18-MONTH OUTLOOK

From December 2009 to June 2011

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Power to Ontario. On Demand.

Ontario Demand Forecast

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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 2009 to June 2011 and supersedes the previous forecast released in May 2009.

Economic Outlook

The dominant issue underlying the demand forecast continues to be the economy. However, the focus has shifted from that of recessionary impacts to recovery prospects. Following the financial crisis of last fall, Ontario electricity demand contracted sharply through to the spring of 2009. Since then the demand has stabilized but signs of a recovery have been absent. Moving forward, the main question concerns the timing and strength of any subsequent growth – both in the economy and electricity demand. Here are the key economic issues for the 18-Month Outlook:

- Recovery – Both demand and economic data suggest that the recession has ended but do not seem to indicate that a recovery has started. Economic indicators continue to be mixed and demand has been more or less flat since the spring. Many experts have predicted slow growth during the recovery phase. Despite the slow growth demand should improve in 2010 as production stabilizes in the auto and steel industries - industries that were idled for periods of time in 2009.
- Changing Economy – The economy is in the process of both cyclical and structural change. As such, the economy will not return to the same point after the recessionary cycle has ended. Several industries have been experiencing declining output and sales for several years and the current economic climate has lead to a reduction in industrial capacity as unprofitable, outdated and surplus facilities are eliminated.
- Risks –Over the forecast horizon the downside risks remain quite substantial. To date, the recovery has been weak and the risk of a "double dip" recession is possible. In particular, the high dollar, the reduction in stimulus spending and the "Buy American" provisions will have a negative impact on the demand for Ontario's goods and services.

Actual Weather and Demand

Since the last forecast the actual demand and weather data for August, September and October have been recorded. Here are the highlights:

<u>August</u>

- The weather for August was near normal. The monthly demand peak occurred on the hottest day of the month when the afternoon temperature topped 31.3°C.

- Actual peak demand for August was 24,380 MW and occurred on August 17th. The peak weather was only slightly warmer than the normal peak so the weather corrected peak was 23,867 MW.
- Actual energy demand for the month was 12.2 TWh and the weather-corrected energy demand was 12.1 TWh. These are both lower than any August data since the late 1990's.
- Wholesale industrial energy demand was 27.2% lower than the previous August. This figure is higher than previous months due to the impact of a labour disruption at a large volume consumer.

September

- September's weather was slightly milder than normal. The monthly peak occurred on the third warmest day which was slightly cooler than the normal peak weather. The warmer temperatures came later in the month when the cooling response was muted.
- The peak for September was 19,731 MW the lowest September value since 1998. The weather-corrected peak was 19,871 MW which is also the lowest since 1998.
- Actual energy demand for the month was 10.9 TWh (10.9 TWh weather corrected). These are the lowest September energy values since 1997.
- Wholesale industrial customers' consumption fell 29.4% compared to the previous September. Once again this was impacted by the continued work stoppage at a large volume consumer.

October

- October's weather was fairly normal. The monthly peak occurred on the coldest day of the month.
- The peak for October was 18,420 MW (19,462 MW weather corrected). This is the lowest October value since 1998.
- Actual energy demand for the month was 11.2 TWh (11.2 TWh weather corrected). These are the lowest October energy values since 1996.
- Wholesale industrial customers' consumption fell 23.4% compared to the previous September. The aforementioned work stoppage continues to impact these numbers.

Overall, the weather experienced this year has been near normal. For the first ten months actual energy demand has been 6.7% lower than the previous year. On a weather-corrected basis that figure is -6.4%. The decline is slightly overstated due to the fact that 2008 was a leap year and had an extra day's worth of electricity demand. Economic factors have far out-weighed any weather impacts throughout 2009.

Demand Forecast

The 18-Month Outlook contains a forecast of demand which includes the impact of additional conservation savings and demand reductions from projected off-grid generation.

The Ontario Power Authority (OPA) and local distribution companies (LDC) continue to take actions that reduce demand. 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. A discussion of the impacts of conservation, off-grid generation and demand response are included in section 3.4 of this document.

Table 1 summarizes the annual peak and energy demand forecast for the period covered in this 18-month forecast. Peak demand is expected to fall this year and next due to conservation initiatives, the growth in embedded generation and the wide spread introduction of time of use prices

Energy demand is expected to show a minimal increase over the next two years. Despite the impacts of conservation and embedded generation demand is expected to increase due to economic and demographic growth.

Table 1: Peak and Energy Demand Forecast

Season	Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Winter 2009-10	22,717	23,883
Summer 2010	23,608	25,806
Winter 2010-11	22,447	23,527
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 (Forecast)	140.5	-5.7%
2010 Energy (Forecast)	141.1	0.4%
2011 Energy (Forecast)	142.3	0.8%

- 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 2009 to June 2011. It supersedes the previous forecast released August 2009.

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_2009nov.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 September 2009. Data for October has 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_2009nov.xls) spreadsheet posted alongside the Outlook documents. Additional tables are also included in the spreadsheet. Having a separate spreadsheet allows for historical data right back to market opening. That 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 or to forecasts.demand@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 Outlook period. Additional tables are included in the 18-Month Outlook Tables spreadsheet.

Table 2.1 has 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 (MWh)
06-Dec-09	21,681	23,207	720	2,880	26-Sep-10	19,056	23,777	1,366	2,481
13-Dec-09	21,919	23,232	592	2,870	03-Oct-10	18,413	22,505	1,389	2,437
20-Dec-09	21,919	23,113	512	2,877	10-Oct-10	18,375	22,715	1,492	2,545
27-Dec-09	21,254	22,342	474	2,786	17-Oct-10	18,710	19,709	1,317	2,537
03-Jan-10	20,614	21,860	409	2,827	24-Oct-10	19,063	20,116	1,115	2,647
10-Jan-10	21,953	22,913	371	2,945	31-Oct-10	19,475	20,377	1,165	2,687
17-Jan-10	21,974	23,101	566	2,971	07-Nov-10	19,746	20,664	1,398	2,649
24-Jan-10	22,717	23,844	562	3,025	14-Nov-10	20,058	21,166	857	2,773
31-Jan-10	22,671	23,883	439	2,995	21-Nov-10	20,559	21,788	1,098	2,757
07-Feb-10	22,460	23,655	415	2,998	28-Nov-10	20,824	22,358	1,281	2,862
14-Feb-10	21,727	22,967	539	2,964	05-Dec-10	21,237	22,971	929	2,799
21-Feb-10	21,616	22,708	426	2,944	12-Dec-10	21,904	23,264	987	2,739
28-Feb-10	21,438	22,684	506	2,898	19-Dec-10	21,956	23,141	1,010	2,772
07-Mar-10	21,376	22,194	381	2,873	26-Dec-10	20,443	21,762	982	2,746
14-Mar-10	20,659	22,531	833	2,843	02-Jan-11	21,010	22,258	839	2,704
21-Mar-10	20,383	22,164	653	2,764	09-Jan-11	21,909	22,963	1,153	2,695
28-Mar-10	19,728	21,560	842	2,798	16-Jan-11	21,922	22,939	1,492	2,570
04-Apr-10	18,885	20,964	814	2,825	23-Jan-11	22,447	23,470	1,428	2,533
11-Apr-10	18,831	20,187	720	2,880	30-Jan-11	22,249	23,429	1,311	2,511
18-Apr-10	18,361	19,730	592	2,870	06-Feb-11	22,431	23,527	1,080	2,478
25-Apr-10	18,445	21,582	512	2,877	13-Feb-11	21,764	23,058	617	2,530
02-May-10	17,758	21,429	474	2,786	20-Feb-11	21,720	22,808	472	2,512
09-May-10	17,692	21,048	409	2,827	27-Feb-11	21,366	22,581	515	2,598
16-May-10	17,893	21,498	371	2,945	06-Mar-11	21,003	21,843	649	2,649
23-May-10	18,630	21,435	566	2,971	13-Mar-11	20,462	22,219	842	2,654
30-May-10	18,901	22,146	562	3,025	20-Mar-11	20,166	22,104	776	2,669
06-Jun-10	19,848	24,313	439	2,995	27-Mar-11	19,612	21,474	687	2,724
13-Jun-10	20,081	23,118	415	2,998	03-Apr-11	18,974	20,717	1,013	2,762
20-Jun-10	21,639	24,040	539	2,964	10-Apr-11	18,658	20,076	751	2,795
27-Jun-10	22,521	24,924	426	2,944	17-Apr-11	18,181	19,520	568	2,870
04-Jul-10	21,845	24,410	506	2,898	24-Apr-11	17,931	21,518	348	2,866
11-Jul-10	22,532	24,197	381	2,873	01-May-11	17,501	21,435	569	2,771
18-Jul-10	23,020	24,890	833	2,843	08-May-11	17,464	20,791	457	2,777
25-Jul-10	23,608	25,806	713	2,801	15-May-11	17,816	21,280	377	2,962
01-Aug-10	22,912	24,983	823	2,737	22-May-11	18,440	21,245	517	2,987
08-Aug-10	21,860	24,684	867	2,565	29-May-11	18,586	21,886	418	3,049
15-Aug-10	22,977	25,716	759	2,599	05-Jun-11	19,682	24,114	384	3,017
22-Aug-10	22,628	25,098	830	2,557	12-Jun-11	19,608	22,801	421	3,033
29-Aug-10	21,779	24,401	500	2,506	19-Jun-11	21,113	23,535	578	2,986
05-Sep-10	21,682	24,436	651	2,468	26-Jun-11	22,308	24,694	413	2,963
12-Sep-10	20,830	24,894	788	2,472	03-Jul-11	21,769	24,339	433	2,934
19-Sep-10	20,086	24,523	361	2,444					

Compared to the previous forecast, energy demand is up slightly for 2010 and 2011 and peak demands are lower. Both peak and energy demand have tracked quite low throughout 2009 – initially due to the global recession but recently the high dollar has held any potential growth in check. 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

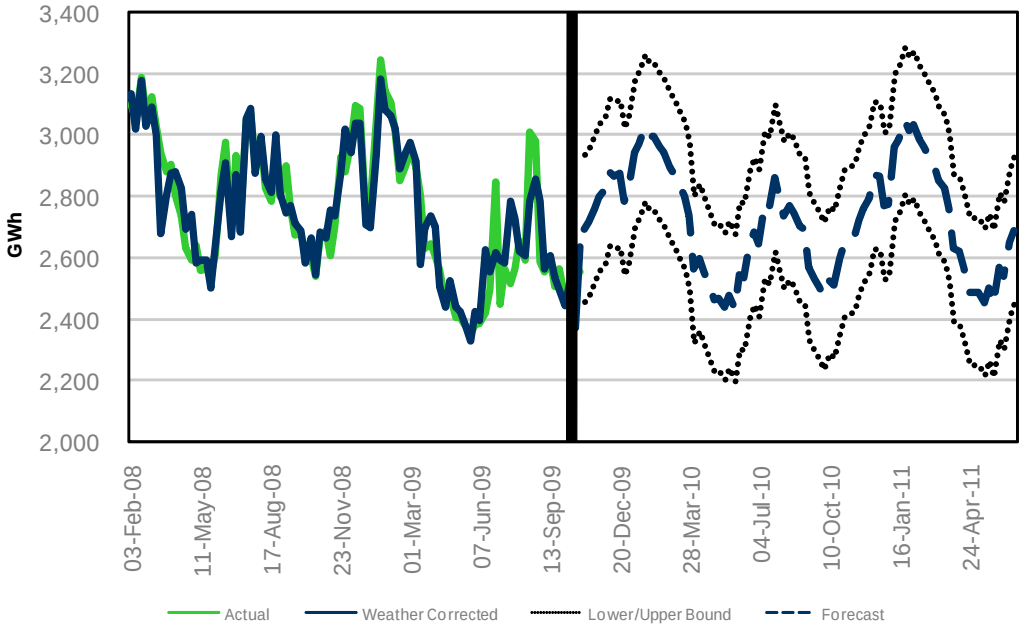
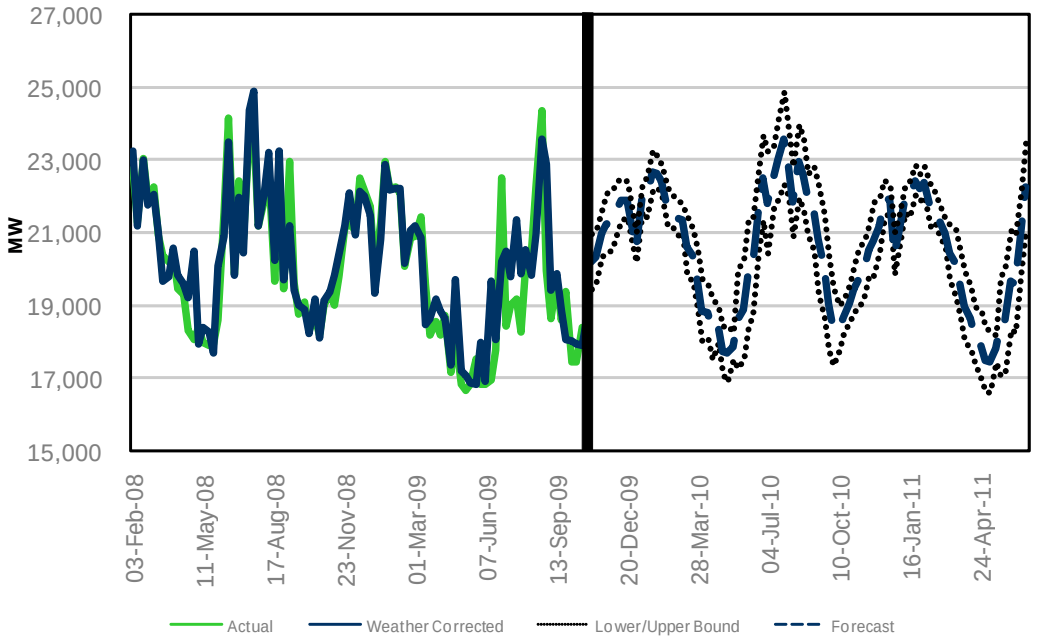


Figure 2.2: Weekly Peak Demand – History and Forecast



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3.0 Historical Review

This section covers historical energy and peak demand. The weather-corrected numbers are generated based on Normal weather.

3.1 August to October Review

The weather has been fairly normal throughout 2009. Demand has been low primarily due to the recent economic downturn. Both peak and energy demand were lower than expected for the first ten months. Table 3.1 contains a summary of the weather and demand for the past four months. Table 3.3.2 of the 18-Month Outlook Tables spreadsheet contains similar information going back to market opening.

Table 3.1: Historical Weather and Demand Summary

Historical Analysis		July	August	September	October
Actual	Average Temperature (°C)	23.5	24.9	21.2	11.8
	Minimum Temperature (°C)	19.8	18.2	11.2	4.1
	Maximum Temperature (°C)	27.5	31.2	27.2	17.3
Monthly Normal	Normal Average Temperature (°C)	26.4	24.4	20.9	12.6
	Normal Minimum Temperature (°C)	20.0	18.2	9.5	4.0
	Normal Maximum Temperature (°C)	30.9	30.8	29.8	21.1
Actual	Peak Demand (MW)	20,011	24,380	19,731	18,420
	Average Hour (MW)	15,210	16,432	15,183	15,036
	Minimum Hour (MW)	10,786	11,040	10,890	11,295
	90th Percentile (MW)	18,132	20,683	18,072	17,251
	Percent above 20,000 (MW)	0.1%	16.4%	0.0%	0.0%
	# of Hours Above 20,000 (MW)	1	122	0	0
	Energy Demand (GWh)	11,317	12,226	10,932	11,187
Weather Corrected	Peak Demand (MW)	22,168	23,867	19,871	19,462
	Energy Demand (GWh)	11,889	12,105	10,920	11,242
Forecast	Peak Demand (MW)	24,077	23,421	21,055	20,215
	Energy Demand (GWh)	12,072	11,833	10,978	11,568

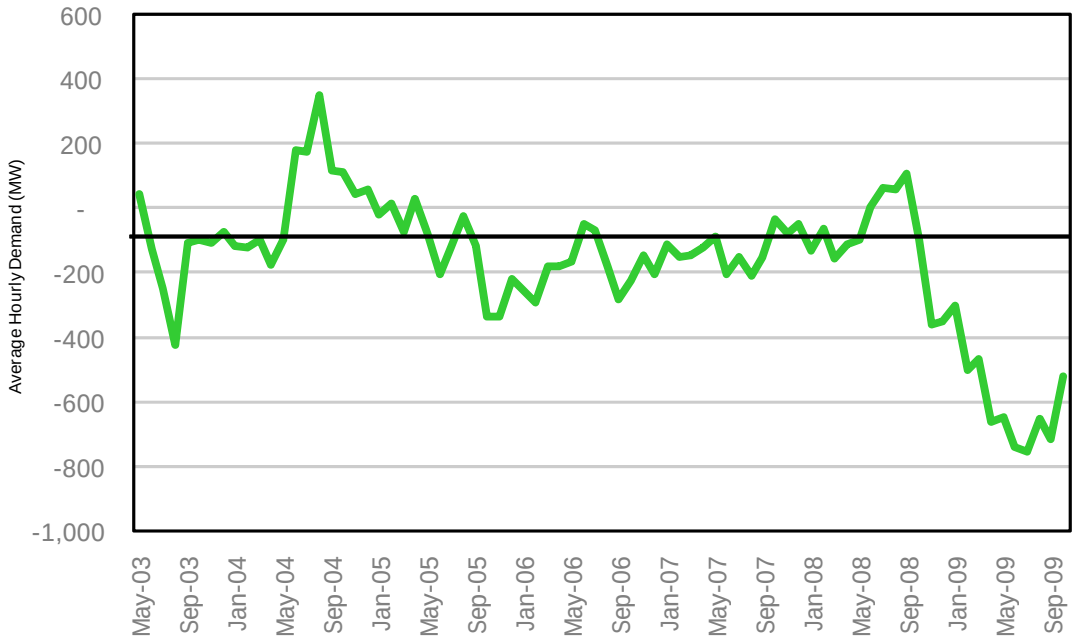
Notes for Table 2.1 – Weather is for Toronto. Temperature is the daily high. Forecast is the most recent for that period.

3.2 Historical Energy Demand

Actual energy demand was 6.7% lower for the first ten months compared to a year earlier. After adjusting for both the weather and the leap year, demand was 6.1% lower than the same months of 2008. As mentioned above, the main reason for the decline has been the recent economic downturn.

Figure 3.1 shows the year over year change in wholesale customers' consumption. Consumption has been falling since the spring of 2005, coinciding with the appreciation of the Canadian dollar. Prior to the financial crisis this past fall these customers had shown four consecutive months of year over year growth – a string of growth not seen since the end of 2004. As North America fell into recession in the fourth quarter of 2008 and first quarter of 2009 industrial demand has dropped significantly. Since the summer their consumption has been fairly flat. For the ten months of 2009 wholesale customer consumption has fell by 25.5% compared to a year earlier.

Figure 3.1: Wholesale Customer's Year over Year Change in Consumption



Overall energy demand has experience a similar profile to that of the industrial sector. Though not as volatile, energy demand has been declining or flat 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 grid.

Figure 3.2 shows the moving average of weekly demand. The graph depicts the general decline in energy demand since the summer of 2005. As well, the steep decline as North American dropped into the recent recession is also apparent.

Table 3.2 contains the weekly energy demand for the past three 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 correction is positive 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.

Figure 3.2: Energy Demand – 52 Week Moving Average

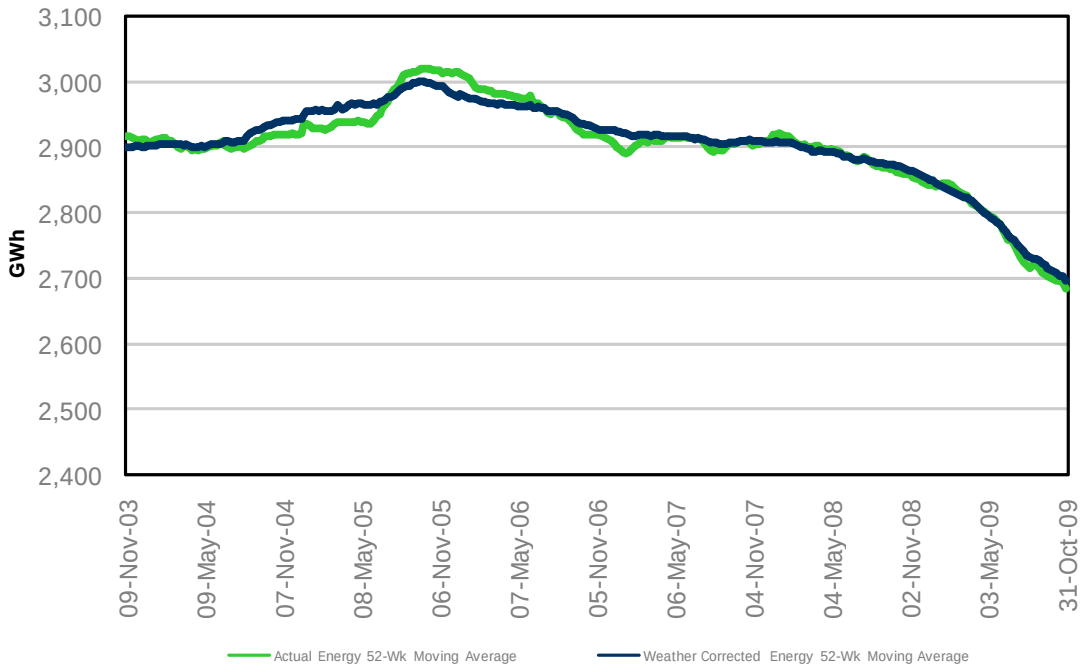


Table 3.2: Historical Weekly Energy Demand

Week Number	Week Ending	Peak Day	Actual Energy (GWh)	Corrected Energy (GWh)	Notes
32	09-Aug-09	Tue-Aug-4	2,593	2,612	Civic Holiday
33	16-Aug-09	Mon-Aug-10	3,010	2,790	
34	23-Aug-09	Mon-Aug-17	2,983	2,858	
35	30-Aug-09	Tue-Aug-25	2,587	2,785	
36	06-Sep-09	Thu-Sep-3	2,554	2,568	
37	13-Sep-09	Tue-Sep-8	2,589	2,610	Labour Day
38	20-Sep-09	Mon-Sep-14	2,507	2,538	
39	27-Sep-09	Wed-Sep-23	2,563	2,499	
40	04-Oct-09	Thu-Oct-1	2,469	2,449	
41	11-Oct-09	Wed-Oct-7	2,483	2,517	
42	18-Oct-09	Thu-Oct-15	2,543	2,374	Thanksgiving Day
43	25-Oct-09	Thu-Oct-22	2,556	2,637	

3.3 Historical Peak Demand

Peak demands are primarily weather driven events. However, peak demands have been eroded by declining demand due to the economy. In much the same way that weekends and holidays will blunt the impact of extreme weather events the recession is having a dampening impact on peak demands. Figure 2.4 shows the wholesale customers consumption at the time of the

monthly peak. The graph clearly shows the significant drop experienced in the last quarter of 2008 and the first quarter of 2009. The economic impact on peak demand - via the directly connected customers - has been roughly 580 MW. Additional market participant consumption data is contained in Table 3.3.3 of the Tables spreadsheet.

Figure 3.3: Wholesale Customers Coincident Peak and Average Hourly Consumption

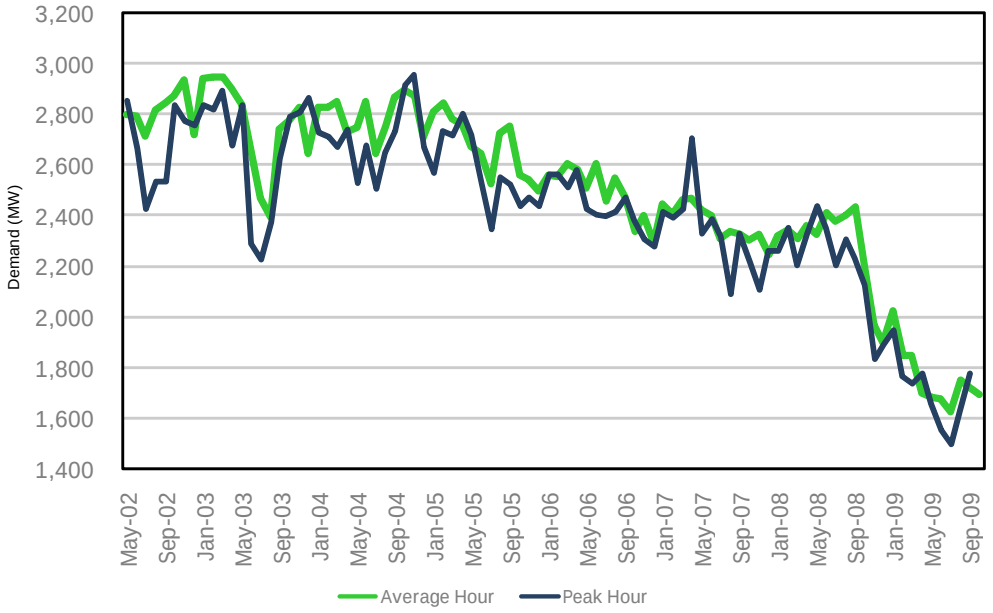
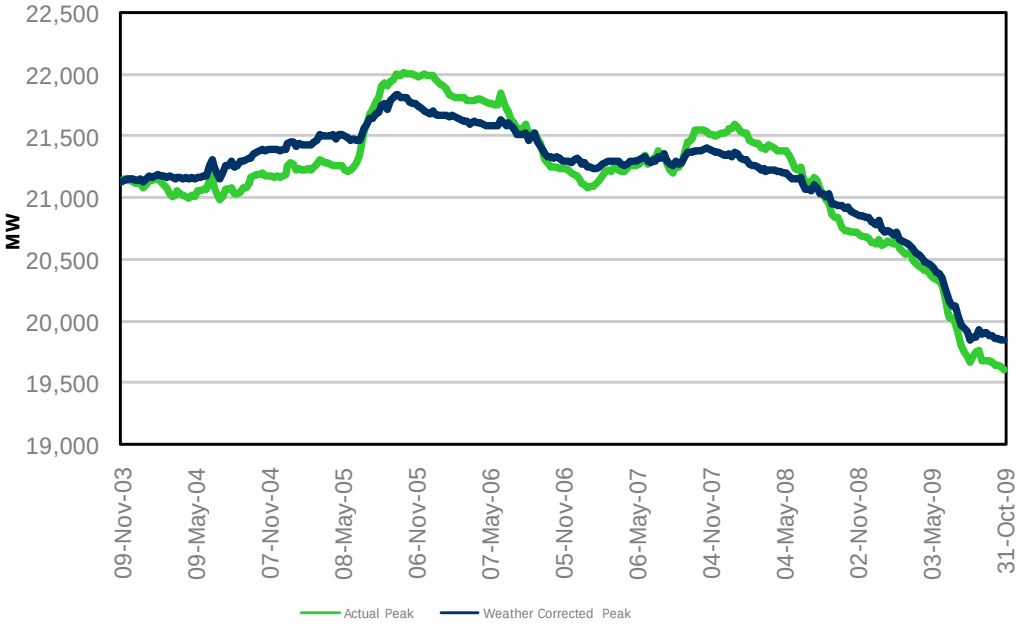


Figure 3.4: Peak Demand – 52 Week Moving Average



The same decline can be seen at the system level. Figure 3.4 shows the 52-week moving-average of peak demand. A similar drop of roughly 650 MW is evident.

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

Table 3.3: Weekly Peak Demand

Week Number	Week Ending	Peak Day	Actual Peak (MW)	Weather Corrected Peak (MW)	Peak Day Temperature
32	09-Aug-09	Tue-Aug-4	20,541	19,859	26.4
33	16-Aug-09	Mon-Aug-10	22,306	20,940	29.9
34	23-Aug-09	Mon-Aug-17	24,380	23,579	31.2
35	30-Aug-09	Tue-Aug-25	19,991	22,892	25.5
36	06-Sep-09	Thu-Sep-3	18,680	19,418	23.7
37	13-Sep-09	Tue-Sep-8	19,731	19,871	25.1
38	20-Sep-09	Mon-Sep-14	18,616	18,876	25.0
39	27-Sep-09	Wed-Sep-23	19,391	18,055	27.2
40	04-Oct-09	Thu-Oct-1	17,462	18,023	11.4
41	11-Oct-09	Wed-Oct-7	17,484	17,931	12.4
42	18-Oct-09	Thu-Oct-15	18,420	17,918	4.1
43	25-Oct-09	Thu-Oct-22	18,190	18,641	15.7

3.4 Load Duration Curves

The following graphs illustrate the load duration curves for August, September and October. Although the weather influences the levels to a large degree, the economic slowdown is evident in each of the graphs.

Figure 3.5: August Load Duration Curve

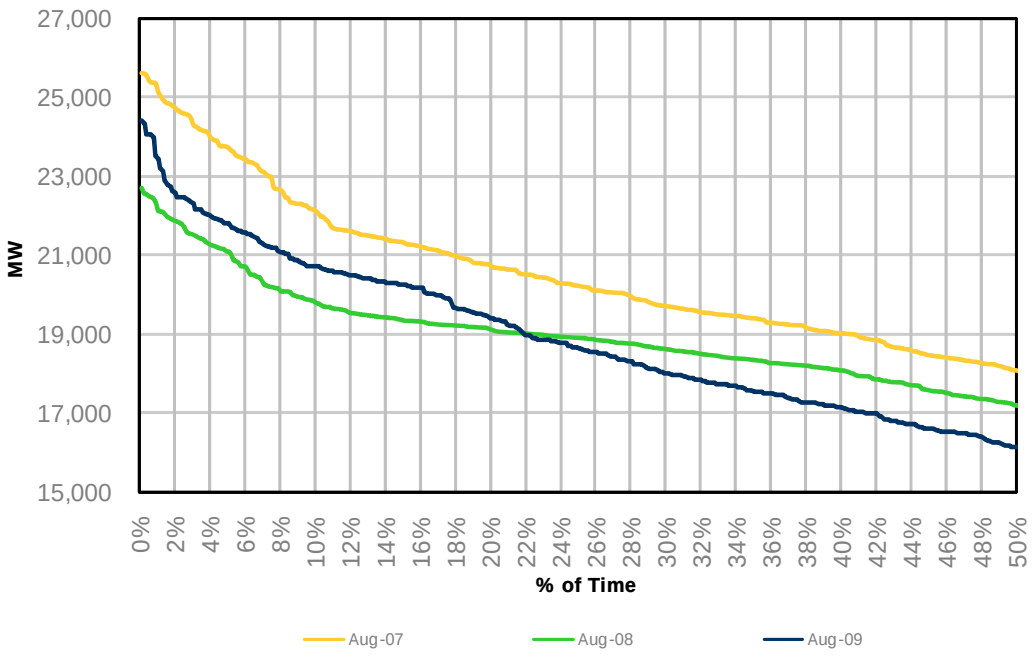


Figure 3.6: September Load Duration Curve

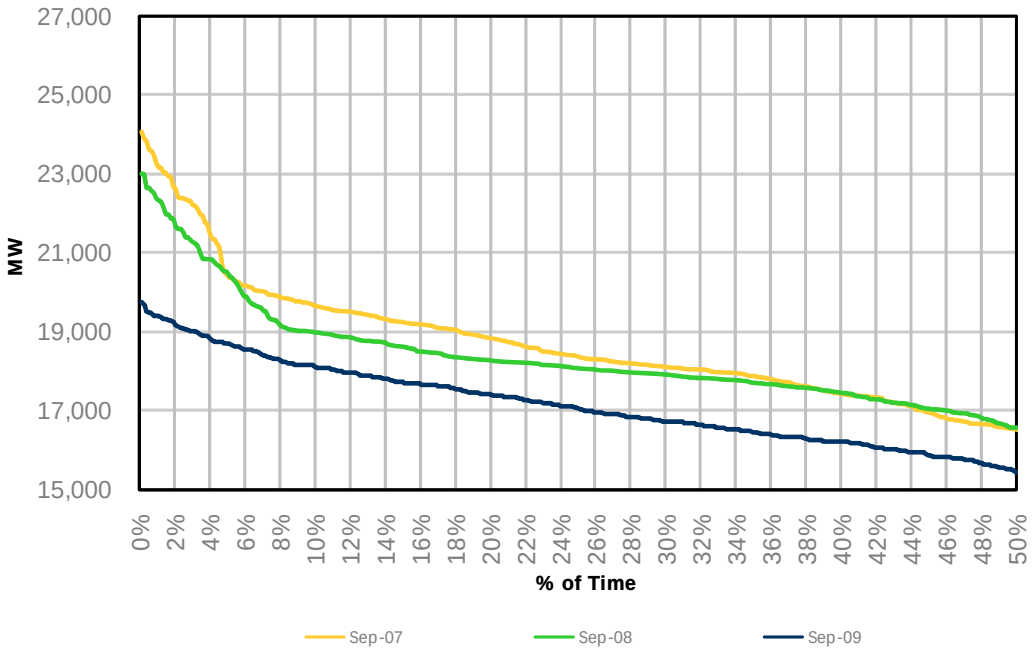
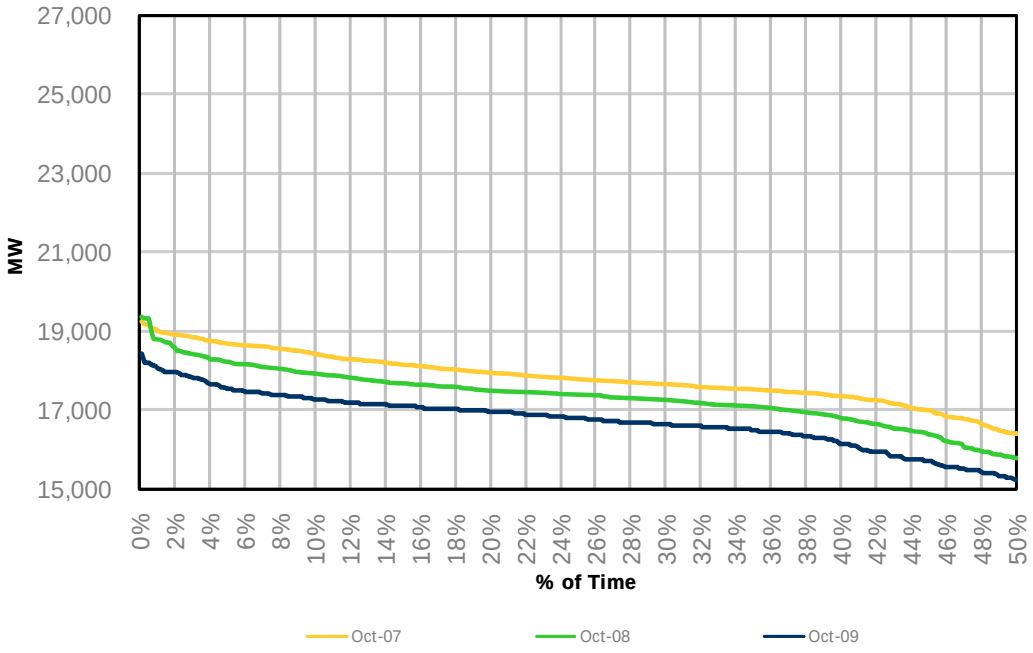


Figure 3.7: October Load Duration Curve



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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_2009nov.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 impacts – days of the week, holidays, sunrise and sunset – are 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 the economic drivers used in the forecast. 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 (f)	6,514	-2.6	46.2	-35.8	1.283	-0.81
2010 (f)	6,556	0.6	49.2	6.4	1.294	0.83
2011 (f)	6,687	2.0	57.3	16.6	1.315	1.59

Although the recessionary period is behind us, the current recovery period has seen both economic and demand growth quite flat. A high Canadian dollar has continued to hurt Ontario's export oriented industrial sectors. The Bank of Canada has tried to "talk down the dollar" but with interest rates so low there is little they can do to lower the dollar. Additionally, oil and mineral prices have begun to increase again which will also put upward pressure on the dollar. Therefore, mining and the petrochemical sectors may grow quicker than manufacturers and exporters who will lag overall growth.

One of the few consistently positive economic variables has been inventories. Inventories have experienced month over month declines since the beginning of 2009. This means that as the demand for goods grows, firms will be ramping up production rather than depleting accumulated inventories. Unfortunately, new orders have not shown consistent growth this year. Of the nine months reported this year, only three months have shown positive month over month increases in new orders.

Although the recovery will be characterized by slow growth, more stable production levels in 2010 and 2011 should lead to very modest increases in demand. In order to maintain inventories, many firms drastically cut back on and idled production. Consistent production from the automotive and steel industries, combined with the return to production of a large consumer currently experiencing a labour disruption will help demand meet those modest increases.

The forecast still faces considerable downside risk. A reduction in stimulus spending and "Buy American" policies could impact the demand for Ontario's goods. Business and consumer confidence will continue to be relatively fragile until the recovery shows sustained growth. Until that point the economy is at risk of experiencing a "double dip" recession.

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 v 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 generation under the Renewable Energy Standard Offer Program (RESOP) and 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 demand 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 demand.

Demand response 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 a 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 peak - is expected to grow by 132 MW. Embedded generation is expected to grow by 117 MW for peak periods over the outlook time

frame. Lastly, demand management programs are projected to increase their capacity from 699 MW to 1,114 MW.

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