18-MONTH OUTLOOK

From June 2012 to November 2013

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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 electricity demand forecast for the period from June 2012 to November 2013 and supersedes the previous forecast released in February 2012.

Economic Outlook

The on-going Eurozone financial issues continue to impact the global economy both in terms of financial markets and in the demand for goods and services. A combination of recession, austerity measures and an inability to meet debt servicing without third party help have made the situation nearly untenable.

There are currently nine European nations in recession, including some of the larger economies (U.K., Spain and Netherlands). Recession, in combination with strict austerity measures makes it increasingly difficult to manage their debts loads or even meet the interest payments on their debt. A year ago the challenge facing the Eurozone nations was containing the Greek contagion. Now the issue has grown to include questions about the future of Greek membership in the trade union and debt concerns levels of larger nations such as Spain and Italy. All this uncertainty will continue to cast a pall over the global economy.

Though not totally immune from the European crisis, North American could be insulated due to the large U.S. market. Though the U.S. ended 2011 with strong growth it started 2012 with low growth figures. In Ontario, austerity measures at both the federal and provincial level certainly will have a moderating impact on growth. Finally, oil prices will act as a drag on the economy. Oil as the world's most common commodity impacts all aspects of the economy and leads to inflationary pressures. Higher inflation would be a concern as it could lead to higher interest rates which in combination with high debt levels could have long-term negative impacts.

Overall, the combined impacts do not bode well for growth over the forecast horizon. Low economic growth, high debt levels, austerity measures, high unemployment levels are issues that will be resolved but it will take a deal of time for them to work out.

The keys to the economic outlook are:

- Spending restraint – Both governments and consumers have high debt loads and will look to keep their spending prudent.
- Eurozone Debt – Although not a direct impact on Ontario this issue will continue to impact the mood of the global economy.
- U.S. Economy – An improved U.S. economy will help stimulate the demand for Ontario goods. The outlook is for improvement in U.S. but that demand may be tempered by the exchange rate. As an oil exporter, high oil prices do put upward

pressure on the Canadian dollar. This does hamper Ontario's energy intense export sector.

Economic growth is expected to be very modest over the forecast horizon.

Actual Weather and Demand

Since the last Ontario Demand Forecast document was published, actual demand and weather data have been reported for the six months of November through April.

For the six months actual energy demand was lower for each of the months compared to the same month a year prior. The winter was extremely mild and once the electricity demand was adjusted for the deviation from normal, the numbers were much higher. However, the weather-corrected data showed the same year-over-year declines. Only November and February showed an increase over the previous year, but once you account for the extra leap day in February the month showed a year-over-year decline. For the six months actual energy demand was down 3.5% compared to a year previous as compared to a 0.4% decline for the weather-corrected values. The large difference between the growth rates shows the weather impact.

The overall weather was much milder than normal with each of the months ranking fairly high compared to the 42-43 years of weather history since 1970. November (2nd), December (5th), January (6th), February (2nd) and March (1st) all ranked in the top quartile of mildest weather. Only April (17th) was anywhere near normal. Overall, the weather correction for the six months was 2.2 TWh.

The winter peak demand occurred on January 3rd which was the coldest day of the winter with an afternoon high of -14.3°C. The peak demand was 21,847 MW (22,144 MW weather-corrected) and is lower than last year's winter peak demand of 22,733 MW (22,530 MW weather-corrected).

The mild weather was reflected in the monthly minimum demands. For each month other than January the minimum demands were lower than the previous years.

Wholesale consumers' load had shown a significant decline in the latter half of 2011. However since the beginning of 2012 wholesale consumption has started to exhibit some strength. April 2012 had the largest increase since March 2010. Wholesale consumption has shown an up and down pattern that reflects the uncertainty of the global economy.

Demand Forecast

The 18-Month Outlook's demand forecast includes the impact of additional conservation savings and demand reductions from projected off-grid or embedded 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 embedded generation are decremented from demand, whereas demand response programs are included in our analysis as a resource

under the category of demand measures. Conservation, embedded 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 will remain virtually flat 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 be relatively flat this year with a very modest bump in growth for 2013.

Table 1: Peak and Energy Demand Forecast

Season	Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Summer 2012	23,298	25,768
Winter 2012-13	22,192	23,395
Summer 2013	23,301	25,582
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	142.1	1.2%
2011 Energy	141.2	-0.6%
2012 Energy (Forecast)	141.4	0.1%
2013 Energy (Forecast)	142.8	1.0%

- 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 June 2011 to November 2013. It supersedes the previous forecast released in February 2012.

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 website at http://www.ieso.ca/imoweb/pubs/marketReports/Methodology_RTAA_2012jun.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 2011. 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_2012jun.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.

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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)
10-Jun-12	19,611	23,281	1,388	2,586	10-Mar-13	20,881	21,733	404	2,899
17-Jun-12	20,425	24,325	1,586	2,665	17-Mar-13	19,895	20,729	460	2,836
24-Jun-12	22,020	24,825	776	2,675	24-Mar-13	19,592	20,525	587	2,792
01-Jul-12	22,569	24,773	916	2,785	31-Mar-13	18,963	19,836	545	2,640
08-Jul-12	22,546	24,456	758	2,748	07-Apr-13	18,766	20,110	503	2,660
15-Jul-12	23,298	25,768	949	2,828	14-Apr-13	18,216	19,124	472	2,604
22-Jul-12	23,240	24,918	821	2,852	21-Apr-13	17,833	18,800	377	2,540
29-Jul-12	22,941	25,058	678	2,732	28-Apr-13	17,457	18,436	399	2,525
05-Aug-12	22,957	25,733	936	2,841	05-May-13	17,355	20,223	433	2,473
12-Aug-12	22,376	25,138	1,050	2,785	12-May-13	17,904	20,843	635	2,488
19-Aug-12	22,235	24,175	1,039	2,790	19-May-13	17,897	20,480	772	2,457
26-Aug-12	21,822	24,275	818	2,747	26-May-13	19,345	22,937	771	2,445
02-Sep-12	21,595	24,785	994	2,759	02-Jun-13	19,336	22,405	1,287	2,532
09-Sep-12	20,801	23,364	1,486	2,638	09-Jun-13	19,797	23,469	1,384	2,609
16-Sep-12	19,267	22,811	1,308	2,564	16-Jun-13	20,908	24,500	1,382	2,690
23-Sep-12	19,235	21,453	808	2,512	23-Jun-13	21,399	24,996	774	2,704
30-Sep-12	18,984	20,233	752	2,528	30-Jun-13	22,755	24,916	917	2,817
07-Oct-12	18,015	18,592	512	2,513	07-Jul-13	22,741	24,643	771	2,712
14-Oct-12	17,687	18,577	579	2,481	14-Jul-13	23,301	25,582	1,032	2,835
21-Oct-12	17,837	18,378	500	2,536	21-Jul-13	23,164	24,881	908	2,830
28-Oct-12	18,471	18,904	486	2,563	28-Jul-13	22,787	24,579	945	2,778
04-Nov-12	18,449	19,380	741	2,569	04-Aug-13	22,760	24,979	1,083	2,835
11-Nov-12	19,543	19,782	482	2,657	11-Aug-13	22,706	25,555	949	2,844
18-Nov-12	19,848	20,582	484	2,720	18-Aug-13	22,177	24,843	978	2,807
25-Nov-12	20,304	20,916	482	2,777	25-Aug-13	22,041	24,290	823	2,798
02-Dec-12	20,720	21,453	563	2,820	01-Sep-13	21,545	24,363	1,287	2,798
09-Dec-12	21,467	22,402	526	2,902	08-Sep-13	20,888	23,429	1,538	2,650
16-Dec-12	21,485	22,519	631	2,923	15-Sep-13	19,956	22,900	1,294	2,558
23-Dec-12	21,798	22,762	510	2,966	22-Sep-13	19,732	21,574	607	2,575
30-Dec-12	19,900	21,264	429	2,695	29-Sep-13	19,280	20,276	786	2,569
06-Jan-13	21,336	22,948	687	2,884	06-Oct-13	18,143	18,685	487	2,526
13-Jan-13	22,192	23,164	674	3,038	13-Oct-13	17,728	17,936	705	2,513
20-Jan-13	22,194	23,395	648	3,051	20-Oct-13	17,633	18,099	822	2,513
27-Jan-13	21,889	22,948	624	3,012	27-Oct-13	18,581	19,009	541	2,596
03-Feb-13	21,971	22,941	558	3,006	03-Nov-13	18,586	19,007	434	2,600
10-Feb-13	21,935	22,769	480	3,030	10-Nov-13	19,603	19,741	385	2,672
17-Feb-13	21,353	22,542	637	2,985	17-Nov-13	19,937	20,668	484	2,726
24-Feb-13	20,968	22,330	538	2,881	24-Nov-13	20,407	21,018	680	2,791
03-Mar-13	20,788	22,240	483	2,921	01-Dec-13	20,831	21,562	501	2,827

Compared to the previous forecast, weekly peak and energy demand are lower for most weeks. 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

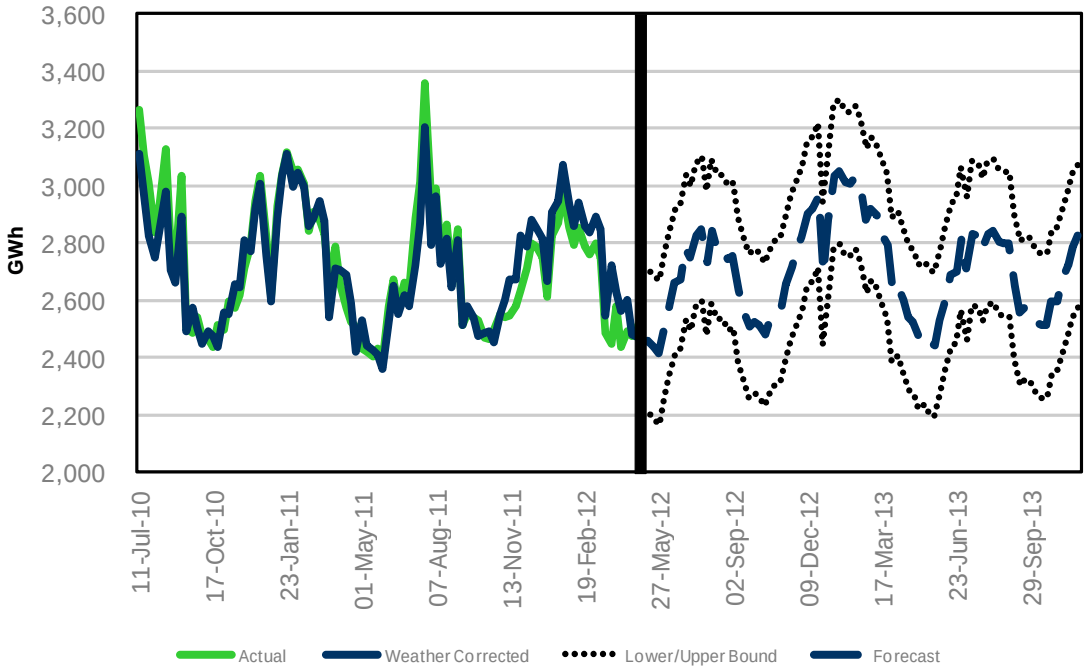
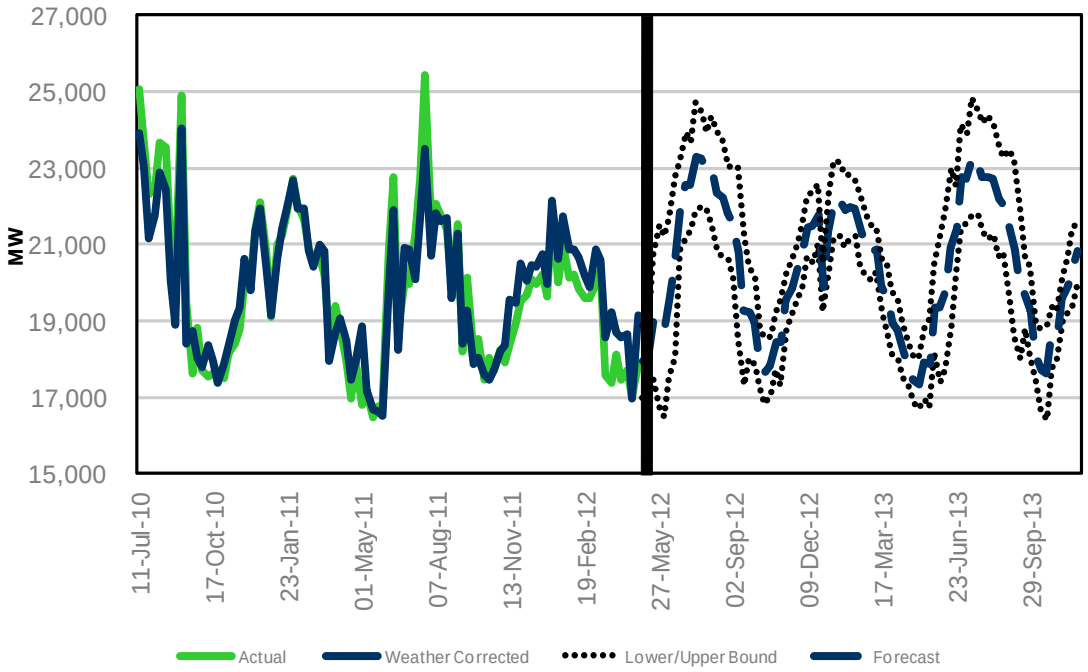


Figure 2.2: Weekly Peak Demand – History and Forecast



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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 – November to April

Since the last Ontario Demand document actuals have been recorded for the period November to April. The winter of 2011-12 was very unusual as it was extremely mild. Table 3.1 contains a summary of the weather and demand for the past six months.

November

- November was milder than normal in terms of both average and peak temperature. It ranked as the second mildest average temperature and the sixth's mildest peak since 1970. The coldest day was not the peak day.
- The 19,673 MW peak was low based on historical standards but not surprising given the weather. The weather-corrected peak was a higher 21,002 MW. Energy demand was quite low as well (11.1 TWh) but higher once the weather was factored in (11.6 TWh). These values are low by historical standards but similar to those experiences during the recession.
- Minimum demand (11,284 MW) was the lowest November minimum going back to 1995.
- Wholesale industrial consumption was 2.5% lower than November 2010 and 3.8% above the recessionary November 2009.

December

- December's average temperature was milder than normal and ranks as the fourth mildest since 1970. The minimum temperature for the month was milder than normal but was not the peak day as it was during the Christmas break.
- The actual peak of 20,204 MW was the lowest December peak going back to 1995. After correcting for weather, the peak (20,749 MW) still ranks as the lowest since 1995.
- Minimum demand (11,974 MW) was the lowest December record going back to 1997.
- Wholesale industrial consumption was 3.1% lower than December 2010 and 6.0% above the recessionary December 2009.

January

- Like the rest of the winter January was milder than normal. The average temperature was the sixth mildest. Once again the peak temperature was slightly milder but near normal.
- The January peak was 21,847 MW, was the peak for the winter and occurred on the coldest day. It was low by historical standards and the weather-corrected 22,144 MW was also the lowest since the late 1990's. Energy demand for the month was 12.7 TWh (13.1 TWh weather-corrected) and also represent the lowest values since 1995. Weather-corrected energy demand was 1.0% lower than the previous January.

- Minimum demand (12,439 MW) was higher than January 2011 (11,835 MW). This is more a reflection of the 2011 minimum as the 2012 would only rank higher than 2011 in the last 17 years.
- Wholesale industrial energy demand was 3.0% lower than July 2010, but 9.0% above the recessionary July 2009.

February

- February's average temperature was the second mildest since 1970 ranking only behind February 1998. The coldest temperature was near normal but occurred on a weekend and therefore was not the peak day.
- The actual peak (19,956 MW) and energy demand (11.6 TWh) were lower than any February going back to the late 1990's. Weather corrected energy demand (12.0 TWh) initially shows an increase over the previous year but once you account for the extra leap year day demand is actually lower.
- Minimum demand (13,228 MW) was the lowest February minimum since 1996.
- Wholesale industrial energy demand was down 1.5% compared to the previous year and is roughly the same as the value for February 2009 which was the heart of the recession.

March

- March was the mildest in our records (starting 1970). Even the peak day was mild by historical standards.
- The month's peak demand of 20,332 MW (20,575 MW) were lower than any March since the late 1990's. Energy demand was 11.5 TWh (12.0 TWh weather-corrected). Weather-corrected demand – both peak and energy – were similarly the lowest since the turn of the century.
- Reflecting the mild weather, the minimum demand (11,250 MW) the lowest since 1995.
- Wholesale industrial energy demand was 0.3% higher than in March 2011. This was the first year over year increase in seven months and only the second in over a year.

April

- April was the only month in the review period where the average monthly temperature was even close to being normal. However, the coldest temperature was the highest since 1970. The net result would be near normal energy demand weather but very mild peak weather.
- The actual peak 17,874 MW (19,170 MW weather corrected) was lower than April 2011 but higher than April 2010. Energy demand (10.6 TWh and 10.8 TWh weather-corrected) was similar to that experienced in during the recession.
- Minimum demand (11,248 MW) was down slightly from April 2011 (-0.2%) but was much higher than that recorded in April 2009 or April 2010.
- For the second consecutive month wholesale industrial energy demand showed a year over year increase. Wholesale industrial consumption was up 3.3% over the previous April.

Table 3.3.2 of the 18-Month Outlook Tables spreadsheet contains monthly demand 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		November	December	January	February	March	April
Actual	Average Temperature (°C)	10.1	3.1	0.8	2.3	11.4	12.1
	Minimum Temperature (°C)	1.3	-6.1	-14.3	-9.1	-3.7	4.1
	Maximum Temperature (°C)	18.1	13.7	9.6	8.8	23.7	25.5
Monthly Normal	Normal Average Temperature (°C)	6.7	0.4	-3.3	-1.5	3.6	10.7
	Normal Minimum Temperature (°C)	-2.0	-8.4	-13.5	-13.5	-5.5	2.8
	Normal Maximum Temperature (°C)	18.9	13.4	6.7	8.2	16.7	25.0
Actual	Peak Demand (MW)	19,673	20,204	21,847	19,956	20,332	17,874
	Average Hour (MW)	15,439	16,306	17,090	16,681	15,440	14,781
	Minimum Hour (MW)	11,284	11,974	12,439	13,228	11,250	11,248
	90th Percentile (MW)	17,789	18,902	19,423	18,709	17,580	16,598
	Percent above 20,000 (MW)	0.0%	0.6%	4.2%	0.0%	0.3%	0.0%
	# of Hours Above 20,000 (MW)	0	4	31	0	2	0
	Energy Demand (GWh)	11,116	12,131	12,715	11,610	11,488	10,642
Weather Corrected	Peak Demand (MW)	21,002	20,749	22,144	20,713	20,575	19,170
	Energy Demand (GWh)	11,662	12,436	13,066	11,954	11,986	10,842
Forecast	Peak Demand (MW)	20,747	21,942	22,160	21,814	20,709	18,745
	Energy Demand (GWh)	11,623	12,865	13,280	12,203	12,265	10,867

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

Demand was relatively weak throughout 2011 as evidenced by the decline from 2010. The start to 2012 has been weak as well due to the extremely mild weather and weak economic conditions. For the first four months demand is down 3.7% compared to a year earlier. After adjusting for the weather the demand is 0.8% lower than a year previous. Adjusting for the additional leap day would translate into a 1.6% declined compared to the same period in 2011.

The wholesale customers' consumption provides an insight into the underlying economic conditions. Consumption was strong to start 2011 but faltered later in the year. However, recent months have shown a reversal to those declines. For the first four months of 2012 wholesale consumption was up 0.8% compared to 2011. After adjusting for the leap year, consumption would appear flat compared to a year earlier. This is encouraging as the previous six months had shown a reduction. Compared to the first four months of 2009 wholesale customers consumption has risen by a modest 0.9%.

Figure 3.1 shows the year-over-year change in wholesale customers' average hourly consumption. Consumption had been on a downward trend since the spring of 2005, a result of the appreciating Canadian dollar. Demand had started to increase just prior to the financial crisis of late 2008. 2010 was a year of recovery but 2011 was a minor step back due to the on-going global debt concerns.

Figure 3.2 shows the wholesale customers' average hourly load by industry segment for for the first four months of the years 2008-2012. The graph shows that those industries with the highest load levels have seen the greatest reduction in their load. However, those industries are also showing a marginal increase over 2011. More importantly it shows that none of the major industrial segments have surpassed their pre-recessionary levels.

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

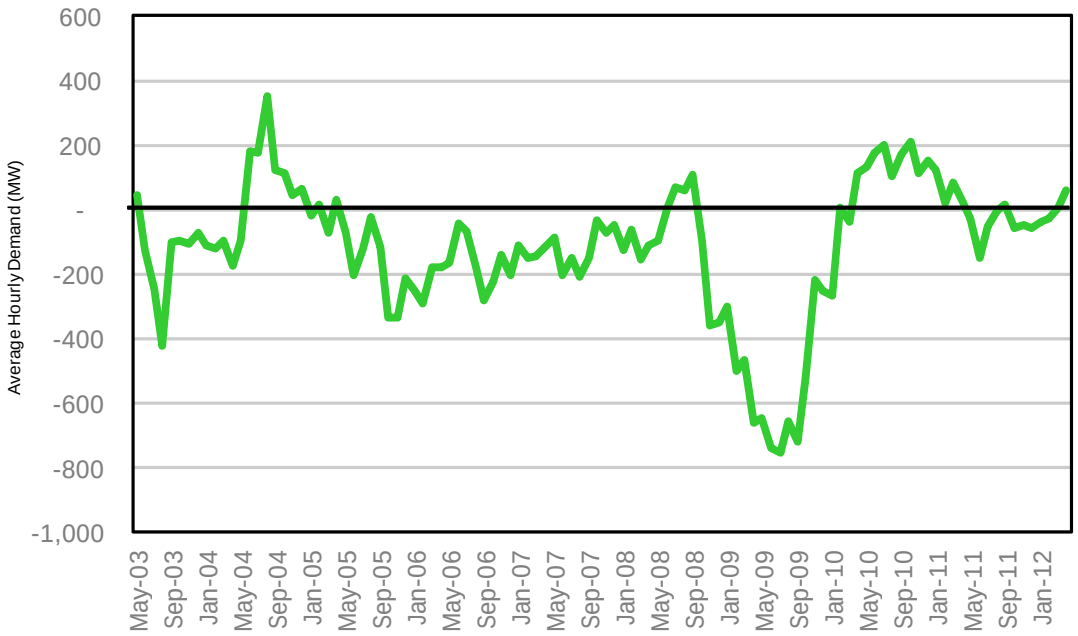
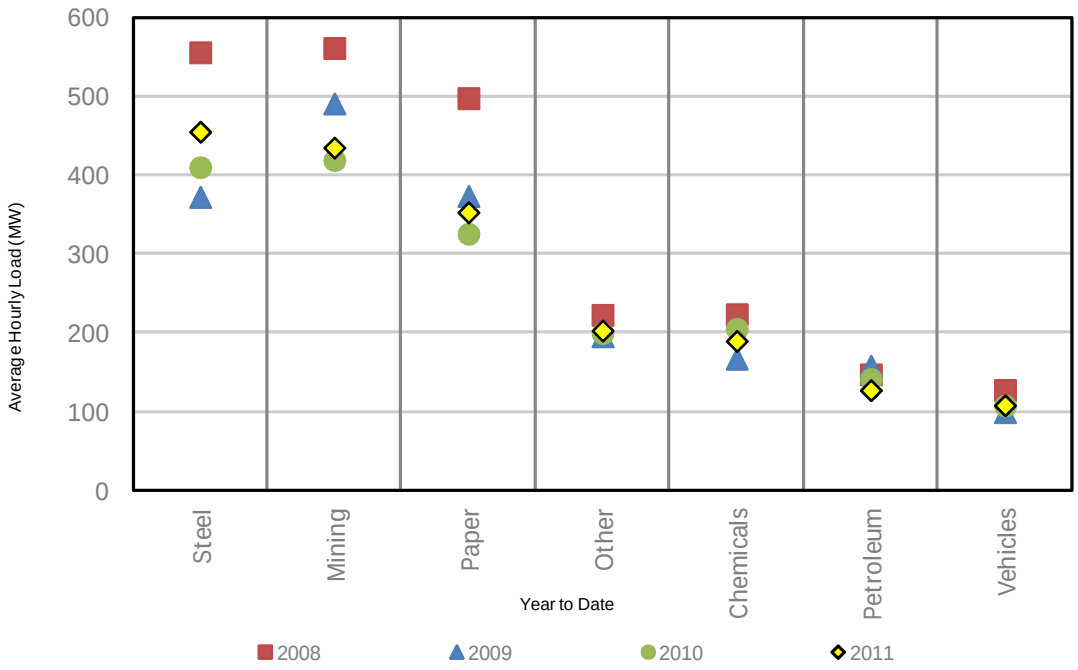


Figure 3.2: Wholesale Customers' Average Hourly Consumption by Industry Segment



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 embedded generation has further eroded the demand for electricity on the IESO-controlled grid.

Figure 3.3 shows quarterly energy demand and embedded generation. Though embedded generation shows seasonal volatility, the underlying upward trend is quite evident in the graph. Moving forward the embedded generation component will continue to grow as more FIT and Micro-FIT contracts come into commercial operation.

Figure 3.3: Quarterly Energy Demand and Embedded Generation

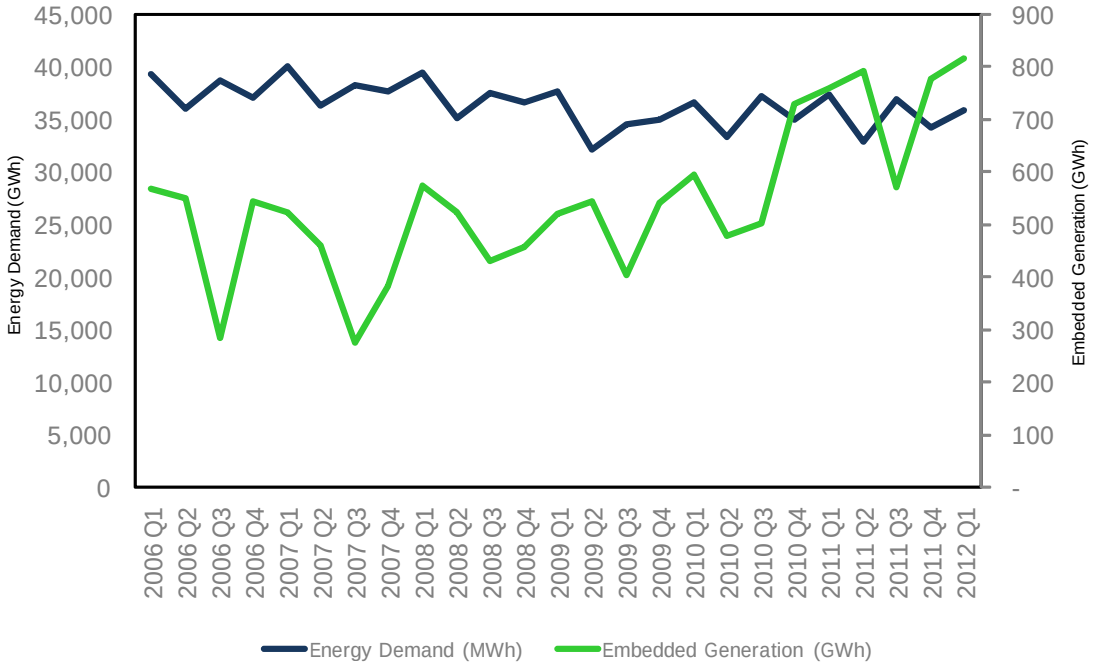


Table 3.2 contains the weekly energy demand for the past six months. The table has the actual and weather-corrected demand for each week and notes any item of significance for the week. If the weather-corrected demand is greater than the actual demand, it means that the actual weather was milder than 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
44	06-Nov-11	01-Nov-11	2,540	2,601	
45	13-Nov-11	11-Nov-11	2,550	2,672	
46	20-Nov-11	17-Nov-11	2,580	2,672	
47	27-Nov-11	22-Nov-11	2,635	2,830	
48	04-Dec-11	29-Nov-11	2,710	2,787	
49	11-Dec-11	07-Dec-11	2,799	2,883	
50	18-Dec-11	12-Dec-11	2,788	2,852	
51	25-Dec-11	20-Dec-11	2,752	2,818	Christmas Day
52	01-Jan-12	29-Dec-11	2,612	2,670	New Year's Day
1	08-Jan-12	03-Jan-12	2,830	2,912	
2	15-Jan-12	15-Jan-12	2,871	2,948	
3	22-Jan-12	18-Jan-12	2,983	3,072	
4	29-Jan-12	25-Jan-12	2,856	2,938	
5	05-Feb-12	30-Jan-12	2,797	2,861	
6	12-Feb-12	07-Feb-12	2,852	2,940	
7	19-Feb-12	14-Feb-12	2,791	2,861	
8	26-Feb-12	21-Feb-12	2,759	2,838	Family Day
9	04-Mar-12	29-Feb-12	2,803	2,896	
10	11-Mar-12	05-Mar-12	2,750	2,847	
11	18-Mar-12	12-Mar-12	2,489	2,548	
12	25-Mar-12	22-Mar-12	2,449	2,723	
13	01-Apr-12	26-Mar-12	2,583	2,633	
14	08-Apr-12	03-Apr-12	2,440	2,563	Good Friday
15	15-Apr-12	10-Apr-12	2,491	2,604	Easter Monday
16	22-Apr-12	18-Apr-12	2,477	2,485	
17	29-Apr-12	23-Apr-12	2,515	2,473	

3.3 Historical Peak Demand

Peak demands are weather-driven, weekday events. Peak demands have been facing downward pressure due to a number of factors. Conservation, time of use rates, embedded generation, demand response and lower levels of economic activity have all contributed to lower peak demands.

The peak for the winter of 2011-12 was quite low by historical standards. The January peak of 21,847 MW was the lowest winter peak since 1987. Although the winter was extremely mild, the peak weather was near normal. After correcting for weather the peak of 22,144 MW is the lowest since 1996. Reflecting the weather, most of the peaks over the recent six month period were lower than normal due to the mild weather.

Throughout the winter period the use of demand response is unusual. Therefore, there were limited demand response actions during this period.

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.

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

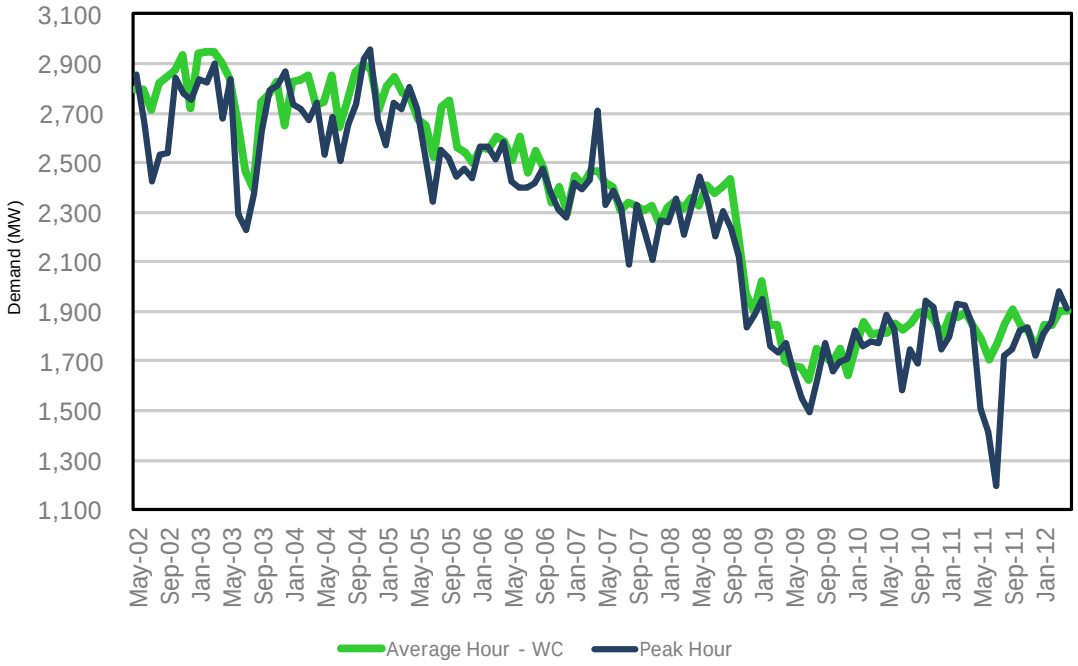


Table 3.3 shows the actual and weather-corrected weekly peak demand for the past six months.

Table 3.3: Weekly Peak Demand

Week Number	Week Ending	Peak Day	Actual Peak (MW)	Weather Corrected Peak (MW)	Peak Day Temperature
44	06-Nov-11	Tue-Nov-1	17,911	18,357	12.7
45	13-Nov-11	Fri-Nov-11	18,381	19,563	5.5
46	20-Nov-11	Thu-Nov-17	18,931	19,481	4.3
47	27-Nov-11	Tue-Nov-22	19,501	20,514	1.3
48	04-Dec-11	Tue-Nov-29	19,673	20,075	5.6
49	11-Dec-11	Wed-Dec-7	20,085	20,472	1.2
50	18-Dec-11	Mon-Dec-12	19,960	20,426	6.5
51	25-Dec-11	Tue-Dec-20	20,204	20,749	-1.3
52	01-Jan-12	Thu-Dec-29	19,648	19,984	-2.8
1	08-Jan-12	Tue-Jan-3	21,847	22,144	-14.3
2	15-Jan-12	Sun-Jan-15	20,017	20,617	-7.5
3	22-Jan-12	Wed-Jan-18	20,986	21,737	-4.5
4	29-Jan-12	Wed-Jan-25	20,150	20,897	-0.9
5	05-Feb-12	Mon-Jan-30	20,213	20,891	-1.4
6	12-Feb-12	Tue-Feb-7	19,852	20,680	-0.3
7	19-Feb-12	Tue-Feb-14	19,605	20,187	1.0
8	26-Feb-12	Tue-Feb-21	19,603	19,891	3.0
9	04-Mar-12	Wed-Feb-29	19,956	20,872	1.3
10	11-Mar-12	Mon-Mar-5	20,332	20,575	-2.8
11	18-Mar-12	Mon-Mar-12	17,578	18,589	11.8
12	25-Mar-12	Thu-Mar-22	17,384	19,218	23.7
13	01-Apr-12	Mon-Mar-26	18,136	18,684	2.6
14	08-Apr-12	Tue-Apr-3	17,464	18,595	10.7
15	15-Apr-12	Tue-Apr-10	17,721	18,674	8.0
16	22-Apr-12	Wed-Apr-18	17,032	16,993	9.0
17	29-Apr-12	Mon-Apr-23	17,874	19,170	4.1

3.4 Load Duration Curves

The following load duration curves display load for the four seasons. The seasons are defined as fall (September, October and November), winter (December, January and February), spring (March, April and May) and summer (June, July and August). The following graphs are presented in reverse order with the most recent data (winter) first (Figures 3.5 to 3.8).

The figures are not weather-corrected so the weather will influence the shape of each of the graphs. The impact of the extremely mild weather is very evident in the winter load duration curve. Although the peak was in the normal range, the vast majority of the curve was below all previous experience. Although the level of economic activity also influences the curves the weather was by far the most dominant impact.

The fall load duration curve has also been updated. The results for 2011 are more reflective of the economic impacts. Note that the levels for 2010 are quite similar reflecting the relatively flat level of economic activity.

Figure 3.5: Winter Load Duration Curve

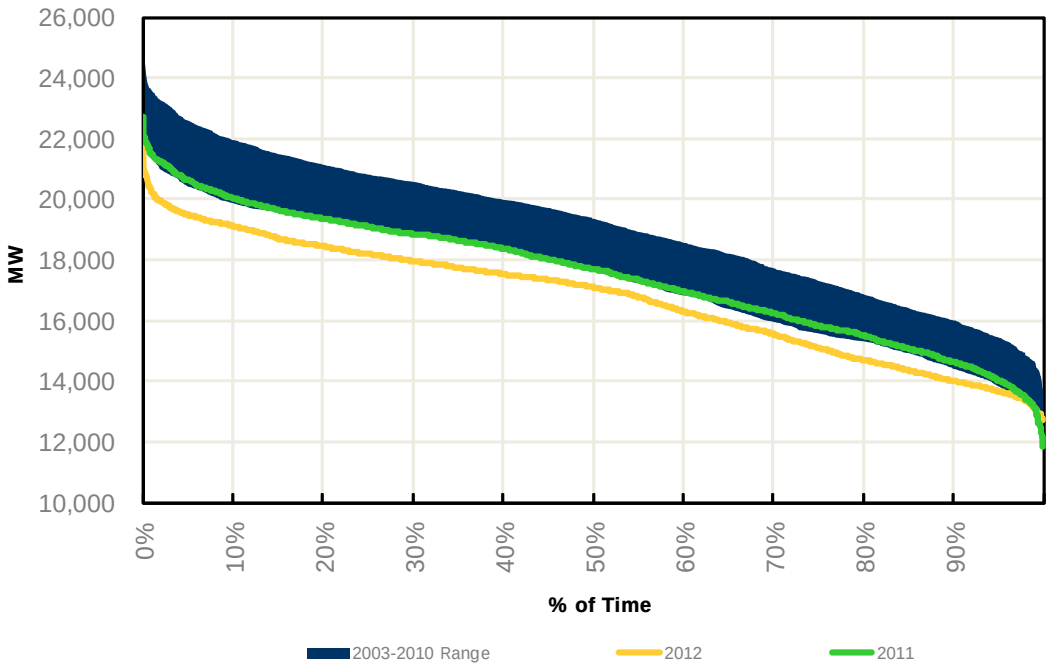


Figure 3.6: Fall Load Duration Curve

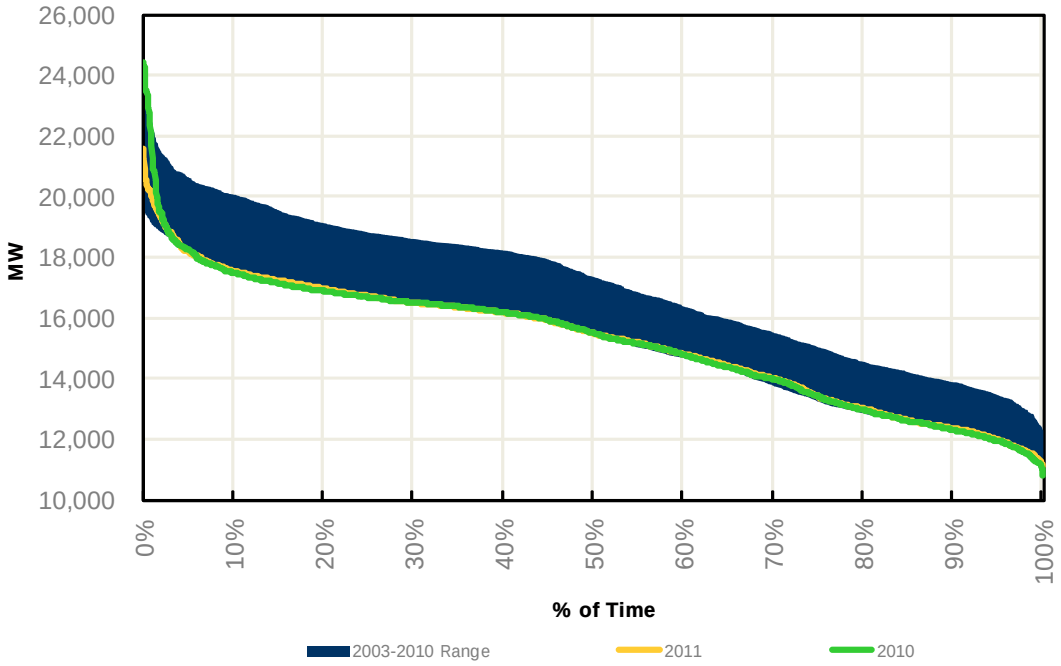


Figure 3.7: Summer Load Duration Curve

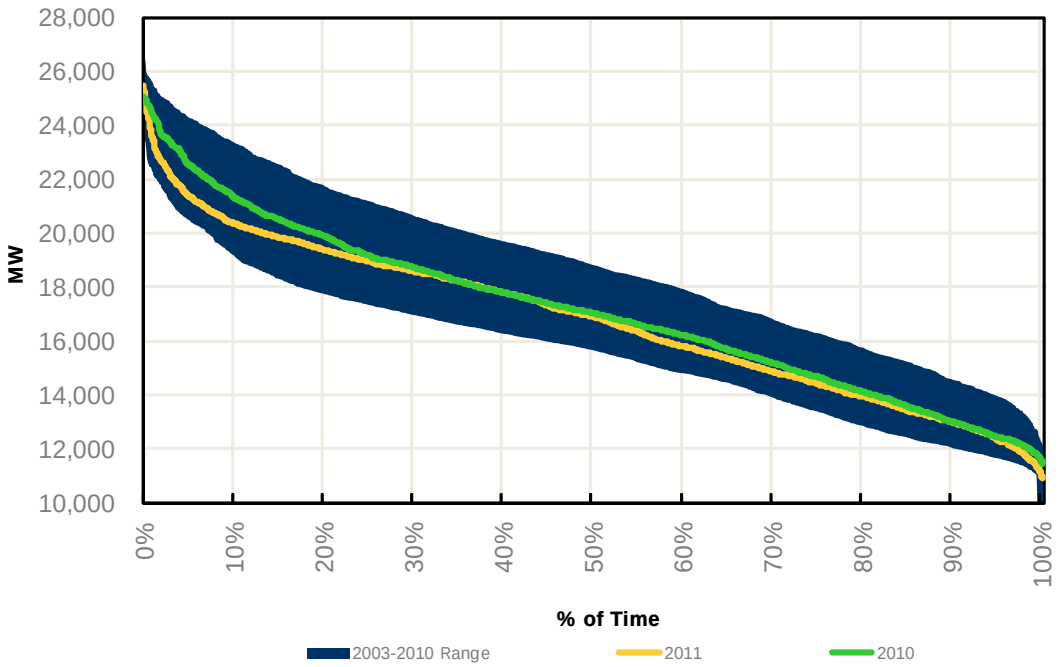
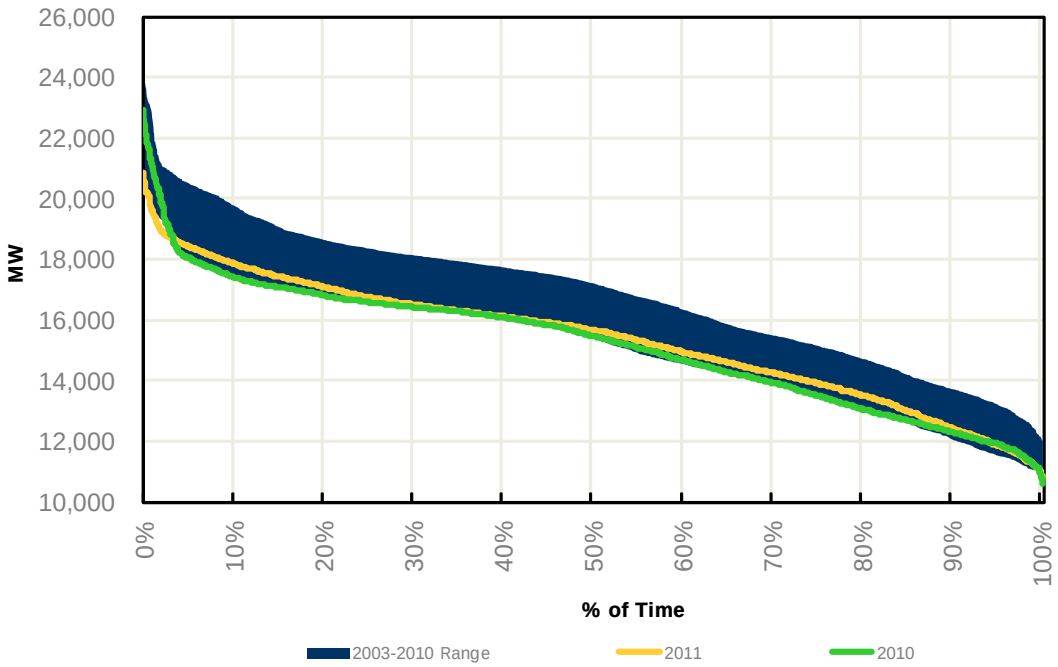


Figure 3.8: Spring Load Duration Curve

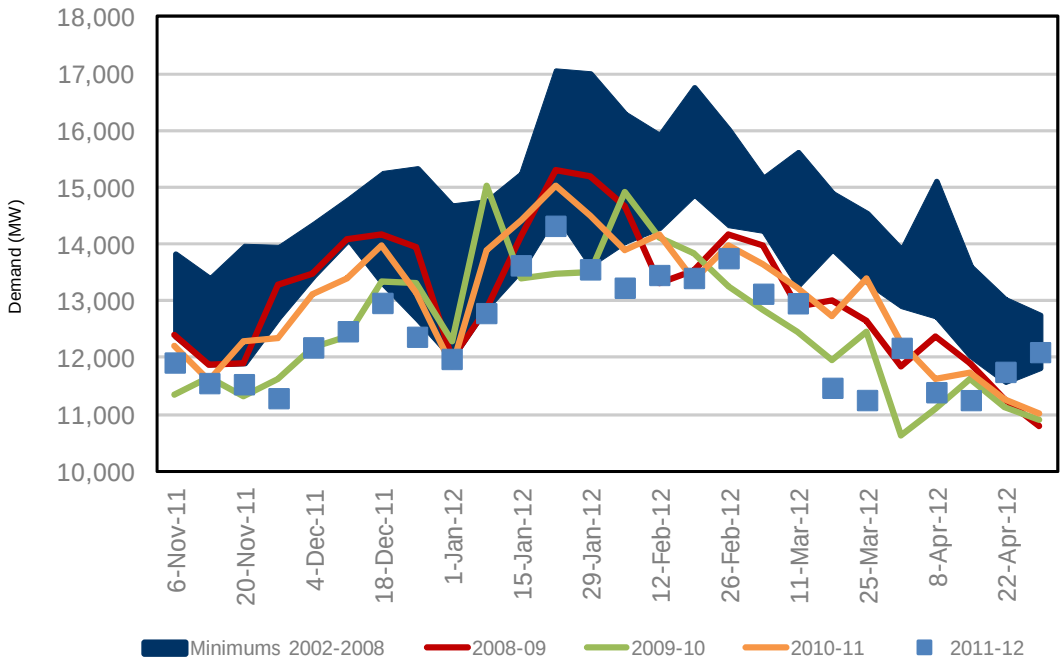


3.5 Historical Minimum Demand

With the mild weather over the course of the winter minimum demand levels tracked at historically low levels. Although the weather was the dominant factor this past winter, the level of economic activity, the impact of conservation and growth in embedded generation all combine to put downward pressure on the level of demand. These lower demand levels in combination with the amount of baseload generation on the system, has led to frequent periods of surplus generation, an area of operational concern.

Figure 3.9 shows the minimum weekly demands for the period November to April since market opening. The band represents the range of values for the years 2002-2008. The individual values are shown for 2008-2009, 2009-10, 2010-11 and 2011-12. The financial crisis happened in the fall of 2008. Therefore, 2008-2009 represents the start of the recession, 2009-2010 the midst of the recession and 2010-2011 was the recovery period. The graph shows how the minimums have trended since the recession and it is apparent that minimums have not recovered to their pre-recession levels.

Figure 3.9: Weekly Minimum 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_2012may.pdf).

The form and structure of the model have been modified to enhance and strengthen the explanatory powers of the economic drivers, conservation and embedded generation. 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 demand for electricity according to 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 both a consensus of publicly available provincial forecasts and purchases forecasts of economic data in order to generate economic drivers for the demand forecast and to provide 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.

The Eurozone debt crisis has not gone away but in fact appears to be coming to a head. At the time of this document's publication, nine European countries are in recession. In addition, there has been a change in government in France and political uncertainty in Greece. Where at one point there appeared to be some certainty in terms of the path forward, there is now concern about the viability of the Eurozone.

These outcomes continue to have impacts on the global economy both through financial markets and through the demands for goods and services. Confidence was growing as the U.S. ended 2011 with strong growth numbers but has since waned as it stumbled to begin 2012. All told these developments really mean a step back in terms of the global economy. The high Canadian dollar and general global economic mood will continue to have a negative impact on Ontario's energy intense export industries. As such this is reflected in the demand forecast which sees energy demand as flat throughout 2012.

Despite rather strong Canadian fundamentals there are a number of factors that will mitigate Ontario's growth over the forecast. Government austerity measures - both federal and provincial - high personal debt levels and high oil prices will act as a drag on Ontario's growth. Austerity measures are particularly significant as it represents a reduction of both one-time stimulus spending and further cuts to existing problems.

In the U.S., high personal and public debt levels, high unemployment levels and slow job growth have led to deteriorating consumer confidence. Low confidence and high debt has translated into lower consumer spending and with the consumer representing nearly two-thirds of the economy

leads to slow economic growth. Unfortunately, slow growth is not going to alleviate the high levels of unemployment and governments have very few stimulus options as debt levels limit spending, interest rates cannot be lowered further and currency devaluation (printing money) can only take you so far. The net result is that growth is going to remain low for the foreseeable future as governments and people make up for past spending.

Although none of Ontario's industries have rebounded to pre-recession levels some have shown growth over the 2010-11 timeframe. However, from an electricity demand perspective the industries that are lagging are the electrically intense ones. This means that electricity growth will lag economic growth.

Despite the rather somber tone, much of the risk to the economic forecast remains on the downside as the debt issues present many challenges. Table 4.1 contains the summary of key economic drivers.

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	6,632	1.5	57.1	19.1	1.303	1.34
2011	6,724	1.4	65.2	14.3	1.321	1.37
2012 (f)	6,781	0.8	65.0	-0.4	1.335	1.09
2013 (f)	6,863	1.2	60.6	-6.8	1.351	1.21

4.3 Weather Drivers for Forecast

Since forecasting long-term weather is not possible, weather scenarios are generated using 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 1980 to 2010 would be the first value for the normal January. The median value of the second highest weather factor from each January from 1980 to 2010 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 31-year history.

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 2010.

4.4 Conservation and Demand Management

Conservation and demand management within the Outlook are broken into three categories: 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. 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 normally have been met through the grid. Although the actual 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 summer peak - is expected to grow by 140 MW. Embedded generation's available capacity at the time of summer peak is expected to grow by 150 MW over the outlook timeframe. Lastly, demand management programs are projected to increase their reliably available capacity from 1,141 MW to 1,500 MW over the course of the forecast horizon.

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