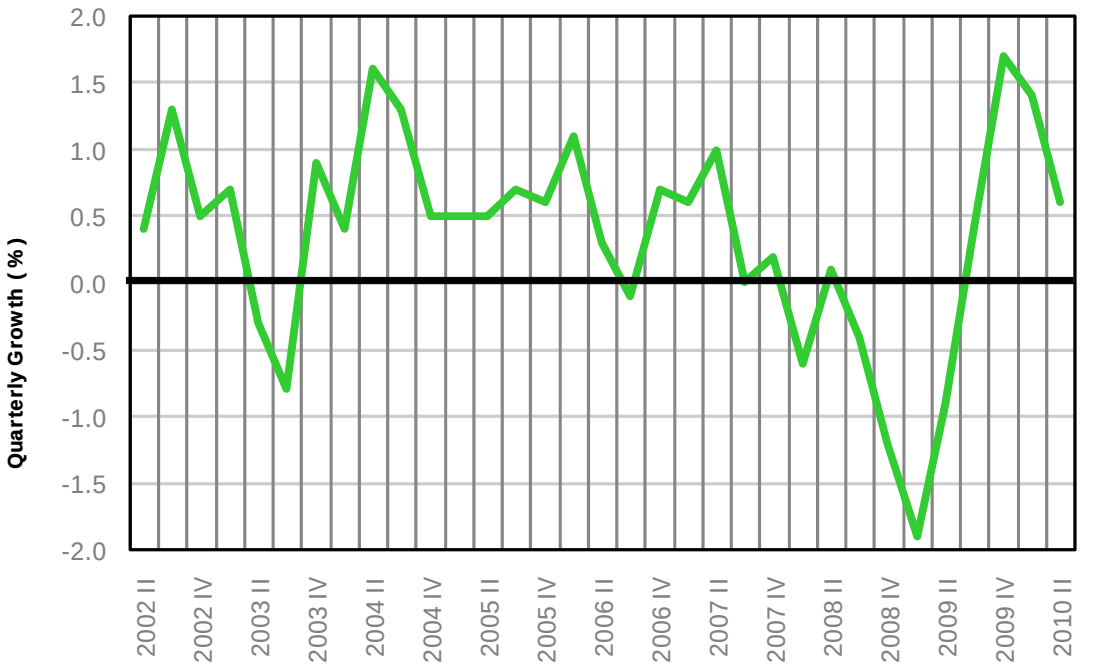
To produce an energy and peak demand forecast, an economic forecast of various drivers is required. The IESO uses a consensus of four publicly available provincial forecasts to generate economic drivers. The IESO also purchases economic forecasts for additional insight and analysis. Table 4.1 summarizes the key economic drivers for the demand forecast. The Ontario growth index is a weighting of the economic drivers as they relate to demand.

Table 4.1: Forecast of Ontario Economic Drivers

Year	Ontario Employment		Ontario Housing Starts		Ontario Growth Index	
	Thousands	Annual Growth (%)	Thousands	Annual Growth (%)	Index	Annual Growth (%)
1995	5,098	2.0	31.9	-23.3	1.025	1.42
1996	5,161	1.2	39.5	23.9	1.036	1.05
1997	5,277	2.3	50.0	26.5	1.054	1.69
1998	5,440	3.1	50.1	0.2	1.077	2.18
1999	5,621	3.3	62.9	25.6	1.102	2.34
2000	5,801	3.2	67.4	7.1	1.128	2.39
2001	5,924	2.1	70.3	4.2	1.150	1.88
2002	6,014	1.5	79.6	13.3	1.169	1.65
2003	6,203	3.1	80.9	1.7	1.198	2.49
2004	6,310	1.7	79.9	-1.3	1.219	1.78
2005	6,390	1.3	73.2	-8.4	1.237	1.49
2006	6,485	1.5	67.8	-7.4	1.256	1.53
2007	6,585	1.6	62.8	-7.4	1.275	1.47
2008	6,686	1.5	71.9	14.6	1.294	1.50
2009	6,535	-2.3	47.9	-33.3	1.286	-0.63
2010 (f)	6,638	1.6	57.0	18.8	1.303	1.38
2011 (f)	6,731	1.4	54.1	-5.0	1.320	1.26
2012 (f)	6,839	1.6	52.1	-3.6	1.337	1.33

In the final quarter of 2009 Ontario posted GDP growth of 1.7%, the highest quarterly growth since the last quarter of 1999. 2010 started off well with another strong showing with 1.4% growth. However, at that time a number of issues started to appear, most notably concerns about the debt levels of several countries. Global economic growth began to weaken and concerns about a "double-dip" recession were frequent topics of discussion. The next quarter Ontario registered GDP growth of 0.6% validating the earlier concerns. Ontario's quarterly GDP growth is depicted in Figure 4.1.

Figure 4.1: Ontario's GDP Growth



With high debt levels governments have limited resources to stimulate the economy again. With interest rates near zero and concerns about deflation and high unemployment levels the U.S. Federal Reserve has embarked on an aggressive program of "quantitative easing". There is significant debate on whether this will spur U.S. economic growth or merely devalue the U.S. dollar and drive up commodity prices. In either case, with its ties to the U.S. economy, Ontario's own economy will be impacted by the results.

Additionally, there has been a move towards austerity measures in order to rein in public debt. There will be a swing towards fiscal restraint as the current slate of fiscal stimulus measures is eliminated. This could introduce additional volatility – a boom-bust type of cycle.

Against this backdrop, economic growth is expected to be fairly muted over the forecast horizon. High commodity prices and a low U.S. dollar will remain a challenge for Ontario's manufacturing sector. These factors combined with weak global demand makes the prospect of a strong recovery in industrial demand unlikely for the foreseeable future.

Ultimately, the economic forecast still faces considerable downside risk due to the debt concerns of a number of nations.

4.3 Weather Drivers for Forecast

Since forecasting long-term weather is not possible, weather scenarios are generated based on historical data. The analytical studies that the IESO produces serve a variety of purposes and needs. As such, a variety of inputs are required. Therefore the IESO produces demand forecasts based on a number of different weather scenarios. The most commonly utilized scenarios are Normal and Extreme.

The weather scenarios are generated using the following steps:

- For each day over the past 31 years a "weather factor" is calculated based on the weather conditions of that day (temperature, wind speed, cloud cover and humidity). This weather factor represents the MW impact on demand if those weather conditions were observed in the forecast horizon.
- The daily weather factors are sorted from highest to lowest for each month.
- Normal weather is based on the median value of the sorted weather factors across the 31 years of history. For example, the median value of the maximum weather factor from each January from 1978 to 2008 would be the first value for the normal January. The median value of the second highest weather factor from each January from 1978 to 2008 would be the second day in the normal January. This is repeated until all days in the month are generated. Once the normal months are created they are mapped to the calendar based on the weekly average distribution of weather. The weekly peak eliciting weather is always mapped to Wednesday to ensure that peaks do not occur on weekends or holidays.
- Extreme weather is generated in a similar manner except that we use the maximum, rather than the median value from the sorted data.

Load Forecast Uncertainty (LFU) - a measure of demand fluctuations due to weather variability - is a critical part of the analysis. In conjunction with the normal weather forecast, LFU is valuable in determining a distribution of potential outcomes under various weather conditions. The resource adequacy assessments use the normal weather forecast in combination with LFU to consider a full range of peak demands that can occur under 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 useful when examining peak conditions but is unrealistic from an energy demand standpoint, as severe weather conditions do not persist over a long time period.

The 18-Month Outlook Tables spreadsheet includes Table 3.3.5 which has the 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 IESO uses six weather stations in the demand models – the data in the table is for Toronto. The weather scenarios were updated for data through the end of December 2007.

4.4 Conservation and Demand Management

Conservation and demand management within the Outlook are broken into three groups: conservation, embedded generation and demand management. Conservation includes energy efficiency programs, conservation behaviour, fuel switching and the impacts of smart meters.

Embedded generation refers to load-displacing generation that is located on the Market Participants' side of the meter. This would include all generation under the Renewable Energy Standard Offer Program (RESOP) and some generation under the Green Energy Act's Feed-in Tariff (FIT). Demand management includes the OPA's Demand Response programs and the IESO's Dispatchable Loads program. Each of these groups will impact demand throughout the forecast.

Projected conservation numbers are provided to the IESO by the Ontario Power Authority (OPA). These projections are based on existing and future programs. Projected conservation impacts are decremented from demand.

Information on embedded generation is factored into the forecast. Embedded generation will displace demand that would have been met through the grid. Although the demand for electricity is unaltered, the source of supply will not be from the grid. Therefore the impacts of embedded generation are decremented from the forecast.

Demand response capacity projections are also provided by the OPA. Demand management programs represent a demand reduction that will be dispatched like a resource or generator. Conceptually, these programs represent capacity that can be called on when needed. Therefore, demand management is treated as a resource with a capacity value in MW. Adjustments are made based on historical data for the amount of demand management that is deemed to be reliably available.

Over the course of the forecast, the amount of conservation and demand management are expected to increase. Conservation - at the time of the winter peak - is expected to grow by 75 MW. Embedded generation's available capacity at the time peak is expected to grow by 50 MW over the outlook time frame. Lastly, demand management programs are projected to increase their capacity from 685 MW to 1,049 MW over the course of the forecast horizon.

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