

**18-MONTH OUTLOOK:**

# An Assessment of the Reliability of the Ontario Electricity System

From July 2008 to December 2009



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## Executive Summary

Ontario's reliability outlook has improved heading into this summer as compared to what was experienced in the summer of 2007 when three nuclear units were unavailable for much of the warmest part of the summer season. While one nuclear unit is expected to be unavailable this summer, the Portlands Energy Centre has already started producing power and is expected to be able to contribute more than 300 MW to help meet demands.

Overall, the reliability outlook for Ontario's electricity sector is generally positive and improving over the next 18 months. About 4,300 megawatts (MW) of new supply are scheduled to come into, or return to service and there are also changes planned to the transmission network.

Sufficient supply is forecast within Ontario to meet electricity demands under normal weather conditions in all but five weeks over the next year and a half. If that forecast were to materialize, modest amounts of imported power would be needed. Ontario may rely more heavily on imports from neighbouring jurisdictions to maintain reliability in the case of extreme weather, particularly if new generators are behind schedule, conservation does not materialize as expected, or additional outages occur.

The Ontario transmission system is expected to be adequate to reliably supply electricity demands over the next 18-months. During the period there may be some constraints on the ability to deliver power from the combined Bruce and Southwest areas as a result of additional nuclear, wind and gas generation expected in these areas. Hydro One will be installing transmission facilities beginning in 2009 that will start to alleviate this restriction. Hydro One has also applied to the Ontario Energy Board for permission to construct a new 500 kilovolt (kV) transmission line out of Bruce that would address this limitation.

Ontario's import capability will increase by about 30 per cent with the new 1250 MW interconnection between Ontario and Québec, scheduled for completion by spring 2009.

Reliability within the Greater Toronto Area (GTA) for both summer 2008 and summer 2009 is expected to be adequate and improving in its resiliency throughout the period as new facilities are incorporated. For this summer, GTA supply remains dependent on the availability of the autotransformers feeding the GTA, the Pickering units, and the Portlands Energy Centre.

In the York Region, the transformer station capacity in the Newmarket and Aurora area has been exceeded due to load growth. A new transformer station is planned to be in service around the middle of 2009. Until then, the immediate needs will be mitigated

through load transfers, increasing the equipment operating ratings and demand response.

Increasing conservation efforts and a slowing economy have translated into lower energy demand forecasts compared to the previous outlook. Energy demand is forecast to decrease by 1.0% for 2008 and a further 1.1% in 2009, which is lower than in the previous Outlook. Peak demands are expected to decline throughout the forecast.

The following table summarizes the planned scenario's peak demands for the upcoming seasons under the Normal and Extreme weather scenarios.

Season	Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Summer 2008	25,232	27,495
Winter 2008-09	23,698	24,740
Summer 2009	24,998	27,260

The IESO regularly assesses the adequacy and reliability of Ontario's power system. This 18-Month Outlook provides the IESO's assessment of the reliability of the power system from July 2008 to December 2009. It reflects the most up-to-date forecast information as well as experience gained from past operations.

The 18-Month Outlook is intended for operational planning purposes, and for scheduling generator outage plans. To avoid unacceptably low reserves, it is important to the overall operational planning process that participants adjust their maintenance activities to periods where available resources exceed requirements.

**- End of Section**

**Caution and Disclaimer**

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# 1.0 Introduction

This Outlook covers the 18-month period from June 2008 to December 2009. It supersedes the report titled “An Assessment of the Reliability of the Ontario Electricity System from April 2008 to September 2009”, dated April 1, 2008.

The purpose of the 18-Month Outlook is:

- To advise market participants of the resource and transmission reliability of the Ontario electricity system;
- To assess potentially adverse conditions that might be avoided through adjustment or coordination of maintenance plans for generation and transmission equipment; and
- To report on initiatives that are being put in place to improve reliability within the 18-month timeframe of this Outlook.

The contents of this Outlook focus on the assessment of resource and transmission adequacy. Other supporting information and forecasts are contained separately in the following documents that are updated as required:

- “Ontario Demand Forecast from June 2008 to December 2009” (IESO\_REP\_0477) (found on the IESO web site at [http://www.ieso.ca/imoweb/pubs/marketReports/18Month\\_ODF\\_2008jun.pdf](http://www.ieso.ca/imoweb/pubs/marketReports/18Month_ODF_2008jun.pdf))
  - Contains a detailed description of the peak and energy demand forecasts used in this Outlook.
- “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\\_2008jun.pdf](http://www.ieso.ca/imoweb/pubs/marketReports/Methodology_RTAA_2008jun.pdf))
  - Contains information regarding the methodology used to perform the demand forecasts, resource adequacy assessments and transmission reliability assessments in this Outlook.
- “Ontario Transmission System” (IESO\_REP\_0265) (found on the IESO web site at [http://www.ieso.ca/imoweb/pubs/marketReports/OntTxSystem\\_2008jun.pdf](http://www.ieso.ca/imoweb/pubs/marketReports/OntTxSystem_2008jun.pdf))
  - Provides specific details on the transmission system, including the major internal transmission interfaces and interconnections with neighbouring jurisdictions.

Readers are invited to provide comments on this Outlook report or to give suggestions as to the content of future reports. To do so, please contact us at:

- Toll Free: 1-888-448-7777
- Tel: 905-403-6900
- Fax: 905-403-6921
- E-mail: [customer.relations@ieso.ca](mailto:customer.relations@ieso.ca).

This Outlook presents an assessment of resource and transmission adequacy based on the stated assumptions, using the described methodology. Readers may envision other possible scenarios, recognizing the uncertainties associated with various input assumptions, and are encouraged to use their own judgment in considering possible future scenarios. The resource adequacy assessment tables contained in the document can be downloaded from the Independent Electricity System Operator (IESO) web site in MS Excel format.

In addition to the comprehensive Outlook, the IESO periodically issues Interim Updates to the 18-Month Outlook between full Outlooks. These updates include a spreadsheet which reflects changes to Total Resources, Total Reductions in Resources, and Reserve Above Requirement values for the Planned Resource Scenario. The updates also include a summary of actual demand and forecast demand data. Similar to the full Outlooks, the Interim Updates are posted on the IESO web site. These updates provide Outlook information on a more frequent basis to allow market participants to better adjust their operational plans and outage schedules.

The reader should be aware that [Security and Adequacy Assessments](#) are published on the IESO web site on a weekly and daily basis that progressively supersede information presented in this report.

**- End of Section -**

## 2.0 Updates to This Outlook

### 2.1 Changes to Demand Forecast

The demand forecast has been updated to include the actual demand, weather and economic experience through to the end of March 2008. The economic outlook has been updated based on the most recent data.

Overall, the updated Firm Demand Scenario demand forecast has lower peak and energy demands compared to the previous Outlook due to economic impacts. For the Planned Demand Scenario better modeling of the effects of conservation and load-displacing generation figures has changed the assumed daily consumption pattern used in this report.

### 2.2 Updates to Resources

Since the previous Outlook report was published, Durham College District Energy Project (2 MW), Great Northern Tri-Gen Facility (12 MW) and Portland Energy Centre Simple Cycle Operation (394 MW) came into service. Durham College District Energy Project and Great Northern Tri-Gen Facility are embedded and they are not registered to take part in the IESO administered wholesale market. GenSet Resource Management Inc added a generator (1 MW) to their fleet. The 25 Hz to 60 Hz frequency changer (50 MW) and units 1 & 2 at Beck 1 have been deregistered.

Therefore, the net installed capacity registered to participate in the IESO administered wholesale market has, thus, increased by 345 MW.

There have been updates to the generator outages submitted by market participants. For this Outlook, generation outage plans submitted to the IESO's Integrated Outage Management System (IOMS) as of June 12, 2008 were used.

### 2.3 Updates to Bottled Generation Resources

In response to a request from the Forecasts and Assessments Standing Committee, the IESO has begun publishing the amount of bottled (transmission constrained) generation in different zones. The bottled generation tables, A3 and A8, appear in the Appendix A. The bottled generation levels listed in the appendix corresponds to a generation dispatch that would maximize the possible reserve above requirements in Ontario. The reserve amounts discussed and shown in this document have been adjusted to reflect the bottled generation listed in the Appendix. The IESO is also studying various operating scenarios that could decrease the amount of bottled generation. The results of these studies will be reflected in future Outlook reports. In real time operation, the actual amount of bottled generation will depend on many conditions prevailing at the time, including the local generation levels, overall generation dispatch and the direction and levels of flows into and out of Ontario.

## **2.4 Updates to Transmission Outlook**

The list of transmission projects, planned transmission outages and actual experience with forced transmission outages have been updated from the previous 18-Month Outlook. For this Outlook, transmission outage plans submitted to the IOMS as of April 22, 2008 were used.

This Outlook also presents discussions on the major transmission enhancements that are forecast to be in service or are under construction within the outlook period, and the effects of generation and transmission project delays on the system's ability to supply the forecast peak demand.

**- End of Section -**

## 3.0 Historical Review

This section provides a review of past power system operation, including the most recent months of operation, to identify noteworthy observations, emerging problems and variations from forecast.

### 3.1 Weather and Demand Historical Review

The weather for the spring of 2008 was unusual. On average, March was colder than normal except that it lacked any really cold days. Likewise, April was warmer than normal except that it lacked any really warm days. May was mild throughout.

Spring usually has lower demands than in peak seasons, as weather sensitive loads tend to be smaller. As well, loads are tracking lighter due to the overall economy. Lastly, the growth in conservation and load displacing generation add further downward pressure on loads. The combined impacts of a muted economy, growing conservation and mild weather means that both peak and energy demand was low for the spring of 2008.

Energy demand was 2.5% lower than the spring of 2007 (-2.2% on a weather-corrected basis). Energy consumption was the lowest it has been since the spring of 2001. Likewise, the weather-corrected peak demands did not show any growth. March had the lowest peak since 1999 and April and May are relatively flat for the last three years.

### 3.2 Hourly Resource Contributions at Time of Weekday Peak

The figures from 3.1 to 3.4 show the contributions made by self scheduling and intermittent generators, wind generators, hydro generators, and imports and net interchange at the time of weekday peak for the period from May 1, 2007 to April 30, 2008. The holiday data was removed from the display of actual hourly data due to the fact that hydro peaking generation and interchange data that occurs during holidays is not typical of periods of time when Ontario is challenged from a supply demand perspective

Figure 3.1 indicates the amount of wind generation contributions to the wholesale market at the time of peak demand, excluding holidays, compared to the forecast contributions. Currently, IESO forecasts available wind generation as 10 percent of installed capacity, and assumes a constant contribution over a yearly basis. The forecast methodology does not account for seasonal variances in wind patterns, and thus, results in large deviations of actual monthly median contribution from forecast during winter months as compared to summer months. To address this issue the IESO, in coordination with wind stakeholders, is engaged in a process of developing a wind capacity contribution forecasting method that considers a monthly/seasonal median approach which uses the lesser of the actual wind farm history or a simulated wind history. The IESO will continue to examine various other wind forecasting methodology options particularly any recommendations emerging from NERC's Integration of Variable Generation Task Force (IVGTF). In the meantime, IESO will continue with using the existing wind capacity contribution assumption.

Figure 3.1 Wind Generation Contributions at the Time of Peak Demand

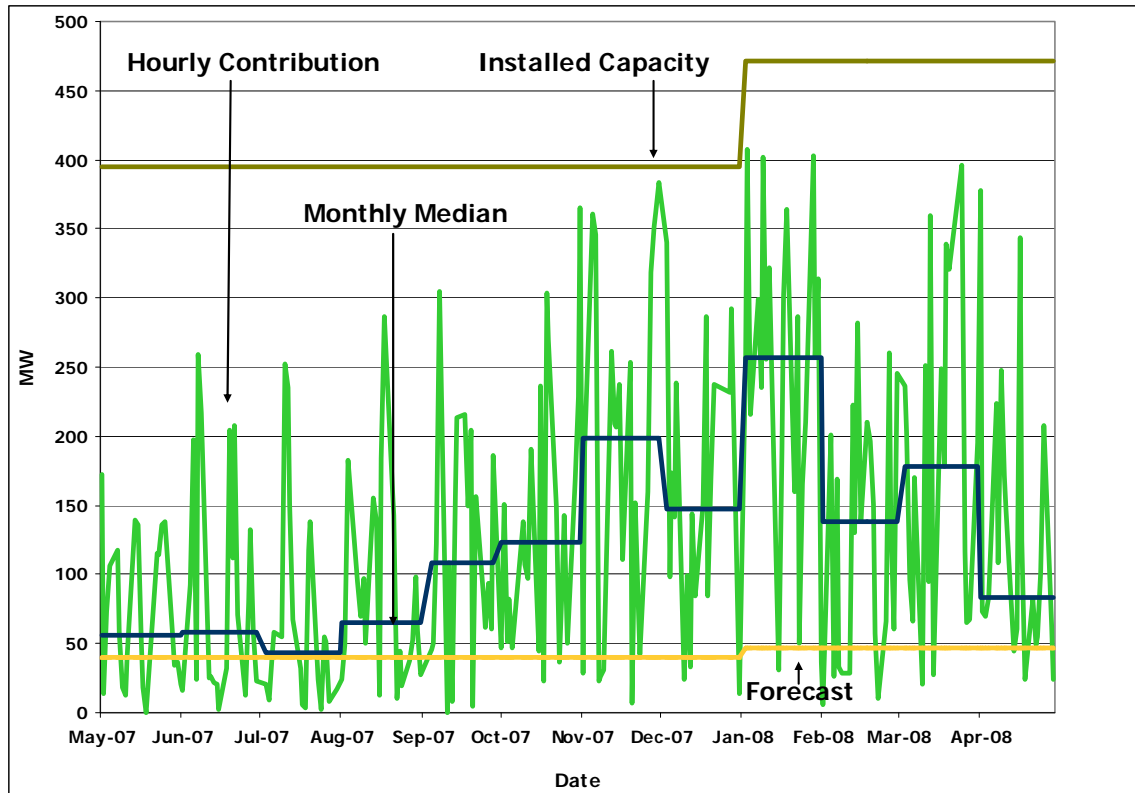


Figure 3.2 indicates the actual hydro contributions to energy and operating reserve markets at the time of non holiday weekday peak from May 1, 2007 to April 30, 2008, compared to forecast contributions. The forecast looking forward for the next 18 months was updated to include recent actuals as per the established methodology. The actual contributions for the last year were on average 5% lower than the current forecast. The gap between actual and forecast is narrowed in March of 2008, and the actual contributions in April were higher than the forecast. This is the first month that the actual contributions have exceeded the forecast contributions since the IESO adopted this approach.

Figure 3.2 Hydro Contributions (Energy and Operating Reserve) at the Time of Weekday Peak

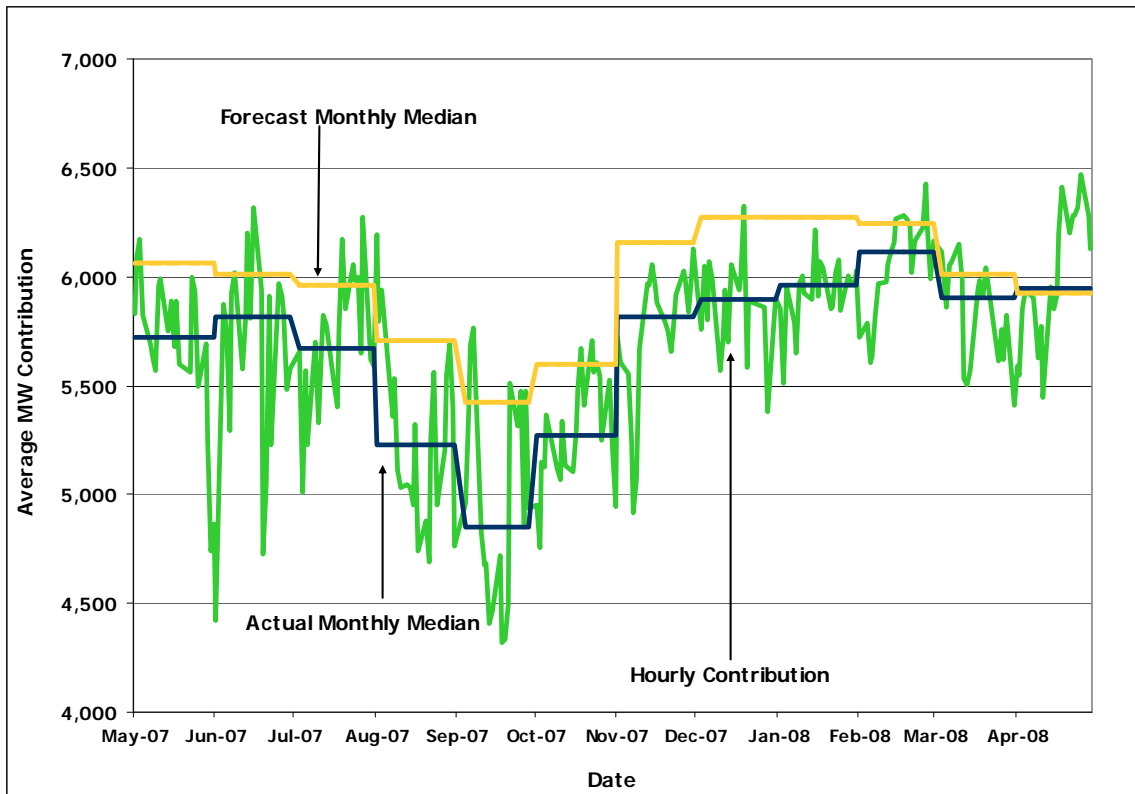


Figure 3.3 Imports into Ontario at the Time of Weekday Peak

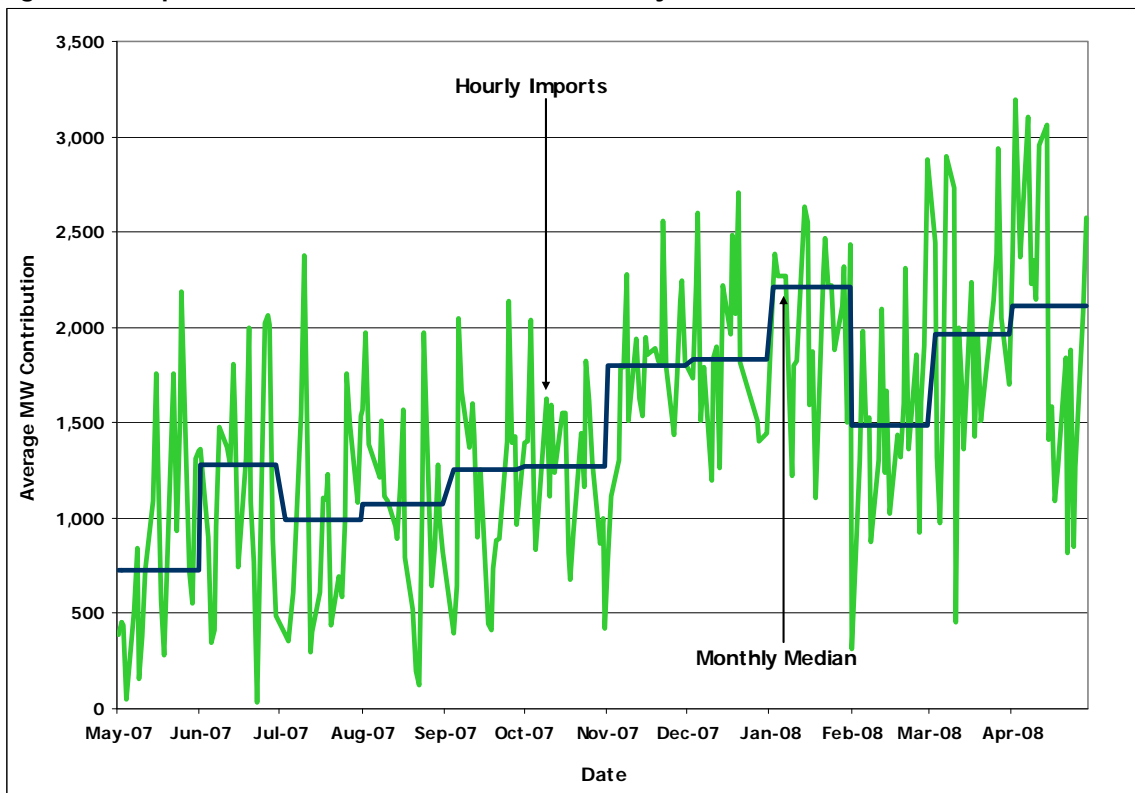
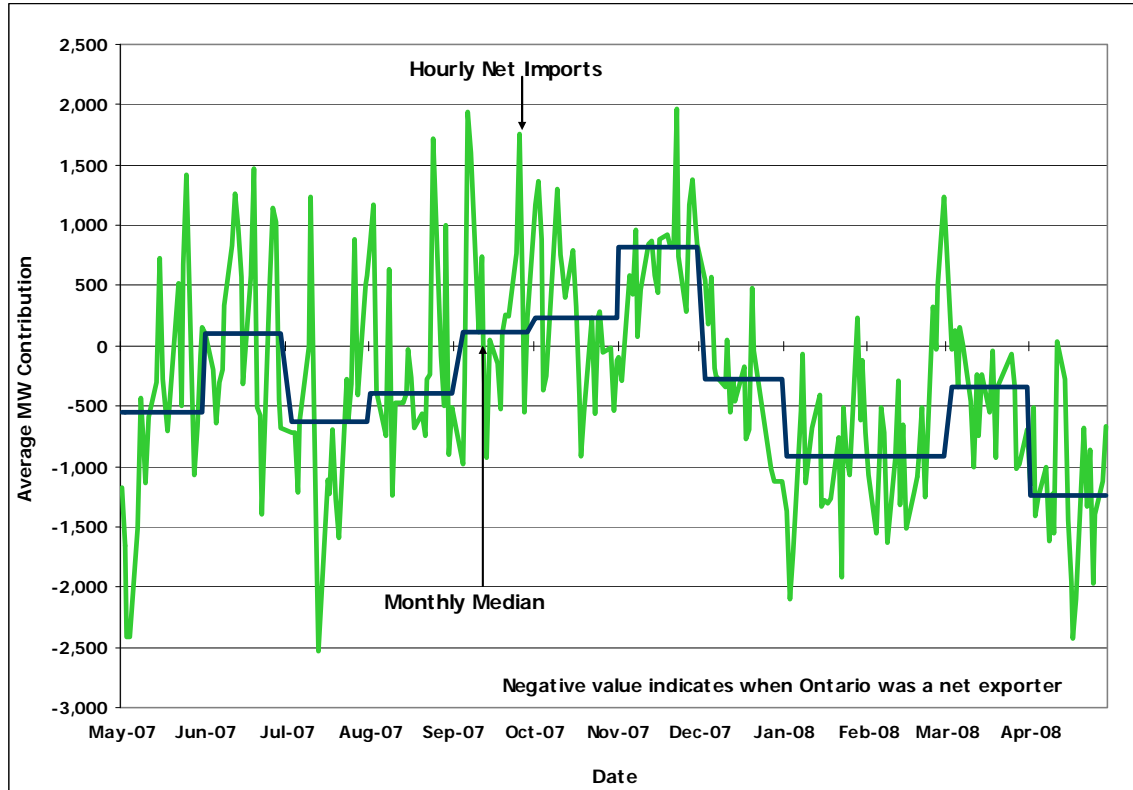


Figure 3.4 shows the amount of net imports into Ontario at the time of non-holiday weekday peak. Net interchange is the difference between total imports into Ontario and total exports out of Ontario. The trend to lower imports and higher exports corresponds to periods of time when Ontario generally has higher reserves.

**Figure 3.4 Net Interchange into Ontario at the Time of Weekday Peak**



The net interchange into Ontario continues to decline as the volume of export transactions increases from Ontario to neighbouring markets.

### 3.3 Historically Significant Events

Throughout the early part of 2008, there have been several instances where the Ontario Hourly Energy Price (HOEP) has been negative. These prices were the result of lower demand conditions than forecast and low-priced generation resources offered to meet this market demand. Prior to this year, the IESO had only seen 5 instances of negative HOEP since market opening. The frequency of having negative prices will increase during the 18 month study period, as electricity supply from baseload generation including nuclear, hydroelectric and wind sources is expected to increase in the latter half of the Outlook period and may at times exceed demand. Through planning and coordination with market participants, the IESO will be addressing the expected periods of surplus generation to mitigate any potential impacts to reliability. The very low prices in these surplus situations not only serves to discourage additional supply in those hours, but also encourages any market based pricing consumers to shift whatever consumption they can out of higher priced hours into these very low priced periods.

- End of Section -



## 4.0 Demand Forecast

The forecast of demand has been updated to reflect the most recent economic, weather and demand information. The Ontario economy continues to be influenced by a number of key developments:

- The high Canadian dollar and a U.S. slowdown continue to impact Ontario's manufacturing sector.
- Recent financial volatility has led to lower interest rates on both sides of the border. This helps boost domestic consumption and business investment. For that reason, construction, retail sales and the demand for goods and services remain strong. However, high fuel costs have raised inflation concerns which could exert upward pressure on interest rates.

Though economic indicators point to moderate growth, industrial electricity demand continues to lag. Going forward this trend is expected to continue in the near term. The demand models were updated and re-estimated to capture the most recent actual data and economic forecast.

Demand for the first five months of 2008 is tracking lower than in 2007. The economic impacts and conservation are the cause for the decline. Energy demand was down 1.2% on a weather-corrected basis. Demand from directly connected industry dropped by 3.9% for the first five months of 2008 compared to the same time period for 2007.

### **Demand Forecast Assumptions**

The adequacy assessments contained in this Outlook take into consideration a range of peak demands that can occur under various weather conditions with varying probability of occurrence. The IESO focuses on two demand forecast scenarios:

- Normal weather; and
- Extreme weather.

The impact of varying weather is modeled probabilistically in the calculation of the required resources for each week of the study period.

In addition to the weather scenarios, the demand forecast has two scenarios that differ in their treatment of conservation. The Planned Demand scenario includes the impacts of additional conservation programs and initiatives by the OPA and electricity distributors. As well, this scenario includes the impact of planned additions to load-displacing generation. All these impacts are decremented from the Firm scenario which only accounts for existing levels of conservation and existing load-displacing generation.

As noted in Section 1.0 the estimated conservation impacts have been improved due to updated OPA projections and improved modeling of load-displacing generation arising from the Renewable Energy Standard Offer Program (RESOP). Demand measures, such as dispatchable loads and price responsive demand, are treated as a resource and are further covered in Section 5.1 and 5.2. Table 4.1 shows the various conservation and demand management components and their treatment under the two scenarios.

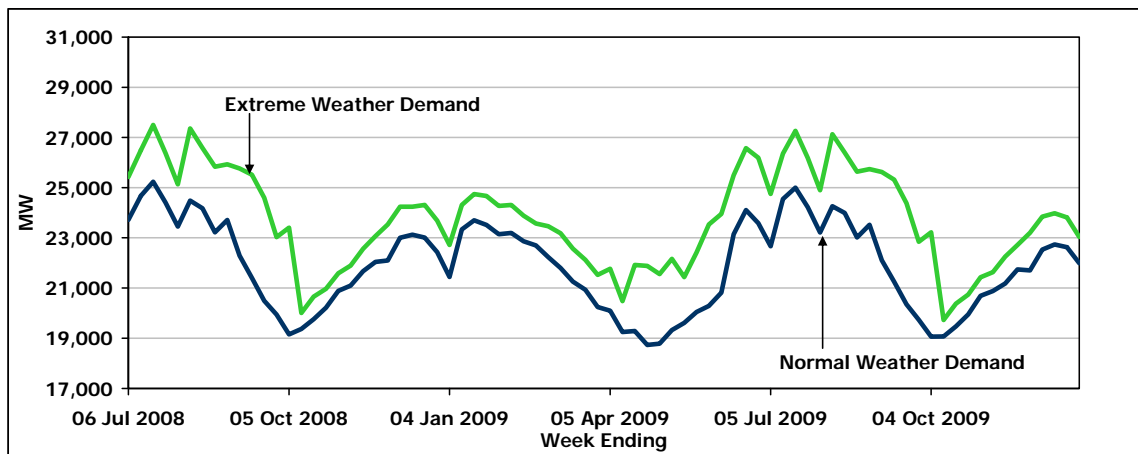
**Table 4.1 Conservation and Demand Management Scenarios**

Conservation and Demand Management Components	Planned Scenario	Firm Scenario	Treatment
Conservation	Targeted levels included	Existing levels included	Decrement demand
OPA Demand Response 1	Targeted levels included	Existing levels included	Resource
OPA Demand Response 2	Targeted levels included	None	Resource
OPA Demand Response 3	Targeted levels included	None	Resource
OPA Contracted Demand Response	Existing levels included	Existing levels included	Resource
RESOP Generation	Projected levels included	Existing levels included	Decrement demand
CHP Generation	Projected levels included	Existing levels included	Decrement demand if non-MP

Economic and demographic growth will be the factors driving energy and peak demand up during the forecast, and conservation will act to slow that growth. Under the Planned Demand scenario, energy demand is expected to decrease by 1.0% in 2008 (150.0 TWh) and 1.1% in 2009 (148.3 TWh) as conservation initiatives further reduce electricity demand. Under this scenario, the Normal peak demand for the summer of 2008 is expected to be 25,232 MW. Under the Firm Demand Scenario energy demand will decrease 0.4% in 2008 (151.0 TWh) and rebound to grow by 0.6% in 2009 (151.9 TWh). The summer 2008 Normal peak is expected to be 25,478 MW.

Figure 4.1 shows the Normal and Extreme (Planned Demand Scenario) weather demands assumed for each week in the study period.

**Figure 4.1 Demand Forecast Range**



For further discussion of how we identify peak demands and treat demand measures please refer to the Ontario Demand Forecast document, Section 3.0 *Forecasting Process and Assumptions*.

- End of Section -

## 5.0 Resource Adequacy Assessment

This section provides an assessment of the adequacy of resources to meet the forecast demand. From this assessment generator owners receive guidance for planning outages. When planned outages would adversely affect the reliability of the grid, as indicated by reserves below required levels, the IESO has the authority to deny approval of outages based on their order of precedence.

In recognition of the uncertainty that exists regarding the future availability of resources, two resource scenarios are described in this section: the Firm Resource Scenario (FRS) and the Planned Resource Scenario (PRS) (See section 5.2 for a description of the FRS and the PRS).

As was reported in the previous Outlook, the supply picture is expected to change significantly over the next 18 months. More than 4,300 MW of new supply are scheduled to come into, or return to service, including approximately 2,800 MW of gas-fired generation, 800 MW of nuclear generation, 100 MW of hydroelectric generation and about 600 MW of wind capacity. Most of the new supply projects have started their construction phase. In addition, the new interconnection with Quebec will increase transfer capabilities by 1,250 MW, in 2009.

The existing installed generating capacity within Ontario is summarized in Table 5.1. This capacity does not include generation that is commissioning.

**Table 5.1 Existing Installed Generation Resources as of June 15, 2008**

Fuel Type	Total Capacity (MW)	Number of Stations
Nuclear	11,426	5
Hydroelectric	7,738	68
Coal	6,434	4
Oil / Gas	5,498	23
Wind	471	5
Biomass / Landfill Gas	75	5
<b>Total</b>	<b>31,642</b>	<b>110</b>

## 5.1 Committed and Contracted Generation Resources

Table 5.2 summarizes the significant generation facilities that are scheduled to come into service, upgraded or retired within the next 18 month study period. This includes generation projects in the IESO's Connection Assessment and Approval Process (CAA) that are under construction and projects contracted by the OPA. Details regarding the IESO's CAA process and the status of all projects in the CAA queue, including copies of available Preliminary Assessment and System Impact Assessment Reports, can be found on the IESO's web site at <http://www.ieso.ca/imoweb/connassess/ca.asp>. Generator owners or operators have provided the information regarding the status of their projects listed in Table 5.2.

The estimated effective date shown in Table 5.2 indicates the date on which additional capacity is assumed to be available to meet Ontario demand. For projects that are under contract, the estimated effective date is the best estimate of the date when the contract requires the additional capacity to be available. In the event that a project is delayed, such that the commercial in-service date is expected to be later than the contract date, the estimated effective date will be the best estimate of the commercial in-service date for the project.

**Table 5.2 Committed and Contracted Generation Resources**

Proponent/Project Name	Zone	Fuel Type	Estimated Effective Date	Project Status	Capacity Considered in Resource Scenario (MW)	
					FRS (MW)	PRS (MW)
Retirement of Sandy Falls 25 Hz generation to convert to 60 Hz	Northeast	Water	2008-Q2 *	Connection Assessment	-3	-3
Retirement of Lower Sturgeon 25 Hz generation to convert to 60 Hz	Northeast	Water	2008-Q3 *	Connection Assessment	-5	-5
Kruger Energy Port Alma Wind Power Project	West	Wind	2008-Q3 *	Construction	101	101
Lac Seul Hydroelectric Project	Northwest	Water	2008-Q3	Construction	13	13
Greenfield Energy Centre	West	Gas	2008-Q3 *	Commissioning	1,005	1,005
Countryside London Cogeneration Facility	West	Gas	2008-Q3 *	Construction	12	12
Umbata Falls Hydroelectric Project	Northwest	Water	2008-Q4 *	Construction		23
Melancthon II Wind Project	Southwest	Wind	2008-Q4	Construction		132
Enbridge Ontario Wind Farm	Southwest	Wind	2008-Q4	Construction		200
Portlands Energy Centre Combined Cycle Operation	Toronto	Gas	2009-Q1 *	Construction		240
St. Clair Energy Centre	West	Gas	2009-Q1	Construction		570
Nuclear Upgrade	N/A	Uranium	2009-Q1 *	Construction	27	27
Return of Unit 7 at Beck 1 as a 60 Hz unit	Niagara	Water	2009-Q1	Construction	59	59
Goreway Station Project	Toronto	Gas	2009-Q2	Commissioning	860	860
Algoma Energy Cogeneration Facility	Northeast	Industrial Gas	2009-Q2	Construction		63
Wolfe Island Wind Project	East	Wind	2009-Q2 *	Approvals & Permits		198
Bruce Unit 2	Bruce	Uranium	2009-Q3 *	Construction		750
East Windsor Cogeneration Centre	West	Gas	2009-Q3 *	Construction		84
<b>Total</b>					<b>2,068</b>	<b>4,328</b>

### Notes to Table 5.2:

- \* The estimated Effective Date or the Capacity for the project or both may have changed from the last Outlook.
- The total may not add up due to rounding.
- Project status provides a general indication of the project progress. The standard milestones used are: Connection Assessment, Approvals & Permits, Construction, and Commissioning.
- "Connection Assessment" indicates that the project is undergoing a system impact assessment with the IESO.

5. "Approvals & Permits" indicates that the project proponent is in the process of acquiring major approvals and permits required to start construction (e.g. environmental assessment, municipal approvals etc).
6. "Construction" means that the project is under construction,
7. "Commissioning" indicates that the project is undergoing commissioning tests with the IESO.

## 5.2 Summary of Scenario Assumptions

In assessing future resource adequacy, it is necessary to make a number of assumptions regarding the magnitude of resources expected to be available for operation. Two scenarios were considered in this Outlook: a Firm Resource Scenario and a Planned Resource Scenario. Both resource scenarios were established starting from the existing installed resources shown in Table 5.1.

For both the PRS and the FRS scenarios, all generating resources (excluding the units that are scheduled to retire), already in-service or once in-service are assumed to remain in-service for the duration of the study period, except for periods of time that the generator owner or operator has submitted planned outages for their generating units.

The generation capability assumptions are as follows:

- Hydroelectric capability, which includes energy and operating reserve is based on median historical values of hydroelectric hourly energy production and capacity contribution to operating reserve during weekday peak demand hours from May 2002 to February 2008.
- Capacity and energy contributions from thermal generators based on market participant submissions, including planned outages, expected forced outage rates and seasonal deratings.
- Wind-powered generation capacity at the time of weekday peak is assumed to be 10% and total energy contribution is assumed to be 30%.

The PRS assumes quantities of demand measures and generation capacity based on existing resources plus significant resource changes that are scheduled to occur within the 18-month study period. These include:

- A. Existing Installed Resources: total capacity of 31,692 MW (refer to Table 5.1)
- B. All new generation facilities and capacity changes to the existing facilities (refer to Table 5.2)
- C. Demand Forecast:
  - The demand forecast is reduced to account for the impacts of targeted conservation.
  - Demand measures include dispatchable loads and loads contracted with the OPA which vary in total from 412 MW to 542 MW (refer to column "Demand Measures" in Table A2 or A7 in Appendix A). Based on historical data, it is assumed that 55.5% of dispatchable demand is available at the time of the weekly peak.
  - Demand measures are forecast based on market participant information and actual market experience.

The FRS assumes quantities of demand measures and generation capacity based on the existing resources and a limited set of planned capacity increases or additions (refer to Table 5.2, column labeled “FRS” under heading “Capacity Considered in Resource Scenario”). This scenario includes:

- A. Existing Installed Resources: total capacity of 31,692 MW (refer to Table 5.1).
- B. Capacity changes to existing facilities (refer to Table 5.2).
- C. Additional generating resources that have started their commissioning activities with contributions beginning on the date that the facility is expected to be in-service.
- D. Additional generating resources that are expected to become available in the first three months of the Outlook study period (regardless of commissioning status), with contributions beginning on the date that the facility is expected to be in-service.
- E. Existing demand measures assumed at 299 MW for the entire period of the Outlook (refer to column “Demand Measures” in Table A1 or A6 in Appendix A). Demand values (Table A4 in Appendix A) exclude targeted conservation.

The resource and demand scenario assumptions are summarized in the Table 5.3

**Table 5.3 Summary of Scenario Assumptions**

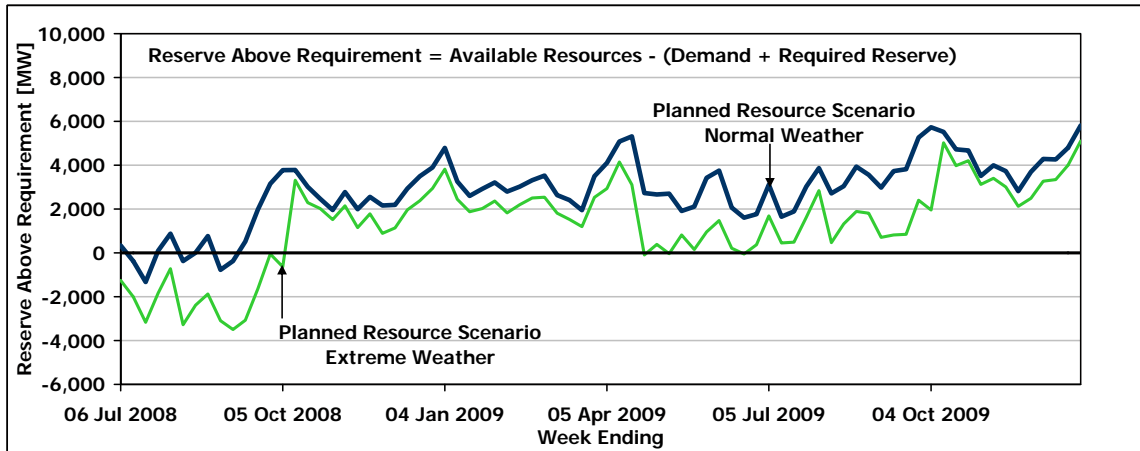
Firm Resource Scenario	Planned Resource Scenario
<b>Resource Assumptions</b>	
Existing Installed Resources (refer to Table 5.1)	Existing Installed Resources (refer to Table 5.1)
Capacity changes to existing facilities in Table 5.2	All projects listed in Table 5.2
Generating resources in Table 5.2 that have started their commissioning activities	
Generating resources in Table 5.2 that are expected to become available in the first three months of the Outlook study period (regardless of commissioning status)	
<b>Demand Assumptions</b>	
Existing conservation and demand measures	Existing and targeted conservation
	Additional Demand measures that include dispatchable loads and loads contracted with the OPA

### 5.3 Planned Resource Scenario with Normal and Extreme Weather

#### Weekly Adequacy Assessments for the Planned Resource Scenario

Reserve Above Requirement levels, which represent the difference between Available Resources and Required Resources, are shown in Figure 5.1.

**Figure 5.1 Reserve Above Requirement: Planned Resource Scenario with Normal vs. Extreme Weather**

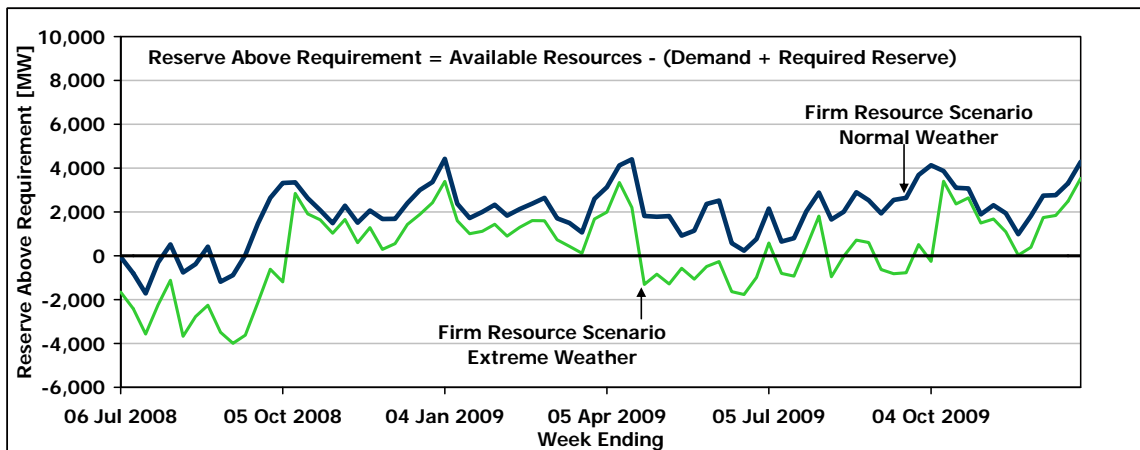


### 5.4 Firm Resource Scenario with Normal and Extreme Weather

#### Weekly Adequacy Assessments for the Firm Resource Scenario

Reserve Above Requirement levels, which represent the difference between Available Resources and Required Resources, are shown in Figure 5.2.

**Figure 5.2 Reserve Above Requirement: Firm Resource Scenario with Normal vs. Extreme Weather**



## 5.5 Comparison of Resource Scenarios

Table 5.4 shows a snapshot of the forecast available resources, under the two scenarios, at the time of the summer and winter peak demands over the study period.

The monthly forecast of energy production capability, as provided by market participants, is included in Appendix A, Table A9.

**Table 5.4 Summary of Available Resources**

Notes	Description	Summer Peak 2008		Winter Peak 2009		Summer Peak 2009	
		Firm Resource Scenario	Planned Resource Scenario	Firm Resource Scenario	Planned Resource Scenario	Firm Resource Scenario	Planned Resource Scenario
1	Installed Resources (MW)	31,639	31,639	32,764	33,929	33,710	35,136
2	Imports (MW)	0	0	0	0	0	0
3	Total Resources (MW)	31,639	31,639	32,764	33,929	33,710	35,136
4	Total Reductions in Resources (MW)	4,091	4,106	4,055	5,098	3,717	4,939
5	Demand Measures (MW)	299	412	299	542	299	542
6	Available Resources (MW)	27,846	27,944	29,008	29,373	30,292	30,738

### Notes to Table 5.4:

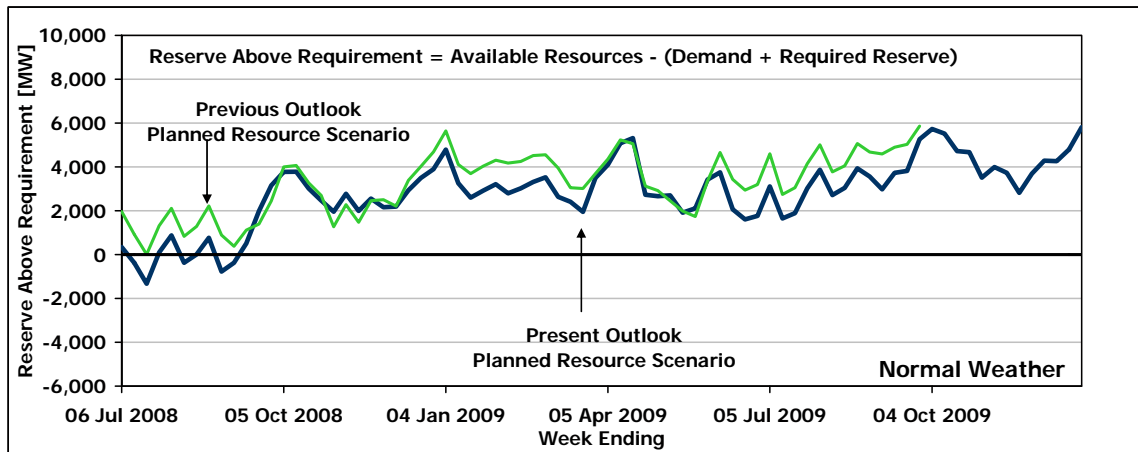
1. Installed Resources (MW): This is the total capacity of the generation resources in Ontario assumed to be installed at the time of the summer and winter peaks in the 18 month time span. Initially, this value includes all generators registered to participate in the IESO-administered markets at the beginning of the 18 month study period. Additional generation capacity that was assumed under the applicable resource scenario is progressively included, according to the estimated in-service dates.
2. Imports (MW): Represents the amount of external capacity considered to be delivered to Ontario.
3. Total Resources (MW): This is the sum of Installed Resources (line 1) and Imports (line 2).
4. Total Reductions in Resources (MW): These reductions represent the sum of generator deratings, generator planned outages, generation limitations due to transmission interface constraints, generation constraints due to transmission outages/limitations and allowance for generation capability levels below rated installed capacity.
5. Demand Measures: This is the amount of demand assumed available to be reduced, under each resource scenario.
6. Available Resources (MW): This equals Total Resources (line 3) minus Total Reductions in Resources (line 4) plus Demand Measures (line 5).



### Comparison of the Weekly Adequacy Assessments for the Planned Resource Scenario

Figure 5.3 provides a comparison between the forecast Reserve Above Requirement values in the present Outlook and the forecast Reserve Above Requirement values in the previous Outlook published on April 1, 2008. The difference is mainly due to the changes to generator outages and the change in the demand forecast.

**Figure 5.3 Reserve Above Requirement: Planned Resource Scenario with Present Outlook vs. Previous Outlook**



## 5.6 Resource Adequacy Risks

The forecast reserve levels for both the FRS and the PRS should be assessed bearing in mind the risks discussed below.

### 5.6.1 Extreme Weather

The FRS and the PRS are based on the assumption of normal (average) weather. However, peak demands in both summer and winter typically occur during periods of extreme weather. Unfortunately, the occurrence and timing of extreme weather is impossible to accurately forecast far in advance. As a result, the impact of extreme weather is modeled probabilistically in the calculation of the required resources for each week of the study period. The impact of extreme weather was demonstrated in the first week of August 2006, when Ontario established an all-time record demand of 27,005 MW. Over 3,000 MW of this demand was due to the higher than average heat and humidity.

In order to illustrate the impact of extreme weather on forecast reserve levels during the Outlook period, both the FRS and the PRS were re-calculated assuming extreme weather in each week instead of normal weather. The probability of this occurring in every week is very small; however the probability of an occurrence in any given week is greater (about 2.5 percent). When one looks at the entire summer or winter periods, the expectation of at least one period of extreme weather becomes very likely.

The magnitude of resource deficiencies, under extreme weather (as seen earlier in Figures 5.1 and 5.2), clearly illustrates circumstances could arise under which reliance on a combination of interconnected supply, rejection of planned generator maintenance or emergency actions may be

required. This emphasizes the continued need for a mix of resources that provides for a reliable supply, conservation programs and demand measures within Ontario.

### 5.6.2 New Facilities

For the 18 month period under study, the improving demand-supply situation, seen mainly in the PRS, is dependent on the additional generation, conservation programs and demand measures coming into service as forecast. Some of the risks the projects face are regulatory approvals, construction delays and untimely equipment deliveries by suppliers.

Since the last report, most of the projects have started their construction phases. While there will undoubtedly be adjustments to schedules between now and when each facility is declared commercially in service, having these projects under construction represents a significant reduction in risk for the future.

The OPA monitors and reports on the progress of the electricity supply contract projects on a quarterly basis at their web site found below:

<http://www.powerauthority.on.ca/Page.asp?PageID=122&ContentID=6465&SiteNodeID=120>

### 5.6.3 Generator Planned Outages

A number of large generating units perform their maintenance in the shoulder seasons and are scheduled to return to service from outage prior to summers 2008 and 2009. Meeting these schedules is critical to maintaining adequate reserve levels. Delays in returning generators to service from maintenance outages could lead to reliance on imports and/or cancellation of other planned generator outages.

With the transition from winter peaking to summer peaking over the last number of years Ontario has experienced several years where the dual peaking nature of the Ontario system (roughly equivalent peaks in winter and summer) meant that outages must be scheduled in shorter spring and fall periods. Inevitably this meant that some long duration outages had to be scheduled into the start of the peak seasons, creating the potential that any extensions of these outages would occur when the generation is most needed.

In the previous report, the IESO reported on a new opportunity for a limited amount of maintenance activities through the winter period. This opportunity continues to be available. Until recently, the Independent Electricity System Operator (IESO) generally limited generators to scheduling their planned maintenance outages during the fall and spring “shoulder months” when demand tends to be lower. With more domestic resources becoming available, limited opportunities now exist for the IESO to accommodate planned generator outages in the winter months as well. These opportunities should provide generators with more flexibility to schedule their maintenance outages which should in turn provide greater assurances going forward that Ontario’s generation fleet will be well prepared for the high demand summer months.

In the event that generator outages must be delayed due to reliability concerns, it will be necessary for outages to be rescheduled to a more suitable time period. However outage rescheduling could challenge the ability of generator owners/operators to accommodate larger number and magnitude of outages over shorter time periods and may increase forced outage occurrences. Operational experience so far indicates generator owners are usually able to adapt their outage plans.

#### 5.6.4 Lower than Forecast Generator Availability

IESO resource adequacy assessments include a probabilistic allowance for random generator forced outages based on generator reliability information provided by market participants, or on industry-wide data for similar facilities. Along with weather-related demand impacts, the impact of generator forced outages is included in the determination of required resources.

#### 5.6.5 Lower than Forecast Hydroelectric Resources

IESO resource adequacy assessments include hydroelectric generation outputs based on median historical values of hydroelectric production plus operating reserve during weekday peak demand hours and energy capability provided by market participants. The amount of available hydroelectric generation is greatly influenced both by water-flow conditions on the respective river systems and by the way in which water is utilized.

It is not possible to accurately forecast precipitation amounts far in advance. Drought conditions over some or all of the study period would lower the amount of generation available from hydroelectric resources. Low water conditions can result in significant challenges to maintaining reliability, as was experienced in the summer of 2005.

#### 5.6.6 Wind Resource Risks

This Outlook assumes that 10% of the installed capacity of wind power generators is available at the time of the weekly peak. There is a risk that wind power output could be less than 10% at the time of the weekly peak if:

- the wind isn't blowing, or
- extreme cold weather or high wind speeds necessitate that wind generator output be curtailed to prevent equipment damage (these conditions are expected to be rare).

The geographic diversity of Ontario wind resources, as more sites are commissioned, should mitigate some of the risk associated with wind speed variability.

IESO is examining wind issues with stakeholders in the Wind Power Standing Committee (SE-29). The assumed capacity factor at the time of the peak is an issue this stakeholdering process is examining.

#### 5.6.7 Capacity Limitations

There is a risk that any given generator may not be capable of producing the maximum capacity that the market participant has forecast to be available at the time of peak demand. There may be several reasons for these differences. Independent of the best efforts of generator owners to maintain generator capability, there are sometimes external factors which may impact the capability to produce.

Some outages and deratings, such as environmental limitations and high ambient temperature deratings, may be more likely to occur at roughly the same time as the extreme weather conditions that drive peaks in demand.

For example, there are risks that gas-fired generators may not be capable of producing the maximum capacity that the market participant has forecast to be available at the time of peak. The natural gas and electricity sectors are converging as natural gas becomes one of the more

common fuels in North America for electric power generation. The IESO is jointly working with the Ontario gas transportation industry to identify and address issues.

#### 5.6.8 Transmission Constrained Resource Utilization

Transmission constraints may occur more often than expected due to multiple unplanned outages and may also have greater impact than expected on the ability to deliver generation to load centres. This is particularly true for large transformers whose repair or replacement time can be much longer than for transmission lines. Although many transmission limitations are modeled in accordance with recognized reliability standards, limitations resulting from multiple forced transmission outages can have significant impacts on resource availability.

Constraints may also occur due to weather conditions that result in both high demands and higher than normal equipment limitations. For example periods of low wind combined with hot weather not only cause higher demands but also result in lower transmission capability. This can affect the utilization of internal generation and imports from neighbouring systems at critical times. Transmission constraints that result from loop flows can be particularly hard to predict because they result not only from the conditions within Ontario but from the dynamic patterns that are taking place within and between other areas. Depending on the direction of prevailing loop flows, this may improve or aggravate the ability to maintain reliability.

During high demand periods, the availability of high-voltage capacitors and the capability of generators to deliver their full reactive capability also become critically important to permit the higher power transfers that are required. Outages or de-ratings to these reactive resources can restrict power transfer from generators and imports, and make it difficult to satisfy the peak demands.

### 5.7 Surplus Supply Scenarios

Previous reports have focused exclusively on peak demand periods. However, reliability risks can also occur when electricity demand is at its lowest such as during the overnight and weekend hours of temperate weather periods. Certain types of generation such as nuclear and some hydroelectric generators must maintain minimum output levels to ensure the generation is available in future high demand hours, or to respect environmental or other operational constraints. At the same time, wind generators can also be contributing, as they operate whenever they have the right conditions. Electricity supply from baseload generation including nuclear, hydroelectric and wind sources is expected to increase in the latter half of the Outlook period and may at times exceed demand. Through planning and coordination with market participants, the IESO will be addressing the expected periods of surplus generation to mitigate any potential impacts to reliability. Surplus baseload supply situations have occurred infrequently to date, and have always been accompanied by very low energy prices. The low prices not only serve to discourage additional supply in those hours, but also to encourage any market based pricing consumers to shift whatever consumption they can out of higher priced hours into these very low priced periods.

- End of Section -

## 6.0 Transmission Reliability Assessment

This section provides an assessment of the reliability of the Ontario transmission system for the 18 month study period of this Outlook.

A main objective of the transmission reliability assessment is to identify all major transmission and load supply projects that are planned for completion during the next 18 months and to discuss their reliability benefits.

A second objective of the transmission reliability assessment is to forecast any reduction in transmission capacity brought about by specific transmission outages. For a major transmission interface or interconnection, the reduction in transmission capacity due to an outage condition can be expressed as a change in the base flow limit associated with the interface or interconnection.

A third objective of the transmission reliability assessment is to identify the possibility of any security related events on the IESO controlled grid that could require contingency planning by market participants or by the IESO. As a result, planned transmission outages are reviewed in correlation with major planned resource outages and also the scheduled completion dates of new generation and transmission projects to identify transmission system reliability concerns and to highlight those outages that should be rescheduled or changed.

### 6.1 Transmission Projects

The IESO requires transmitters to provide information on the transmission projects that are planned for completion within the 18 month period. The complete list of major transmission projects is shown in Appendix B. Projects that are either in service or whose completion has been deferred well beyond the period of this outlook were removed from the list. The list includes only the transmission projects that represent major modifications or are considered to provide significant improvement to system reliability. Minor transmission equipment replacements or refurbishments are excluded. For projects assessed or being assessed under the IESO's Connection Assessment and Approval process, the assigned identification number is included for cross referencing.

Additional information regarding the transmission projects that have been assessed by the IESO can be found at the IESO's Connection Assessments web page, at the following location:  
<http://www.ieso.ca/imoweb/connAssess/ca.asp>.

### 6.2 Load Supply Projects

The electricity demand growth experienced in Ontario in the last decade has resulted in a number of loads reaching or exceeding the capability of the existing transformer stations. To address this problem and provide additional transformer capacity for future load growth, Ontario transmitters and distributors have initiated plans to build new transformer stations and replace existing transformers where appropriate. Seven projects relating to load supply improvements will be placed in service during the timeframe of this Outlook.

Connection assessments performed by the IESO concluded that these proposed projects will provide relief to existing transformer stations, some of which are presently overloaded, and will

improve the supply to various load areas. In some of these assessments the IESO found that the local transmission system may be reaching its maximum capability and identified the need for installation of local voltage support equipment. As a result, Hydro One initiated the installation of low voltage capacitor banks at a number of transformer stations in the system.

Transmission assessments performed by transmitters in collaboration with distributors also identified transmission reinforcements required to ensure load supply reliability. These needed reinforcements were confirmed by the IESO during related connection assessments. Several of these transmission reinforcements are currently under construction or are to start construction soon, and are planned for service during or just beyond the study period of this Outlook. The proposed Essa to Stayner 230 kV transmission line and 230/115 kV transformer station in the Woodstock area are examples of new transmission reinforcements that will result in an increase in load supply reliability.

The implementation of these projects will also provide considerable supply improvements beyond the timeframe of this Outlook.

### 6.3 Transmission Outages

The assessment of transmission outages for this Outlook has been limited to those outages with a scheduled duration of greater than five days or to those outages associated with a project where there is a significant collection of outages that combine to create a scheduled duration of greater than five days. The IESO recognizes that additional outage requirements and changes are expected as time approaches the Outlook study period and that transmission capacity will be impacted by outages with a scheduled duration of five days or less. Prior to approving and releasing an outage, the IESO will reassess the outage for potential system impacts, taking into account all current and forecasted conditions.

The IESO's assessment of the impact of the transmission outage plans is shown in Appendix C, Tables C1 to C10. In these tables, each element is assessed individually by indicating the possible impacts and the reduction in transmission interface and interconnection limits. Where multiple outages are scheduled during the same period, the combined effect of all outages on the reduction in transmission interface and interconnection limits is presented. Where multiple outages are scheduled during the same period and reliability is affected the IESO will request the transmitter to reschedule some of the outages. The methodology used to assess the transmission outage plans is described in the IESO document titled "Methodology to Perform Long Term Assessments" (IESO\_REP\_0266).

The planned transmission outages are reviewed in correlation with major planned resource outages and scheduled completion dates of new generation and transmission projects. This allows the IESO to identify transmission system reliability concerns and to highlight those outages that should be adjusted. A change to an outage may include rescheduling the outage, reducing the scheduled duration or reducing recall time.

The assessment of transmission outages will also identify any resources that have potential or are forecast to be constrained due to transmission outage conditions. Transmitters and generators are expected to have a mutual interest in developing an ongoing arrangement to coordinate their outage planning activities. Transmission outages that may affect generation access to the IESO controlled grid should be coordinated with the generator operators involved, especially at times when the forecast of reserve is deficient. Under the Market Rules, where the scheduling of planned outages by different market participants conflicts such that both or all outages cannot be

approved by the IESO, the IESO will inform the affected market participants and request that they resolve the conflict. If the conflict remains unresolved, the IESO will determine which of the planned outages can be approved according to the priority of each planned outage as determined by the Market Rules detailed in Chapter 5, Sections 6.4.13 to 6.4.18. For this Outlook, transmission outage plans submitted to the IESO's Integrated Outage Management System (IOMS) as of April 22, 2008 were used.

There is a substantial number of planned outages identified during the period of this Outlook that are required to accommodate equipment maintenance or future changes. Their specific impact on reliability is identified in subsequent sections of this report.

#### 6.4 Transmission System Adequacy

The Ontario transmission system with the planned system enhancements and known transmission outages is expected to be adequate to supply the demand under the normal weather conditions forecast for the 18 month period of this Outlook. However, for summer 2008, the transmission system in conjunction with transmission outages may approach its capability to supply the demand under extreme weather conditions. This may require some outages to be rescheduled.

IESO Outlooks identify various areas of the IESO controlled grid where the projected extreme weather loading is expected to approach or exceed the capability of the transmission facilities for the conditions forecast in the planning period. Where the loading was projected to exceed the capability of the transmission facilities, there is also an increased risk of load interruptions.

IESO continues to work with Hydro One and other Ontario transmitters, to identify the highest priority transmission needs, and to ensure that those projects whose in service dates are at risk are given as much priority as is practical, especially those addressing reliability needs for summer 2008 and 2009. IESO has also been working closely with the OPA to specify the locations, timing and minimum requirements to satisfy reliability standards.

### 6.4.1 Toronto and Surrounding Area

The Greater Toronto Area (GTA) electricity supply is mainly provided by the Trafalgar, Claireville, Parkway and Cherrywood 500/230 kV autotransformers, Pickering generation station (GS) and other local generators as depicted in Figure 6.1. The availability of these facilities is critical to ensure reliable electricity supply for Toronto and surrounding area.

**Figure 6.1 Greater Toronto Area Electricity System**



The reliable supply of demand in the GTA under extreme weather conditions forecasted for 2008 and 2009 requires that at a minimum all autotransformers at Trafalgar, Claireville, Parkway and Cherrywood and four Pickering units be in service and at rated capabilities. Based on known outage plans for the summer periods of this Outlook, all autotransformers are expected to be in service. At Pickering GS, four units are expected to be in service during most of the month of June and five for the rest of summer 2008.

Following last year's outages and deratings associated with the 500/230 kV autotransformers, Hydro One implemented an extensive autotransformer remediation program. One spare autotransformer is currently available and two spares autotransformers will be available before to the end of 2008.



For summer 2008 and 2009 with all autotransformers, five Pickering units and all other elements in service, the projected summer extreme weather loadings on the autotransformers should not exceed their long term emergency capability following the forced outage of one autotransformer at Trafalgar, Claireville, Parkway or Cherrywood or one additional Pickering unit. Subsequent forced outages or equipment deratings may require the implementation of control actions in the GTA to reduce the loading of remaining autotransformers within long term emergency limits. For summer 2009, with the additions of Goreway Station and the second stage of Portlands Energy Centre, the situation is further improved.

Prior to any contingency, the projected summer extreme weather loadings on the Trafalgar, Claireville, Parkway and Cherrywood autotransformers are expected to be within their continuous capability but the total station spare capability may be low.

The station spare capability at Claireville is the lowest. For summer 2008, the spare capability at Claireville may be as low as 4%. With one autotransformer out of service the continuous capability of some remaining autotransformers may be exceeded but the loadings will be within their long term emergency capability, which is only available for a limited time. Load reduction measures may be required following the unlikely forced outage of one additional autotransformer to reduce the remaining autotransformer loadings within applicable limits. For summer 2009, the presence of the Goreway Station will reduce the loading of Claireville autotransformers to below their continuous ratings even when one transformer is out of service. Following the loss of an additional transformer at Claireville load reduction measures may still be required.

The second lowest spare capability is at Trafalgar. For summer 2008 the spare capability at Trafalgar may be around 7%. With one autotransformer out of service the capability of the remaining one is sufficient to reliably supply the loads if all associated transmission elements are in service. Multiple element contingencies may require load reduction measures to reduce the loading of the remaining autotransformer to within applicable ratings. The presence of the Goreway Station during summer 2009 will help reduce the loadings on the Trafalgar autotransformers.

The Cherrywood autotransformer loadings are strongly influenced by Pickering generation. In general, the spare capacity at Cherrywood is sufficient if four Pickering units are available. In the specific circumstance where two Pickering units connected to the same 230 kV Cherrywood bus are unavailable, the loss of a Cherrywood autotransformer connected to the same bus would cause the remaining autotransformer to be overloaded. To mitigate this concern, load reduction measures would be required. Availability of the Portlands Energy Centre generation (Phase 1 – summer 2008; Phase 2 – summer 2009) will reduce, but is unlikely to fully eliminate, the necessary amount of load curtailment under these conditions.

The Parkway autotransformers are adequate to supply the load forecast within the timeframe of this Outlook. Under certain outage conditions their spare capability may be useful to provide temporary relief of the Claireville or Cherrywood autotransformers.

Power advisories for the GTA may be issued following outages of more than two Pickering units and a single autotransformer in the GTA. Supplementary contingencies or 500 kV line outages may require load reduction measures ranging from voltage reduction to load curtailment, to control equipment loadings or system voltages in the GTA.

The supply to central Toronto will be improved during the period of this Outlook. The completion of the Portlands Energy Centre will assist in eliminating possible overloads of the Manby TS and Leaside TS autotransformers.

To manage increasing fault levels at Claireville TS resulting from the incorporation of new resources near it, the reconfiguration work at Claireville will allow the 230 KV bus to be operated open by ensuring that the autotransformers loadings on each half of the open remain approximately equal. In addition, the reconfiguration work will improve the supply reliability to transformer stations connected to the 230 kV transmission circuits leaving Claireville TS.

The GTA West transmission corridor between Trafalgar and Richview which supplies Brampton, Mississauga and parts of Caledon and Halton Hills may become loaded above capability during summer 2009 under extreme weather conditions. Transmission reinforcements which will relieve the loading of this corridor and alleviate this problem are planned for service before summer 2010.

In the York Region, the transformer station capacity in the Newmarket and Aurora area has been exceeded due to load growth. There is an immediate need for a new transformer station in the area. A new transformer station is planned to be in service by mid 2009. Until then, the immediate needs will be mitigated by load transfers, increasing the equipment operating ratings and incentives for demand response programs in the area.

For the Outlook period, there are no major transmission outages in the GTA that will result in a reduction of limits.

#### 6.4.2 Bruce and Southwest Zones

Planned refurbishments at the Bruce generation station and proposed wind farm developments in southwestern Ontario will result in increased generation capacity from that region. To avoid potential constrained generation of these resources a number of enhancements are planned. In the near term, transmission reinforcements that will increase the transfer capability out of Bruce include the up-rating of the Hanover to Orangeville 230 kV circuits and the installation of additional high voltage shunt capacitors at Buchanan, Middleport and Nanticoke. These projects are of a high priority and are staged for completion before October 2009. If the seventh Bruce unit is returned to service before all the shunt capacitors are available, some additional constrained generation may occur in the third quarter of 2009 under conditions where all resources at and near Bruce are available at their rated capabilities.

Beyond the Outlook period, in addition to the near-term reinforcements described above, interim measures are being planned for the time when the eighth Bruce unit is returned to service before the proposed 500 kV double-circuit line between Bruce to Milton is available. The interim measures would include the installation of additional voltage control facilities at Nanticoke and when necessary, maximizing the available reactive power from Nanticoke units. These measures together with the new shunt capacitors and the deployment of the existing special protection system will further reduce potential constrained generation. In the longer-term, the proposed 500 kV line from Bruce to Milton would provide the required transmission capability to deliver the full benefits of the Bruce refurbishment project and the development of new renewable resources in southwestern Ontario.

The new manufacturing development and load growth in the Woodstock area will result in increased low voltage conditions on the local 115 kV transmission system during summer

extreme weather conditions. For the Outlook summer periods, Hydro One has installed a second capacitor bank at Woodstock TS to provide voltage support. Beyond the Outlook period, Hydro One is planning to add a new 115 kV DESN station and a second supply point by extending the 230 kV transmission lines from Ingersoll to Woodstock area and installing a new 230/115 kV transformer station. These plans will provide an increased level of supply reliability, and support further load growth in the area.

Limitations associated with the Burlington TS, previously identified by the IESO, are to be resolved partly by the end of 2008 and completely by the end of 2010. This work which includes a 230/115 kV autotransformer upgrade and the replacement of other limiting components will alleviate concerns related to the ability of the station to supply the Burlington 115 kV area loads.

Certain transmission outages on the IESO-controlled grid may also cause additional constrained operation of resources in southwestern Ontario due to a reduction in the transfer capability out of Bruce on the Flow Away from Bruce Complex (FABC) transmission interface. Multiple outages associated with equipment in the Bruce, Southwest and West zones are scheduled during this Outlook period and will result in a reduction in the FABC limit of up to 950 MW. These reductions contribute to the bottled generation amounts shown for the Bruce and West zones in tables A3 and A8.

Low 500 kV voltage conditions at the Milton switching station may occur during summer extreme weather conditions when the 500 kV transmission circuit between Nanticoke and Middleport is out of service. The IESO recommends that the Middleport circuit breaker outage, which causes this circuit to be out of service, be rescheduled. This outage would also reduce the limit on the Flow East to Toronto (FETT) transmission interface limit by 600 MW.

#### 6.4.3 Niagara Zone and the New York Interconnection

The situation with the Queenston Flow West project has not changed since the last Outlook. The completion date for transmission reinforcement from Niagara region into the Hamilton-Burlington area continues to be delayed. The limitations affect the use of both the available Ontario generation and imports into the province, particularly during hot weather, high demand periods.

Once in service, the reinforcement project will increase the transfer capability of the transmission interface connecting the grid in the Niagara zone to the grid in the Hamilton area by about 800 MW. This enhancement will permit increased imports from New York of at least 350 MW, and up to 800 MW depending on the load and generation dispatch in Ontario.

A forced outage associated with one of the Ontario to New York interconnection circuits at Niagara that is expected to last into the second quarter of 2009, results in a reduction of the summer import and export capability of 440 MW and 680 MW respectively, and a reduction of the winter import and export capability of 510 MW and 560 MW respectively. In addition, the outage reduces the FABC limit by up to 100 MW. The resource adequacy assessment results show that under the Normal Weather, Planned Resource Scenario the Reserve above Requirement levels are negative for some periods before mid September 2008. For these periods Ontario may need to rely on imports. It is expected that the capability of the remaining interconnections should be adequate for any imports. However, for the Extreme Weather, Planned Resource Scenario the Reserve above Requirement levels are negative for all periods and significant in some cases before the end of September 2008. If high imports levels are required,

the import capability of the remaining interconnections may approach their limits. The IESO will be monitor any situations closely and will take any necessary mitigating control actions.

#### 6.4.4 East Zone and Ottawa Zone

The 1,250 MW interconnection between Hawthorne transformer station (TS) in Ontario and Outaouais station in Québec is scheduled for service by March 31, 2009. Construction activities are underway and planned for completion by the end of 2008, allowing for commissioning activities to take place in the first quarter of 2009. The new interconnection will be accompanied by the installation of a new Special Protection System (SPS) at Hawthorne TS and modifications to the existing SPS at St. Lawrence TS. The SPSs will allow simultaneous imports from Québec and New York to be maximized. The existing functionality of the St. Lawrence SPS will be maintained.

The current Reliability Must Run (RMR) contract between the IESO and OPG for Lennox GS covers the period October 2007 to September 2008. For the remaining duration of this Outlook period, studies performed by the IESO indicate that there could be significant adverse local area reliability impacts if Lennox is removed from the IESO-controlled grid without adequate replacement.

Lennox GS is presently needed to maintain local area reliability in the Ottawa zone and the area of Ontario that is located east of the FETT transmission interface. As part of the interconnection work at Hawthorne, the addition of voltage support facilities may reduce reliance on Lennox for local Ottawa zone need. Similarly, supply improvements from new generation additions and conservation in and around Toronto through 2010 are expected to reduce the need for Lennox to control flows on the FETT interface. However, Lennox GS is also critical to provincial resource adequacy, and must be retained or replaced. This resource adequacy requirement cannot be achieved through an RMR under the current Market Rules. The Integrated Power System Plan filed by the OPA with the OEB in August, 2007 assumes that Lennox remains in service and is categorized as a planned gas resource starting in 2011. The IESO will continue to negotiate RMR contracts for Lennox GS within the existing market rule structure only to the extent necessary to meet local area requirements.

#### 6.4.5 West Zone and the Michigan Interconnection

Extensive refurbishment work continues to be completed at the Lambton TS 230 kV switchyard to reliably incorporate the new Greenfield Energy Centre and St. Clair Energy Centre generating resources. The modifications are required to manage the expected increase in short circuit levels when these generating resources are in service while Lambton generating units continue to operate. To complete the work, a large volume of equipment outages must proceed as scheduled.

The multiple outages related to the Lambton refurbishment work and Longwood TS equipment refurbishments scheduled in the third and fourth quarters of 2008, combined with outages in the Bruce and Southwest zones, will result in reductions in the Buchanan Longwood Input (BLIP) and the Negative BLIP (NBLIP) limits. These outages could reduce the BLIP/NBLIP limits by 500 MW and up to 700 MW respectively. The NBLIP reductions contribute to the bottled generation amounts shown for the Bruce and West zones in tables A3 and A8.

With the incorporation of Greenfield and St. Clair starting in the first quarter of the 2009, transmission constraints may limit the availability to utilize resources in southwestern Ontario

and imports from Michigan. The frequency and magnitude of congestion could be aggravated further by transmission outages and weather conditions.

Phase angle regulators (PARs) are installed on the Ontario-Michigan interconnection at Lambton TS, representing two of the four interconnections with Michigan, but are not currently available to regulate flows on the interconnection except in emergencies. These PARs are expected to become operational for the summer 2008. The operation of these PARs along with the PAR on the Ontario-Michigan interconnection near Windsor will control circulating flows to a limited extent, and assist in the management of system congestion.

The capability to control flows on the Ontario-Michigan interconnection between Scott TS and Bunce Creek terminal is unavailable. The PAR installed at Bunce Creek in Michigan has failed and is undergoing replacement.

#### 6.4.6 Northern Ontario

The transmission corridors east of Mississagi TS has been experiencing increased congestion due to the connection of the 200 MW Prince Park generation station and the alleviation of constrained Brookfield resources following the completion of the Great Lakes Power (GLP) 230 kV transmission reinforcement project between Wawa TS and Third Line TS. It is expected that congestion will increase even further when the recently contracted Algoma Energy cogeneration project is complete in mid 2009.

For the near-term, the IESO has recommended that the existing Mississagi TS and Algoma TS generation rejection schemes be enhanced as soon as possible to alleviate constrained generation west of Mississagi and reduce congestion over the transmission corridors. Hydro One is planning to implement the required modifications by the third quarter of 2009.

In the latter half of 2008, extensive line work on 230 kV transmission circuits continues in the Kenora and Marathon areas. This series of outages can reduce the Ontario-Manitoba interconnection transfer capacity by up to 250 MW and the West-East transmission interface capability by up to 105 MW for east flows and by to 200 MW for west flows. As shown in tables A3 and A8, the West-East reductions for east flows contribute to the bottled generation amounts.

#### 6.4.7 Ontario 25 Hz System

The gradual retirement of the Niagara 25 Hz system is well underway. As mentioned in previous Outlooks, the IESO advised the 25 Hz customers in 2005 that the 25 Hz supply would be retired in April 2009, and in January 2007 National Grid, a transmission entity in the United States, informed the IESO that it had retired the US portion of the Niagara 25 Hz system. These activities pave the way for the deregistration of the supporting transmission and generating resources at the Sir Adam Beck 1 generation station. The IESO has approved the deregistration request for the 60/25 Hz frequency changer and the remaining 25 Hz generation units at Beck No.1 effective April 30, 2009.

In Northeastern Ontario, the 25 Hz system will also be retired. Most of the associated facilities are scheduled to be deregistered by summer 2008. There is no longer any 25 Hz load in this area.

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## 7.0 Conclusions

The following conclusions are based on the results of the assessment carried out for this Outlook.

### Resource Adequacy

- Under the Planned Resource-Normal Weather Scenario, forecast reserves within Ontario are sufficient to meet requirements for all but five weeks in the study period. Opportunities will exist for additional planned generator maintenance and exports in most of the weeks of the Outlook period. It is expected that generator owners will consider any future outages only when reserve levels are larger than the generator capacity being considered for outage.
- Under the Firm Resource-Normal Weather Scenario, the reserves are forecast to be below requirements for 8 of 78 weeks of the Outlook timeframe.
- Extreme weather during the peak periods will result in reliance on imports to supplement Ontario generation and higher potential for the IESO to reject planned outages and use emergency operating procedures.
- Results of the resource adequacy assessment are summarized in the matrix below. The different shadings present the supply/demand situation under each resource-weather scenario combination.

	<b>Normal Weather Scenario</b>	<b>Extreme Weather Scenario</b>
<b>Planned Resource Scenario</b>	<ul style="list-style-type: none"> <li>- there are five weeks when reserves are lower than required</li> <li>- opportunities for additional outages/exports exist in most of the weeks</li> </ul>	<ul style="list-style-type: none"> <li>- many planned outages at risk</li> <li>- imports required during some peak periods</li> <li>- higher risk of requiring emergency operating procedures</li> </ul>
<b>Firm Resource Scenario</b>	<ul style="list-style-type: none"> <li>- there are eight weeks when reserves are lower than required (planned outages at risk or imports potentially required)</li> <li>- opportunities for additional outages/exports exist in many other weeks</li> </ul>	<ul style="list-style-type: none"> <li>- many planned outages at risk</li> <li>- imports required during some peak periods</li> <li>- higher risk of requiring emergency operating procedures</li> </ul>

- For the Normal Weather Planned Resource Scenario to exhibit positive supply margins in all but five weeks covered by this Outlook, all of the planned resource additions must meet their stated in service targets and the conservation targets set by the Ontario Power Authority (OPA) must be achieved.
- Even if that does occur, Ontario may need to rely on imports from neighbouring jurisdictions to maintain reliability if extreme weather occurs or if equipment performance is below normal.

- A number of large generating units are scheduled to return to service from outage prior to the summers of 2008 and 2009. Meeting these planned outage schedules is critical to maintaining adequate reserve levels over the peak season.
- Reserves are higher than required during the winter under the Normal Weather, Planned Resource Scenario allowing opportunities for additional generator outages in these periods. Air conditioning load growth, combined with minimal growth in heating load has led to the transition from winter peaking to summer peaking over the last ten years. This gap continues to grow. The development of new capabilities and resources to meet the higher summer peaks increases the capability to accommodate planned generator maintenance over the winter months.
- High generator unavailability, whether caused by higher forced outage rates or delays in returning generators to service, could lead to greater reliance on imports. Under these circumstances, opportunities for planned outages, especially during the peak summer period, would be limited.
- The IESO is examining options to mitigate the impacts from surplus supply scenarios, which could include improving the advance knowledge of such potential conditions to better facilitate coordination efforts and market responses.
- Lennox GS is presently needed to maintain local area reliability in the Ottawa zone and the area of Ontario that is located east of the Flow East To Toronto (FETT) interface. As part of the Ontario- Québec interconnection work at Hawthorne, the addition of voltage support facilities may reduce reliance on Lennox for local Ottawa zone need. Similarly, supply improvements from new generation and conservation in and around Toronto through 2010 are expected to reduce the need for Lennox to control flows on the FETT interface. However, Lennox GS is also critical to provincial resource adequacy, and must be retained or replaced. This resource adequacy requirement cannot be achieved through an RMR under the current Market Rules. The Integrated Power System Plan filed by the OPA with the OEB in August assumes that Lennox remains in service and is categorized as a planned gas resource starting in 2011. The IESO will continue to negotiate RMR contracts for Lennox GS within the existing market rule structure, only as necessary to meet local area requirements.
- Over the 18 month period under study, the Northeast Power Coordinating Council resource adequacy criterion is expected to be met. As permitted by the criterion, the IESO forecast considers periodic reliance on interconnection benefits and potential use of other operating actions including outage rescheduling and emergency operating procedures.

### **Transmission Adequacy**

- The Ontario transmission system with the planned system enhancements and known transmission outages is expected to be adequate to supply the demand under the normal weather conditions forecast for the 18 month period of this Outlook. Under extreme weather conditions over the summer 2008, the transmission system with the planned transmission outages may approach its capability to supply the demand under extreme weather conditions. This may require some outages to be rescheduled.
- The supply to central Toronto will be improved during the period of this Outlook with the scheduled completion of Portlands generation.



- For summer 2008 and 2009 with all GTA autotransformers, five Pickering units and all other GTA elements in service, the projected summer extreme weather loadings on the autotransformers should not exceed their long term emergency capability following the forced outage of one autotransformer at Trafalgar, Claireville, Parkway or Cherrywood or one additional Pickering unit.
- The transfer capability of FABC will be increased by various transmission reinforcements that are expected to be completed by the third quarter of 2009. If the seventh unit at Bruce returns to service before the reinforcements are completed, some additional constrained generation could occur under conditions where all resources at and near Bruce are available at their rated capabilities. Beyond the Outlook period, further measures are being planned to increase the FABC transfer capability as additional Bruce area resources come into service.
- Seven new and upgraded load supply transformer stations will be placed in service during the timeframe of this Outlook to help relieve loadings of existing transformer stations and provide additional transformer capacity for future load growth. Additional transmission reinforcements required to also ensure load supply reliability are currently under construction or are to start construction, and are planned for service during or just beyond this Outlook period.
- The new 1,250 MW Ontario-Québec interconnection is scheduled for service by March 31, 2009.
- The multiple outages scheduled in this Outlook period in the Bruce, Southwest and West zones will result in a reduction in FABC, BLIP and NBLIP limits. The resulting FABC and NBLIP reductions contribute to the amount of bottled generation that could be expected in the Bruce and West zones.
- With the incorporation of Greenfield and St. Clair starting in the first quarter of the 2009, transmission constraints may limit the availability to utilize resources in southwestern Ontario and imports from Michigan. The frequency and magnitude of congestion could be aggravated further by transmission outages and weather conditions.
- The phase angle regulators at Lambton are expected to become operational in the summer 2008.
- Hydro One will enhance the existing Mississagi TS and Algoma TS generation rejection schemes by the later part of 2009 to alleviate constrained generation west of Mississagi and reduce congestion over the transmission corridors east of Mississagi.
- The retirement of the Niagara and Northeast 25 Hz systems and the deregistration of most 25 Hz facilities will be completed by mid 2009.

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## Appendix A Resource Adequacy Assessment Details

Table A1 Assessment of Resource Adequacy: Normal Weather,  
Firm Resource Scenario

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
06-Jul-08	31,639	4,699	299	27,238	27,295	13.7	3,273	13.9	3,330	-57
13-Jul-08	31,639	4,093	299	27,844	28,643	11.7	2,905	14.9	3,704	-799
20-Jul-08	31,639	4,091	299	27,846	29,564	9.3	2,368	16.0	4,086	-1,718
27-Jul-08	31,633	4,072	299	27,860	28,166	13.0	3,202	14.2	3,508	-306
03-Aug-08	31,633	4,390	299	27,542	27,024	16.3	3,849	14.1	3,331	518
10-Aug-08	31,735	4,431	299	27,602	28,362	11.7	2,888	14.8	3,648	-760
17-Aug-08	31,735	4,442	299	27,591	27,974	13.0	3,176	14.6	3,559	-383
24-Aug-08	31,735	4,849	299	27,184	26,773	15.9	3,725	14.1	3,314	411
31-Aug-08	31,735	5,994	299	26,039	27,221	8.7	2,083	13.6	3,265	-1,182
07-Sep-08	31,747	6,703	299	25,343	26,223	12.4	2,804	16.4	3,684	-880
14-Sep-08	31,747	6,721	299	25,325	25,286	16.9	3,658	16.7	3,619	39
21-Sep-08	32,752	7,291	299	25,760	24,285	24.1	4,996	17.0	3,521	1,475
28-Sep-08	32,752	7,614	299	25,437	22,791	25.9	5,234	12.8	2,588	2,646
05-Oct-08	32,764	7,653	299	25,410	22,085	31.2	6,036	14.0	2,711	3,325
12-Oct-08	32,764	7,437	299	25,626	22,277	30.8	6,033	13.7	2,684	3,349
19-Oct-08	32,764	7,784	299	25,279	22,655	26.5	5,291	13.3	2,667	2,624
26-Oct-08	32,764	7,768	299	25,295	23,217	23.7	4,848	13.6	2,770	2,078
02-Nov-08	32,764	7,630	299	25,433	23,943	20.3	4,291	13.3	2,801	1,490
09-Nov-08	32,764	6,622	299	26,441	24,160	23.6	5,049	12.9	2,768	2,281
16-Nov-08	32,764	7,010	299	26,053	24,547	18.7	4,099	11.8	2,593	1,506
23-Nov-08	32,764	5,723	299	27,340	25,277	22.2	4,974	13.0	2,911	2,063
30-Nov-08	32,764	6,204	299	26,859	25,182	20.0	4,484	12.6	2,807	1,677
07-Dec-08	32,764	5,197	299	27,866	26,181	19.5	4,554	12.3	2,869	1,685
14-Dec-08	32,764	4,203	299	28,860	26,467	22.9	5,379	12.7	2,986	2,393
21-Dec-08	32,764	3,663	299	29,400	26,403	26.2	6,104	13.3	3,107	2,997
28-Dec-08	32,764	3,839	299	29,224	25,855	28.6	6,490	13.7	3,121	3,369
04-Jan-09	32,764	3,855	299	29,208	24,787	34.3	7,453	13.9	3,032	4,421
11-Jan-09	32,764	3,810	299	29,253	26,887	22.5	5,369	12.6	3,003	2,366
18-Jan-09	32,764	4,055	299	29,008	27,287	19.6	4,743	12.5	3,022	1,721
25-Jan-09	32,764	4,025	299	29,038	27,038	20.7	4,981	12.4	2,981	2,000
01-Feb-09	32,764	4,064	299	28,999	26,673	22.4	5,303	12.6	2,977	2,326
08-Feb-09	32,764	4,556	299	28,507	26,670	19.7	4,692	12.0	2,855	1,837
15-Feb-09	32,764	4,594	299	28,469	26,334	21.4	5,017	12.3	2,882	2,135
22-Feb-09	32,764	4,573	299	28,490	26,114	22.4	5,210	12.2	2,834	2,376
01-Mar-09	32,764	4,686	299	28,377	25,738	24.6	5,596	13.0	2,957	2,639
08-Mar-09	32,791	5,953	299	27,137	25,429	21.5	4,809	13.9	3,101	1,708
15-Mar-09	32,791	6,959	299	26,131	24,629	19.8	4,320	12.9	2,818	1,502
22-Mar-09	32,791	7,759	299	25,331	24,262	18.2	3,896	13.2	2,827	1,069
29-Mar-09	32,791	6,834	299	26,256	23,658	26.3	5,459	13.8	2,861	2,598

Note: The reader should be aware that [Security and Adequacy Assessments](#) are published on the IESO web site on a weekly and daily basis that progressively supersedes information presented in this report.

(Table A1 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
05-Apr-09	33,710	7,114	299	26,895	23,770	30.2	6,235	15.1	3,110	3,125
12-Apr-09	33,710	7,154	299	26,855	22,728	35.7	7,069	14.9	2,942	4,127
19-Apr-09	33,710	6,813	299	27,196	22,799	37.4	7,402	15.2	3,005	4,397
26-Apr-09	33,710	10,121	299	23,888	22,075	24.1	4,634	14.7	2,821	1,813
03-May-09	33,710	9,984	299	24,025	22,246	24.4	4,718	15.2	2,939	1,779
10-May-09	33,710	9,658	299	24,351	22,544	22.3	4,433	13.2	2,626	1,807
17-May-09	33,710	9,690	299	24,319	23,401	20.3	4,101	15.7	3,183	918
24-May-09	33,710	9,158	299	24,851	23,707	20.7	4,269	15.2	3,125	1,144
31-May-09	33,710	7,506	299	26,503	24,138	26.9	5,611	15.5	3,246	2,365
07-Jun-09	33,710	6,792	299	27,217	24,695	27.1	5,804	15.3	3,282	2,522
14-Jun-09	33,710	6,357	299	27,652	27,080	16.5	3,923	14.1	3,351	572
21-Jun-09	33,710	5,403	299	28,606	28,376	15.8	3,905	14.9	3,675	230
28-Jun-09	33,710	5,174	299	28,835	28,072	19.1	4,615	15.9	3,852	763
05-Jul-09	33,710	5,236	299	28,773	26,622	23.5	5,470	14.2	3,319	2,151
12-Jul-09	33,710	4,685	299	29,324	28,669	16.5	4,159	13.9	3,504	655
19-Jul-09	33,710	3,717	299	30,292	29,491	18.0	4,624	14.9	3,823	801
26-Jul-09	33,710	3,768	299	30,241	28,223	21.7	5,401	13.6	3,383	2,018
02-Aug-09	33,710	3,932	299	30,077	27,200	26.1	6,219	14.0	3,342	2,877
09-Aug-09	33,710	3,967	299	30,042	28,382	20.7	5,156	14.1	3,496	1,660
16-Aug-09	33,710	3,994	299	30,015	28,007	22.1	5,435	13.9	3,427	2,008
23-Aug-09	33,710	4,143	299	29,866	26,965	26.4	6,242	14.1	3,341	2,901
30-Aug-09	33,710	4,127	299	29,882	27,349	23.9	5,761	13.4	3,228	2,533
06-Sep-09	33,710	5,548	299	28,461	26,529	25.2	5,733	16.7	3,801	1,932
13-Sep-09	33,710	5,931	299	28,078	25,531	28.5	6,221	16.8	3,674	2,547
20-Sep-09	33,710	6,965	299	27,044	24,403	29.1	6,091	16.5	3,450	2,641
27-Sep-09	33,710	7,420	299	26,589	22,907	30.5	6,207	12.4	2,525	3,682
04-Oct-09	33,710	7,719	299	26,290	22,162	34.8	6,782	13.6	2,654	4,128
11-Oct-09	33,710	7,956	299	26,053	22,181	32.7	6,415	13.0	2,543	3,872
18-Oct-09	33,710	8,392	299	25,617	22,512	28.1	5,618	12.6	2,513	3,105
25-Oct-09	33,710	7,781	299	26,228	23,151	28.4	5,795	13.3	2,718	3,077
01-Nov-09	33,710	8,217	299	25,792	23,904	21.6	4,574	12.7	2,686	1,888
08-Nov-09	33,710	7,659	299	26,350	24,043	22.7	4,879	12.0	2,572	2,307
15-Nov-09	33,710	7,517	299	26,492	24,550	20.9	4,574	12.0	2,632	1,942
22-Nov-09	33,710	8,021	299	25,988	25,003	16.0	3,584	11.6	2,599	985
29-Nov-09	33,710	7,002	299	27,007	25,194	20.4	4,575	12.3	2,762	1,813
06-Dec-09	33,710	5,010	299	28,999	26,259	24.4	5,693	12.7	2,953	2,740
13-Dec-09	33,710	4,856	299	29,153	26,384	24.5	5,728	12.6	2,959	2,769
20-Dec-09	33,710	4,357	299	29,652	26,346	27.2	6,343	13.0	3,037	3,306
27-Dec-09	33,710	4,012	299	29,997	25,716	32.3	7,318	13.4	3,037	4,281

**Table A2 Assessment of Resource Adequacy: Normal Weather,  
Planned Resource Scenario**

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
06-Jul-08	31,639	4,721	412	27,329	26,990	15.2	3,611	13.8	3,272	339
13-Jul-08	31,639	4,108	412	27,942	28,325	13.2	3,265	14.8	3,648	-383
20-Jul-08	31,639	4,106	412	27,944	29,272	10.8	2,712	16.0	4,040	-1,328
27-Jul-08	31,633	4,087	412	27,958	27,861	14.6	3,551	14.2	3,454	97
03-Aug-08	31,633	4,428	412	27,617	26,745	17.8	4,168	14.1	3,296	872
10-Aug-08	31,735	4,436	412	27,710	28,081	13.2	3,232	14.7	3,603	-371
17-Aug-08	31,735	4,446	412	27,700	27,694	14.6	3,523	14.6	3,517	6
24-Aug-08	31,735	4,869	412	27,277	26,507	17.5	4,062	14.2	3,292	770
31-Aug-08	31,735	6,005	412	26,141	26,917	10.3	2,431	13.5	3,207	-776
07-Sep-08	31,747	6,754	542	25,535	25,907	14.6	3,244	16.2	3,616	-372
14-Sep-08	31,747	6,774	542	25,515	24,999	19.2	4,112	16.8	3,596	516
21-Sep-08	32,752	7,323	542	25,971	23,990	26.7	5,480	17.1	3,499	1,981
28-Sep-08	32,752	7,609	542	25,685	22,528	28.8	5,743	13.0	2,586	3,157
05-Oct-08	32,787	7,694	542	25,635	21,866	33.8	6,477	14.1	2,708	3,769
12-Oct-08	32,787	7,496	542	25,833	22,050	33.4	6,463	13.8	2,680	3,783
19-Oct-08	32,787	7,893	542	25,436	22,419	28.7	5,677	13.5	2,660	3,017
26-Oct-08	32,787	7,890	542	25,439	22,975	25.8	5,224	13.7	2,760	2,464
02-Nov-08	32,787	7,685	542	25,644	23,684	22.8	4,754	13.4	2,794	1,960
09-Nov-08	32,787	6,700	542	26,629	23,856	26.2	5,535	13.1	2,762	2,773
16-Nov-08	32,787	7,080	542	26,249	24,261	21.1	4,575	11.9	2,587	1,988
23-Nov-08	32,787	5,826	542	27,503	24,947	24.8	5,458	13.2	2,902	2,556
30-Nov-08	32,787	6,272	542	27,057	24,897	22.5	4,960	12.7	2,800	2,160
07-Dec-08	32,787	5,278	542	28,051	25,863	22.0	5,050	12.4	2,862	2,188
14-Dec-08	32,787	4,288	542	29,041	26,105	25.6	5,914	12.9	2,978	2,936
21-Dec-08	32,787	3,721	542	29,608	26,109	28.7	6,599	13.5	3,100	3,499
28-Dec-08	32,787	3,900	542	29,429	25,538	31.2	7,005	13.9	3,114	3,891
04-Jan-09	32,787	4,085	542	29,244	24,462	36.4	7,800	14.1	3,018	4,782
11-Jan-09	33,929	4,828	542	29,643	26,394	27.0	6,307	13.1	3,058	3,249
18-Jan-09	33,929	5,098	542	29,373	26,772	24.0	5,675	13.0	3,074	2,601
25-Jan-09	33,929	5,004	542	29,467	26,550	25.3	5,955	12.9	3,038	2,917
01-Feb-09	33,929	5,091	542	29,380	26,175	27.0	6,238	13.1	3,033	3,205
08-Feb-09	33,929	5,570	542	28,901	26,111	24.6	5,702	12.6	2,912	2,790
15-Feb-09	33,929	5,653	542	28,818	25,797	26.1	5,955	12.8	2,934	3,021
22-Feb-09	33,929	5,574	542	28,897	25,587	27.3	6,201	12.7	2,891	3,310
01-Mar-09	33,929	5,698	542	28,773	25,252	29.4	6,536	13.6	3,015	3,521
08-Mar-09	33,956	6,920	542	27,578	24,941	26.5	5,783	14.4	3,146	2,637
15-Mar-09	33,956	7,966	542	26,532	24,125	24.8	5,274	13.5	2,867	2,407
22-Mar-09	33,956	8,751	542	25,747	23,804	23.0	4,817	13.7	2,874	1,943
29-Mar-09	33,956	7,850	542	26,648	23,150	31.7	6,410	14.4	2,912	3,498

Note: The reader should be aware that [Security and Adequacy Assessments](#) are published on the IESO web site on a weekly and daily basis that progressively supersedes information presented in this report.

(Table A2 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
05-Apr-09	34,875	8,067	542	27,350	23,249	36.1	7,255	15.7	3,154	4,101
12-Apr-09	34,875	8,103	542	27,314	22,240	41.9	8,069	15.6	2,995	5,074
19-Apr-09	34,875	7,761	542	27,656	22,346	43.4	8,371	15.9	3,061	5,310
26-Apr-09	34,875	11,073	542	24,344	21,609	30.0	5,611	15.4	2,876	2,735
03-May-09	34,875	10,985	542	24,432	21,773	30.1	5,646	15.9	2,987	2,659
10-May-09	34,875	10,707	542	24,710	22,013	27.9	5,383	13.9	2,686	2,697
17-May-09	34,875	10,681	542	24,736	22,822	26.2	5,130	16.4	3,216	1,914
24-May-09	34,875	10,094	542	25,323	23,221	26.3	5,276	15.8	3,174	2,102
31-May-09	34,875	8,436	542	26,981	23,564	33.0	6,695	16.2	3,278	3,417
07-Jun-09	35,136	7,769	542	27,908	24,153	34.0	7,088	16.0	3,333	3,755
14-Jun-09	35,136	7,105	542	28,572	26,512	23.5	5,427	14.6	3,367	2,060
21-Jun-09	35,136	6,296	542	29,381	27,779	21.9	5,274	15.2	3,672	1,602
28-Jun-09	35,136	6,461	542	29,216	27,451	23.9	5,638	16.4	3,873	1,765
05-Jul-09	35,136	6,548	542	29,129	26,021	28.5	6,467	14.8	3,359	3,108
12-Jul-09	35,136	5,955	542	29,722	28,077	21.1	5,179	14.4	3,534	1,645
19-Jul-09	35,136	4,939	542	30,738	28,851	23.0	5,740	15.4	3,853	1,887
26-Jul-09	35,136	5,005	542	30,672	27,651	26.6	6,453	14.2	3,432	3,021
02-Aug-09	35,136	5,208	542	30,469	26,597	31.3	7,261	14.6	3,389	3,872
09-Aug-09	35,136	5,163	542	30,514	27,796	25.8	6,260	14.6	3,542	2,718
16-Aug-09	35,136	5,172	542	30,505	27,468	27.2	6,515	14.5	3,478	3,037
23-Aug-09	35,136	5,334	542	30,343	26,410	31.8	7,325	14.7	3,392	3,933
30-Aug-09	35,136	5,313	542	30,364	26,801	29.1	6,848	14.0	3,285	3,563
06-Sep-09	35,886	7,496	542	28,931	25,956	30.9	6,829	17.4	3,854	2,975
13-Sep-09	35,886	7,713	542	28,714	24,990	35.1	7,462	17.6	3,738	3,724
20-Sep-09	35,886	8,752	542	27,675	23,862	36.0	7,327	17.3	3,514	3,813
27-Sep-09	35,886	8,762	542	27,665	22,401	40.2	7,929	13.5	2,665	5,264
04-Oct-09	35,970	8,902	542	27,609	21,878	44.9	8,548	14.8	2,817	5,731
11-Oct-09	35,970	9,221	542	27,290	21,778	43.1	8,216	14.2	2,704	5,512
18-Oct-09	35,970	9,644	542	26,867	22,143	38.0	7,394	13.7	2,670	4,724
25-Oct-09	35,970	9,023	542	27,488	22,818	37.8	7,539	14.4	2,869	4,670
01-Nov-09	35,970	9,484	542	27,027	23,520	30.7	6,343	13.7	2,836	3,507
08-Nov-09	35,970	8,915	542	27,596	23,609	32.2	6,717	13.1	2,730	3,987
15-Nov-09	35,970	8,816	542	27,695	23,966	30.7	6,512	13.1	2,783	3,729
22-Nov-09	35,970	9,222	542	27,289	24,467	25.5	5,546	12.5	2,724	2,822
29-Nov-09	35,970	8,200	542	28,311	24,616	30.5	6,609	13.4	2,914	3,695
06-Dec-09	35,970	6,610	542	29,901	25,620	32.7	7,364	13.7	3,083	4,281
13-Dec-09	35,970	6,421	542	30,090	25,825	32.4	7,358	13.6	3,093	4,265
20-Dec-09	35,970	5,923	542	30,588	25,795	35.2	7,963	14.0	3,170	4,793
27-Dec-09	35,970	5,539	542	30,972	25,164	40.9	8,982	14.4	3,174	5,808

**Table A3 Zonal Bottled Generation for Normal Weather, Scenario**

Week Ending Day	Firm Resource Scenario			Planned Resource Scenario		
	Bruce & West MW	Northeast MW	Northwest MW	Bruce & West MW	Northeast MW	Northwest MW
06-Jul-08	225	0	71	231	0	86
13-Jul-08	0	0	26	0	0	41
20-Jul-08	0	0	24	0	0	39
27-Jul-08	0	0	176	0	0	190
03-Aug-08	5	0	253	37	0	258
10-Aug-08	0	0	230	0	0	235
17-Aug-08	0	0	29	0	0	34
24-Aug-08	378	0	59	393	0	64
31-Aug-08	426	0	58	433	0	63
07-Sep-08	176	120	49	186	134	77
14-Sep-08	188	132	60	196	145	93
21-Sep-08	148	0	79	149	0	110
28-Sep-08	109	0	0	103	0	0
05-Oct-08	193	0	0	211	0	0
12-Oct-08	373	0	0	426	0	0
19-Oct-08	843	0	97	901	0	144
26-Oct-08	810	0	115	880	0	162
02-Nov-08	0	0	41	0	0	92
09-Nov-08	43	0	63	65	0	114
16-Nov-08	40	0	39	57	0	87
23-Nov-08	485	0	41	526	0	99
30-Nov-08	476	0	36	493	0	83
07-Dec-08	217	0	176	239	0	230
14-Dec-08	199	0	159	220	0	219
21-Dec-08	225	0	139	229	0	188
28-Dec-08	807	0	249	810	0	302
04-Jan-09	802	0	253	973	0	307
11-Jan-09	676	0	167	1,339	0	223
18-Jan-09	903	0	186	1,588	0	244
25-Jan-09	901	0	158	1,527	0	212
01-Feb-09	928	0	170	1,601	0	225
08-Feb-09	938	0	193	1,588	0	258
15-Feb-09	980	0	189	1,679	0	250
22-Feb-09	989	0	158	1,630	0	220
01-Mar-09	542	0	215	1,199	0	270
08-Mar-09	587	0	31	1,201	0	85
15-Mar-09	94	0	58	745	0	116
22-Mar-09	111	0	76	752	0	127
29-Mar-09	124	0	98	780	0	158

Note: The bottled generation values indicated in the table are capacity values calculated at the hour of weekly peak. In real time operation, the actual amount of bottled generation will depend on many conditions prevailing at the time, including the local generation levels, overall generation dispatch and the direction and levels of flows into and out of Ontario.

Zonal information is found on page 6 of the [Ontario Transmission System](#) document.

(Table A3 continued)

Week Ending Day	Firm Resource Scenario			Planned Resource Scenario		
	Bruce & West MW	Northeast MW	Northwest MW	Bruce & West MW	Northeast MW	Northwest MW
05-Apr-09	120	0	0	773	0	0
12-Apr-09	159	0	0	809	0	0
19-Apr-09	190	0	0	840	0	0
26-Apr-09	204	0	0	857	0	0
03-May-09	167	0	0	869	0	0
10-May-09	4	0	0	754	0	0
17-May-09	36	0	0	690	38	0
24-May-09	494	0	0	1,130	0	0
31-May-09	0	0	0	631	0	0
07-Jun-09	0	0	0	500	0	0
14-Jun-09	0	0	0	271	0	0
21-Jun-09	158	0	22	472	42	82
28-Jun-09	419	3	45	1,069	104	103
05-Jul-09	407	0	76	1,083	96	139
12-Jul-09	298	0	59	976	55	119
19-Jul-09	213	0	54	845	50	117
26-Jul-09	277	0	41	909	68	101
02-Aug-09	428	0	53	1,114	53	114
09-Aug-09	235	0	169	894	0	229
16-Aug-09	251	0	180	893	0	238
23-Aug-09	300	0	180	957	0	237
30-Aug-09	285	0	178	936	0	236
06-Sep-09	483	0	170	1,891	0	228
13-Sep-09	186	0	180	1,426	0	241
20-Sep-09	211	0	199	1,458	0	258
27-Sep-09	0	0	163	797	0	227
04-Oct-09	116	0	199	764	0	256
11-Oct-09	130	0	250	855	0	312
18-Oct-09	628	0	229	1,341	0	290
25-Oct-09	92	0	245	798	0	302
01-Nov-09	38	0	219	766	0	279
08-Nov-09	26	0	242	749	0	303
15-Nov-09	0	0	236	758	0	304
22-Nov-09	0	0	245	668	0	305
29-Nov-09	0	0	216	660	0	282
06-Dec-09	370	0	157	1,400	0	254
13-Dec-09	442	0	194	1,449	0	280
20-Dec-09	468	0	193	1,455	0	301
27-Dec-09	546	0	287	1,519	0	368



Table A4 Demand Forecast Range for Firm Demand Scenario

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW	Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
06-Jul-08	23,965	25,673	05-Apr-09	20,660	22,297
13-Jul-08	24,939	26,756	12-Apr-09	19,786	20,992
20-Jul-08	25,478	27,741	19-Apr-09	19,794	22,350
27-Jul-08	24,658	26,624	26-Apr-09	19,254	22,362
03-Aug-08	23,693	25,379	03-May-09	19,307	22,048
10-Aug-08	24,714	27,593	10-May-09	19,918	22,629
17-Aug-08	24,415	26,819	17-May-09	20,218	22,048
24-Aug-08	23,459	26,081	24-May-09	20,582	22,968
31-Aug-08	23,956	26,174	31-May-09	20,892	24,086
07-Sep-08	22,539	26,016	07-Jun-09	21,413	24,540
14-Sep-08	21,667	25,778	14-Jun-09	23,729	26,081
21-Sep-08	20,764	24,854	21-Jun-09	24,701	27,169
28-Sep-08	20,203	23,293	28-Jun-09	24,220	26,834
05-Oct-08	19,374	23,663	05-Jul-09	23,303	25,391
12-Oct-08	19,593	20,230	12-Jul-09	25,165	26,982
19-Oct-08	19,988	20,891	19-Jul-09	25,668	27,930
26-Oct-08	20,447	21,204	26-Jul-09	24,840	26,806
02-Nov-08	21,142	21,827	02-Aug-09	23,858	25,543
09-Nov-08	21,392	22,187	09-Aug-09	24,886	27,764
16-Nov-08	21,954	22,866	16-Aug-09	24,580	26,984
23-Nov-08	22,366	23,360	23-Aug-09	23,624	26,246
30-Nov-08	22,375	23,852	30-Aug-09	24,121	26,338
07-Dec-08	23,312	24,557	06-Sep-09	22,728	26,260
14-Dec-08	23,481	24,597	13-Sep-09	21,857	25,910
21-Dec-08	23,296	24,598	20-Sep-09	20,953	25,044
28-Dec-08	22,734	23,995	27-Sep-09	20,382	23,472
04-Jan-09	21,755	23,052	04-Oct-09	19,508	23,841
11-Jan-09	23,884	24,859	11-Oct-09	19,638	20,237
18-Jan-09	24,265	25,306	18-Oct-09	19,999	20,903
25-Jan-09	24,057	25,210	25-Oct-09	20,433	21,198
01-Feb-09	23,696	24,832	01-Nov-09	21,218	21,902
08-Feb-09	23,815	24,924	08-Nov-09	21,471	22,262
15-Feb-09	23,452	24,482	15-Nov-09	21,918	22,900
22-Feb-09	23,280	24,170	22-Nov-09	22,404	23,393
01-Mar-09	22,781	24,010	29-Nov-09	22,432	23,904
08-Mar-09	22,328	23,806	06-Dec-09	23,306	24,607
15-Mar-09	21,811	23,131	13-Dec-09	23,425	24,670
22-Mar-09	21,435	22,660	20-Dec-09	23,309	24,469
29-Mar-09	20,797	22,043	27-Dec-09	22,679	23,722

Table A5 Demand Forecast Range for Planned Demand Scenario

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW	Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
06-Jul-08	23,718	25,425	05-Apr-09	20,095	21,768
13-Jul-08	24,677	26,493	12-Apr-09	19,245	20,478
20-Jul-08	25,232	27,495	19-Apr-09	19,285	21,915
27-Jul-08	24,407	26,373	26-Apr-09	18,733	21,880
03-Aug-08	23,449	25,134	03-May-09	18,786	21,554
10-Aug-08	24,478	27,356	10-May-09	19,327	22,164
17-Aug-08	24,177	26,581	17-May-09	19,606	21,433
24-Aug-08	23,215	25,837	24-May-09	20,047	22,418
31-Aug-08	23,710	25,928	31-May-09	20,286	23,533
07-Sep-08	22,291	25,767	07-Jun-09	20,820	23,947
14-Sep-08	21,403	25,509	14-Jun-09	23,145	25,497
21-Sep-08	20,491	24,600	21-Jun-09	24,107	26,575
28-Sep-08	19,942	23,027	28-Jun-09	23,578	26,193
05-Oct-08	19,158	23,403	05-Jul-09	22,662	24,750
12-Oct-08	19,370	20,012	12-Jul-09	24,543	26,360
19-Oct-08	19,759	20,659	19-Jul-09	24,998	27,260
26-Oct-08	20,215	20,972	26-Jul-09	24,219	26,185
02-Nov-08	20,890	21,586	02-Aug-09	23,208	24,893
09-Nov-08	21,094	21,895	09-Aug-09	24,254	27,132
16-Nov-08	21,674	22,562	16-Aug-09	23,990	26,394
23-Nov-08	22,045	23,066	23-Aug-09	23,018	25,639
30-Nov-08	22,097	23,537	30-Aug-09	23,516	25,734
07-Dec-08	23,001	24,246	06-Sep-09	22,102	25,617
14-Dec-08	23,127	24,243	13-Sep-09	21,252	25,317
21-Dec-08	23,009	24,311	20-Sep-09	20,348	24,384
28-Dec-08	22,424	23,685	27-Sep-09	19,736	22,841
04-Jan-09	21,444	22,722	04-Oct-09	19,061	23,220
11-Jan-09	23,336	24,310	11-Oct-09	19,074	19,722
18-Jan-09	23,698	24,740	18-Oct-09	19,473	20,377
25-Jan-09	23,512	24,666	25-Oct-09	19,949	20,743
01-Feb-09	23,142	24,277	01-Nov-09	20,684	21,423
08-Feb-09	23,199	24,308	08-Nov-09	20,879	21,632
15-Feb-09	22,863	23,877	15-Nov-09	21,183	22,247
22-Feb-09	22,696	23,572	22-Nov-09	21,743	22,715
01-Mar-09	22,237	23,466	29-Nov-09	21,702	23,200
08-Mar-09	21,795	23,183	06-Dec-09	22,537	23,839
15-Mar-09	21,258	22,570	13-Dec-09	22,732	23,977
22-Mar-09	20,930	22,128	20-Dec-09	22,625	23,812
29-Mar-09	20,238	21,524	27-Dec-09	21,990	23,032

**Table A6 Assessment of Resource Adequacy: Extreme Weather,  
Firm Resource Scenario**

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
06-Jul-08	31,639	4,665	299	27,272	28,931	6.2	1,599	12.7	3,258	-1,659
13-Jul-08	31,639	4,077	299	27,860	30,271	4.1	1,104	13.1	3,515	-2,411
20-Jul-08	31,639	4,075	299	27,862	31,430	0.4	121	13.3	3,689	-3,568
27-Jul-08	31,633	4,067	299	27,865	30,100	4.7	1,241	13.1	3,476	-2,235
03-Aug-08	31,633	4,410	299	27,522	28,637	8.4	2,143	12.8	3,258	-1,115
10-Aug-08	31,735	4,447	299	27,586	31,263	0.0	-7	13.3	3,670	-3,677
17-Aug-08	31,735	4,433	299	27,600	30,379	2.9	781	13.3	3,560	-2,779
24-Aug-08	31,735	4,790	299	27,243	29,498	4.5	1,162	13.1	3,417	-2,255
31-Aug-08	31,735	5,933	299	26,100	29,587	-0.3	-74	13.0	3,413	-3,487
07-Sep-08	31,747	6,628	299	25,418	29,410	-2.3	-598	13.1	3,394	-3,992
14-Sep-08	31,747	6,534	299	25,512	29,129	-1.0	-266	13.0	3,351	-3,617
21-Sep-08	32,752	7,200	299	25,851	27,974	4.0	997	12.6	3,120	-2,123
28-Sep-08	32,752	7,535	299	25,516	26,137	9.5	2,223	12.2	2,844	-621
05-Oct-08	32,764	7,583	299	25,480	26,670	7.7	1,817	12.7	3,007	-1,190
12-Oct-08	32,764	7,389	299	25,674	22,826	26.9	5,444	12.8	2,596	2,848
19-Oct-08	32,764	7,702	299	25,361	23,452	21.4	4,470	12.3	2,561	1,909
26-Oct-08	32,764	7,653	299	25,410	23,768	19.8	4,206	12.1	2,564	1,642
02-Nov-08	32,764	7,589	299	25,474	24,445	16.7	3,647	12.0	2,618	1,029
09-Nov-08	32,764	6,564	299	26,499	24,843	19.4	4,312	12.0	2,656	1,656
16-Nov-08	32,764	6,966	299	26,097	25,496	14.1	3,231	11.5	2,630	601
23-Nov-08	32,764	5,681	299	27,382	26,092	17.2	4,022	11.7	2,732	1,290
30-Nov-08	32,764	6,141	299	26,922	26,627	12.9	3,070	11.6	2,775	295
07-Dec-08	32,764	5,143	299	27,920	27,369	13.7	3,363	11.5	2,812	551
14-Dec-08	32,764	4,196	299	28,867	27,443	17.4	4,270	11.6	2,846	1,424
21-Dec-08	32,764	3,624	299	29,439	27,550	19.7	4,841	12.0	2,952	1,889
28-Dec-08	32,764	3,641	299	29,422	26,997	22.6	5,427	12.5	3,002	2,425
04-Jan-09	32,764	3,712	299	29,351	25,959	27.3	6,299	12.6	2,907	3,392
11-Jan-09	32,764	3,757	299	29,306	27,711	17.9	4,447	11.5	2,852	1,595
18-Jan-09	32,764	3,907	299	29,156	28,151	15.2	3,850	11.2	2,845	1,005
25-Jan-09	32,764	3,884	299	29,179	28,056	15.7	3,969	11.3	2,846	1,123
01-Feb-09	32,764	3,949	299	29,114	27,675	17.2	4,282	11.5	2,843	1,439
08-Feb-09	32,764	4,508	299	28,555	27,654	14.6	3,631	11.0	2,730	901
15-Feb-09	32,764	4,559	299	28,504	27,209	16.4	4,022	11.1	2,727	1,295
22-Feb-09	32,764	4,566	299	28,497	26,897	17.9	4,327	11.3	2,727	1,600
01-Mar-09	32,764	4,612	299	28,451	26,858	18.5	4,441	11.9	2,848	1,593
08-Mar-09	32,791	5,872	299	27,218	26,485	14.3	3,412	11.3	2,679	733
15-Mar-09	32,791	6,842	299	26,248	25,820	13.5	3,117	11.6	2,689	428
22-Mar-09	32,791	7,651	299	25,439	25,327	12.3	2,779	11.8	2,667	112
29-Mar-09	32,791	6,726	299	26,364	24,690	19.6	4,321	12.0	2,647	1,674

Note: The reader should be aware that [Security and Adequacy Assessments](#) are published on the IESO web site on a weekly and daily basis that progressively supersedes information presented in this report.

(Table A6 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
05-Apr-09	33,710	7,043	299	26,966	24,978	20.9	4,669	12.0	2,681	1,988
12-Apr-09	33,710	6,994	299	27,015	23,675	28.7	6,023	12.8	2,683	3,340
19-Apr-09	33,710	6,622	299	27,387	25,181	22.5	5,037	12.7	2,831	2,206
26-Apr-09	33,710	9,917	299	24,092	25,392	7.7	1,730	13.6	3,030	-1,300
03-May-09	33,710	9,817	299	24,192	25,028	9.7	2,144	13.5	2,980	-836
10-May-09	33,710	9,654	299	24,355	25,642	7.6	1,726	13.3	3,013	-1,287
17-May-09	33,710	9,654	299	24,355	24,924	10.5	2,307	13.0	2,876	-569
24-May-09	33,710	9,031	299	24,978	26,044	8.8	2,010	13.4	3,076	-1,066
31-May-09	33,710	7,506	299	26,503	26,996	10.0	2,417	12.1	2,910	-493
07-Jun-09	33,710	6,792	299	27,217	27,480	10.9	2,677	12.0	2,940	-263
14-Jun-09	33,710	6,357	299	27,652	29,287	6.0	1,571	12.3	3,206	-1,635
21-Jun-09	33,710	5,305	299	28,704	30,472	5.7	1,535	12.2	3,303	-1,768
28-Jun-09	33,710	4,941	299	29,068	30,051	8.3	2,234	12.0	3,217	-983
05-Jul-09	33,710	5,100	299	28,909	28,327	13.9	3,518	11.6	2,936	582
12-Jul-09	33,710	4,540	299	29,469	30,270	9.2	2,487	12.2	3,288	-801
19-Jul-09	33,710	3,649	299	30,360	31,288	8.7	2,430	12.0	3,358	-928
26-Jul-09	33,710	3,677	299	30,332	29,941	13.2	3,526	11.7	3,135	391
02-Aug-09	33,710	3,706	299	30,303	28,499	18.6	4,760	11.6	2,956	1,804
09-Aug-09	33,710	3,863	299	30,146	31,109	8.6	2,382	12.1	3,345	-963
16-Aug-09	33,710	3,867	299	30,142	30,169	11.7	3,158	11.8	3,185	-27
23-Aug-09	33,710	4,011	299	29,998	29,280	14.3	3,752	11.6	3,034	718
30-Aug-09	33,710	4,012	299	29,997	29,392	13.9	3,659	11.6	3,054	605
06-Sep-09	33,710	5,279	299	28,730	29,356	9.4	2,470	11.8	3,096	-626
13-Sep-09	33,710	5,874	299	28,135	28,954	8.6	2,225	11.8	3,044	-819
20-Sep-09	33,710	6,875	299	27,134	27,906	8.4	2,090	11.4	2,862	-772
27-Sep-09	33,710	7,429	299	26,580	26,073	13.2	3,108	11.1	2,601	507
04-Oct-09	33,710	7,570	299	26,439	26,693	10.9	2,598	12.0	2,852	-254
11-Oct-09	33,710	7,892	299	26,117	22,717	29.1	5,880	12.3	2,480	3,400
18-Oct-09	33,710	8,333	299	25,676	23,316	22.8	4,773	11.5	2,413	2,360
25-Oct-09	33,710	7,661	299	26,348	23,709	24.3	5,150	11.9	2,511	2,639
01-Nov-09	33,710	8,137	299	25,872	24,378	18.1	3,970	11.3	2,476	1,494
08-Nov-09	33,710	7,597	299	26,412	24,741	18.6	4,150	11.1	2,479	1,671
15-Nov-09	33,710	7,478	299	26,531	25,438	15.9	3,631	11.1	2,538	1,093
22-Nov-09	33,710	7,980	299	26,029	26,005	11.3	2,636	11.2	2,612	24
29-Nov-09	33,710	6,961	299	27,048	26,662	13.2	3,144	11.5	2,758	386
06-Dec-09	33,710	4,867	299	29,142	27,394	18.4	4,535	11.3	2,787	1,748
13-Dec-09	33,710	4,713	299	29,296	27,454	18.8	4,626	11.3	2,784	1,842
20-Dec-09	33,710	4,175	299	29,834	27,351	21.9	5,365	11.8	2,882	2,483
27-Dec-09	33,710	3,843	299	30,166	26,631	27.2	6,444	12.3	2,909	3,535

**Table A7 Assessment of Resource Adequacy: Extreme Weather,  
Planned Resource Scenario**

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
06-Jul-08	31,639	4,705	412	27,345	28,607	7.6	1,920	12.5	3,182	-1,262
13-Jul-08	31,639	4,092	412	27,958	29,970	5.5	1,465	13.1	3,477	-2,012
20-Jul-08	31,639	4,090	412	27,960	31,133	1.7	465	13.2	3,638	-3,173
27-Jul-08	31,633	4,082	412	27,963	29,805	6.0	1,590	13.0	3,432	-1,842
03-Aug-08	31,633	4,415	412	27,630	28,349	9.9	2,496	12.8	3,215	-719
10-Aug-08	31,735	4,451	412	27,695	30,973	1.2	339	13.2	3,617	-3,278
17-Aug-08	31,735	4,437	412	27,709	30,101	4.2	1,128	13.2	3,520	-2,392
24-Aug-08	31,735	4,808	412	27,338	29,219	5.8	1,501	13.1	3,382	-1,881
31-Aug-08	31,735	5,947	412	26,199	29,291	1.1	271	13.0	3,363	-3,092
07-Sep-08	31,747	6,676	542	25,613	29,113	-0.6	-154	13.0	3,346	-3,500
14-Sep-08	31,747	6,577	542	25,712	28,785	0.8	203	12.8	3,276	-3,073
21-Sep-08	32,752	7,232	542	26,062	27,689	5.9	1,462	12.6	3,089	-1,627
28-Sep-08	32,752	7,552	542	25,742	25,792	11.8	2,715	12.0	2,765	-50
05-Oct-08	32,787	7,581	542	25,748	26,378	10.0	2,345	12.7	2,975	-630
12-Oct-08	32,787	7,406	542	25,923	22,607	29.5	5,911	13.0	2,595	3,316
19-Oct-08	32,787	7,822	542	25,507	23,214	23.5	4,848	12.4	2,555	2,293
26-Oct-08	32,787	7,777	542	25,552	23,530	21.8	4,580	12.2	2,558	2,022
02-Nov-08	32,787	7,642	542	25,687	24,171	19.0	4,101	12.0	2,585	1,516
09-Nov-08	32,787	6,639	542	26,690	24,547	21.9	4,795	12.1	2,652	2,143
16-Nov-08	32,787	7,051	542	26,278	25,124	16.5	3,716	11.4	2,562	1,154
23-Nov-08	32,787	5,752	542	27,577	25,794	19.6	4,511	11.8	2,728	1,783
30-Nov-08	32,787	6,222	542	27,107	26,218	15.2	3,570	11.4	2,681	889
07-Dec-08	32,787	5,225	542	28,104	26,971	15.9	3,858	11.2	2,725	1,133
14-Dec-08	32,787	4,278	542	29,051	27,086	19.8	4,808	11.7	2,843	1,965
21-Dec-08	32,787	3,686	542	29,643	27,260	21.9	5,332	12.1	2,949	2,383
28-Dec-08	32,787	3,706	542	29,623	26,684	25.1	5,938	12.7	2,999	2,939
04-Jan-09	32,787	3,891	542	29,438	25,621	29.6	6,716	12.8	2,899	3,817
11-Jan-09	33,929	4,810	542	29,661	27,223	22.0	5,351	12.0	2,913	2,438
18-Jan-09	33,929	4,945	542	29,526	27,646	19.4	4,786	11.8	2,906	1,880
25-Jan-09	33,929	4,880	542	29,591	27,575	20.0	4,925	11.8	2,909	2,016
01-Feb-09	33,929	4,928	542	29,543	27,184	21.7	5,266	12.0	2,907	2,359
08-Feb-09	33,929	5,542	542	28,929	27,101	19.0	4,621	11.5	2,793	1,828
15-Feb-09	33,929	5,606	542	28,865	26,667	20.9	4,988	11.7	2,790	2,198
22-Feb-09	33,929	5,607	542	28,864	26,362	22.5	5,292	11.8	2,790	2,502
01-Mar-09	33,929	5,552	542	28,919	26,381	23.2	5,453	12.4	2,915	2,538
08-Mar-09	33,956	6,809	542	27,689	25,881	19.4	4,506	11.6	2,698	1,808
15-Mar-09	33,956	7,829	542	26,669	25,146	18.2	4,099	11.4	2,576	1,523
22-Mar-09	33,956	8,647	542	25,851	24,657	16.8	3,723	11.4	2,529	1,194
29-Mar-09	33,956	7,723	542	26,775	24,244	24.4	5,251	12.6	2,720	2,531

Note: The reader should be aware that [Security and Adequacy Assessments](#) are published on the IESO web site on a weekly and daily basis that progressively supersedes information presented in this report.

(Table A7 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Measures MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
05-Apr-09	34,875	7,961	542	27,456	24,523	26.1	5,688	12.7	2,755	2,933
12-Apr-09	34,875	8,046	542	27,371	23,228	33.7	6,893	13.4	2,750	4,143
19-Apr-09	34,875	7,496	542	27,921	24,812	27.4	6,006	13.2	2,897	3,109
26-Apr-09	34,875	10,776	542	24,641	24,735	12.6	2,761	13.1	2,855	-94
03-May-09	34,875	10,702	542	24,715	24,327	14.7	3,161	12.9	2,773	388
10-May-09	34,875	10,452	542	24,965	25,004	12.6	2,801	12.8	2,840	-39
17-May-09	34,875	10,483	542	24,934	24,117	16.3	3,501	12.5	2,684	817
24-May-09	34,875	9,969	542	25,448	25,301	13.5	3,030	12.9	2,883	147
31-May-09	34,875	8,228	542	27,189	26,234	15.5	3,656	11.5	2,701	955
07-Jun-09	35,136	7,517	542	28,160	26,691	17.6	4,213	11.5	2,744	1,469
14-Jun-09	35,136	6,929	542	28,748	28,537	12.8	3,251	11.9	3,040	211
21-Jun-09	35,136	6,026	542	29,651	29,707	11.6	3,076	11.8	3,132	-56
28-Jun-09	35,136	6,093	542	29,584	29,212	13.0	3,391	11.5	3,019	372
05-Jul-09	35,136	6,364	542	29,313	27,626	18.4	4,563	11.6	2,876	1,687
12-Jul-09	35,136	5,789	542	29,888	29,435	13.4	3,528	11.7	3,075	453
19-Jul-09	35,136	4,784	542	30,893	30,407	13.3	3,633	11.5	3,147	486
26-Jul-09	35,136	4,844	542	30,833	29,208	17.8	4,648	11.5	3,023	1,625
02-Aug-09	35,136	4,929	542	30,748	27,912	23.5	5,855	12.1	3,019	2,836
09-Aug-09	35,136	4,930	542	30,747	30,277	13.3	3,615	11.6	3,145	470
16-Aug-09	35,136	4,930	542	30,747	29,425	16.5	4,353	11.5	3,031	1,322
23-Aug-09	35,136	5,153	542	30,524	28,637	19.1	4,885	11.7	2,998	1,887
30-Aug-09	35,136	5,141	542	30,536	28,733	18.7	4,802	11.7	2,999	1,803
06-Sep-09	35,886	7,230	542	29,197	28,495	14.0	3,580	11.2	2,878	702
13-Sep-09	35,886	7,488	542	28,939	28,124	14.3	3,622	11.1	2,807	815
20-Sep-09	35,886	8,581	542	27,846	27,004	14.2	3,462	10.7	2,620	842
27-Sep-09	35,886	8,610	542	27,817	25,422	21.8	4,976	11.3	2,581	2,395
04-Oct-09	35,970	8,567	542	27,944	25,985	20.3	4,724	11.9	2,765	1,959
11-Oct-09	35,970	9,121	542	27,390	22,369	38.9	7,668	13.4	2,647	5,021
18-Oct-09	35,970	9,585	542	26,926	22,950	32.1	6,549	12.6	2,573	3,976
25-Oct-09	35,970	8,888	542	27,623	23,417	33.2	6,880	12.9	2,674	4,206
01-Nov-09	35,970	9,330	542	27,181	24,064	26.9	5,758	12.3	2,641	3,117
08-Nov-09	35,970	8,837	542	27,674	24,274	27.9	6,042	12.2	2,642	3,400
15-Nov-09	35,970	8,594	542	27,917	24,909	25.5	5,670	12.0	2,662	3,008
22-Nov-09	35,970	9,122	542	27,389	25,270	20.6	4,674	11.3	2,555	2,119
29-Nov-09	35,970	8,073	542	28,438	25,956	22.6	5,238	11.9	2,756	2,482
06-Dec-09	35,970	6,466	542	30,045	26,777	26.0	6,206	12.3	2,938	3,268
13-Dec-09	35,970	6,261	542	30,250	26,914	26.2	6,273	12.3	2,937	3,336
20-Dec-09	35,970	5,673	542	30,838	26,841	29.5	7,026	12.7	3,029	3,997
27-Dec-09	35,970	5,325	542	31,186	26,087	35.4	8,154	13.3	3,055	5,099

**Table A8 Zonal Bottled Generation for Extreme Weather, Scenario**

Week Ending Day	Firm Resource Scenario			Planned Resource Scenario		
	Bruce & West MW	Northeast MW	Northwest MW	Bruce & West MW	Northeast MW	Northwest MW
06-Jul-08	199	0	62	225	0	76
13-Jul-08	0	0	10	0	0	25
20-Jul-08	0	0	8	0	0	23
27-Jul-08	0	0	171	0	0	185
03-Aug-08	0	0	277	0	0	282
10-Aug-08	0	0	245	0	0	250
17-Aug-08	0	0	21	0	0	25
24-Aug-08	303	0	75	317	0	79
31-Aug-08	353	0	71	362	0	76
07-Sep-08	102	102	66	108	114	96
14-Sep-08	126	60	7	125	74	38
21-Sep-08	94	0	42	96	0	71
28-Sep-08	30	0	0	46	0	0
05-Oct-08	123	0	0	98	0	0
12-Oct-08	325	0	0	337	0	0
19-Oct-08	757	0	101	816	0	158
26-Oct-08	726	0	84	798	0	131
02-Nov-08	0	0	0	0	0	49
09-Nov-08	15	0	33	34	0	84
16-Nov-08	18	0	17	34	0	81
23-Nov-08	461	0	24	477	0	73
30-Nov-08	450	0	0	475	0	51
07-Dec-08	188	0	151	212	0	204
14-Dec-08	171	0	181	188	0	241
21-Dec-08	198	0	127	206	0	176
28-Dec-08	665	0	193	672	0	247
04-Jan-09	714	0	198	835	0	251
11-Jan-09	631	0	159	1,329	0	216
18-Jan-09	807	0	133	1,487	0	191
25-Jan-09	797	0	121	1,440	0	175
01-Feb-09	847	0	135	1,473	0	189
08-Feb-09	911	0	172	1,580	0	238
15-Feb-09	941	0	193	1,627	0	255
22-Feb-09	936	0	204	1,616	0	266
01-Mar-09	504	0	178	1,090	0	233
08-Mar-09	538	0	0	1,139	0	36
15-Mar-09	0	0	36	628	0	95
22-Mar-09	18	0	61	659	0	116
29-Mar-09	40	0	74	684	0	127

Note: The bottled generation values indicated in the table are capacity values calculated at the hour of weekly peak. In real time operation, the actual amount of bottled generation will depend on many conditions prevailing at the time, including the local generation levels, overall generation dispatch and the direction and levels of flows into and out of Ontario.

Zonal information is found on page 6 of the [Ontario Transmission System](#) document.

(Table A8 continued)

Week Ending Day	Firm Resource Scenario			Planned Resource Scenario		
	Bruce & West MW	Northeast MW	Northwest MW	Bruce & West MW	Northeast MW	Northwest MW
05-Apr-09	49	0	0	667	0	0
12-Apr-09	0	0	0	752	0	0
19-Apr-09	0	0	0	575	0	0
26-Apr-09	0	0	0	560	0	0
03-May-09	0	0	0	586	0	0
10-May-09	0	0	0	498	0	0
17-May-09	0	0	0	530	0	0
24-May-09	366	0	0	1,006	0	0
31-May-09	0	0	0	423	0	0
07-Jun-09	0	0	0	249	0	0
14-Jun-09	0	0	0	96	0	0
21-Jun-09	83	0	0	239	31	57
28-Jun-09	200	0	34	780	38	92
05-Jul-09	273	0	73	946	51	136
12-Jul-09	170	0	41	848	34	102
19-Jul-09	159	0	39	714	41	101
26-Jul-09	190	0	36	817	3	97
02-Aug-09	182	0	74	867	0	134
09-Aug-09	114	0	185	645	0	244
16-Aug-09	131	0	172	659	0	229
23-Aug-09	151	0	196	759	0	253
30-Aug-09	157	0	191	752	0	249
06-Sep-09	285	0	99	1,696	0	158
13-Sep-09	125	0	184	1,198	0	244
20-Sep-09	157	0	163	1,317	0	228
27-Sep-09	0	0	172	638	0	234
04-Oct-09	0	0	165	455	0	229
11-Oct-09	62	0	254	756	0	311
18-Oct-09	559	0	240	1,272	0	300
25-Oct-09	11	0	206	706	0	259
01-Nov-09	0	0	177	658	0	233
08-Nov-09	0	0	206	701	0	273
15-Nov-09	0	0	197	585	0	256
22-Nov-09	0	0	204	591	0	282
29-Nov-09	0	0	175	577	0	238
06-Dec-09	241	0	142	1,271	0	239
13-Dec-09	319	0	173	1,309	0	260
20-Dec-09	337	0	143	1,280	0	226
27-Dec-09	408	0	255	1,337	0	336



Table A9 Energy Production Capability Forecast

Month	Firm Resource Scenario Forecast Energy Production Capability (GWh)	Planned Resource Scenario Forecast Energy Production Capability (GWh)
Jul 2008	17,185	17,185
Aug 2008	16,948	16,948
Sep 2008	14,981	14,981
Oct 2008	15,846	15,862
Nov 2008	16,080	16,095
Dec 2008	18,458	18,473
Jan 2009	18,701	19,306
Feb 2009	16,667	17,213
Mar 2009	15,994	16,598
Apr 2009	15,065	15,650
May 2009	15,257	15,862
Jun 2009	17,305	17,972
Jul 2009	18,882	19,571
Aug 2009	18,948	19,637
Sep 2009	17,036	18,205
Oct 2009	16,720	17,981
Nov 2009	16,912	18,132
Dec 2009	17,862	19,123

- End of Section -

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## Appendix B Transmission Projects

Table B Transmission Projects

Zone	CAA-ID#	Transmitter	Description	Proposed I/S Date
<b>East</b>	2007-EX333	Hydro One Networks Inc.	Whitby TS: new shunt capacitor at T3/T4 DESN station	2008-Q3
	2003-EX176	Hydro One Networks Inc.	Kingston-Gardiner TS: new T3/T4 DESN station	2008-Q4
<b>Essa</b>	2006-233	Hydro One Networks Inc.	Orangeville TS: new shunt capacitor	2008-Q2
	2006-211	Hydro One Networks Inc.	new Holland TS	2009-Q2
	2005-190	Hydro One Networks Inc.	Stayner TS: modifications and new 230 kV line	2009-Q2
<b>Niagara</b>	2002-085	Hydro One Networks Inc.	Queenston Flow West: new 230 kV circuits Q26M & Q35M (Allanburg x Middleport)	To be determined
	2007-257	Hydro One Networks Inc.	thermal uprating of 115 kV circuits D9HS, D10S and Q11S	2009-Q2
	2002-EX070	Hydro One Networks Inc.	Venessa Junction to Norfolk TS: new 115 kV circuit	2009-Q3
	2007-EX379	Hydro One Networks Inc.	retirement of Q5G (25 Hz circuit)	2008-Q4
	N/A	Hydro One Networks Inc.	reconnect of Beck G7 to 60 Hz	2008-Q4
	N/A	Hydro One Networks Inc.	thermal upgrade of 115 kV circuit Q4N	2009-Q2
	N/A	Hydro One Networks Inc.	retirement of 25 Hz system	2009-Q2
<b>Northeast</b>	2005-207	Five Nations Energy Inc.	Kashechewan TS: new transformer	2009-Q3
	2005-207	Five Nations Energy Inc.	Fort Albany TS: new back-up transformer	2008-Q4
	2000-015	Five Nations Energy Inc.	new 115 kV transmission line from Moosonee SS to Kashechewan TS to supply Victor Mine	2008-Q3
	N/A	Hydro One Networks Inc.	retirement of 25 Hz system	2009-Q2
<b>Northwest</b>	2006-247	Hydro One Networks Inc.	Lakehead TS: new static var compensator (SVC)	2009-Q4
<b>Ottawa</b>	2000-001	Hydro One Networks Inc.	Hawthorne TS: new 1,250 MW Ontario-Quebec interconnection	2009-Q1
	2006-245	Hydro Ottawa	new Cyrville TS	2008-Q3

(Table B continued)

Zone	CAA-ID#	Transmitter	Description	Proposed I/S Date
Southwest	2006-221	Hydro One Networks Inc.	Halton TS and Meadowvale TS: new shunt capacitors	2009-Q2
	2006-EX299	Hydro One Networks Inc.	Burlington TS: Replace the lower rated 230/115 kV transformer	2008-Q4
	2006-249	Hydro One Networks Inc.	230 kV circuits B4V & B5V: uprate Hanover x Orangeville sections	2009-Q1
	2007-295	Hydro One Networks Inc.	Middleport TS: new 4x250 Mvar shunt capacitors	2009-Q2
	2007-295	Hydro One Networks Inc.	Buchanan TS: new 200 Mvar shunt capacitor	2009-Q3
	2007-295	Hydro One Networks Inc.	Nanticoke TS: new 2x250 Mvar shunt capacitors	2009-Q4
Toronto	2006-231	Hydro One Networks Inc.	Pleasant TS: new DESN station	2008-Q2
	2006-220	Hydro One Networks Inc.	Claireville TS: Install 230 kV bus-tie circuit breaker K1K2 Reterminate 230 kV circuit V73RS to Cardiff (V42H) & 230 kV circuit V73RS to Goreway (V42H) Reterminate 230 kV circuit V76R to Richview Reterminate 230 kV circuit B82V to Brown Hill	2008-Q2
	2006-220	Hydro One Networks Inc.	Claireville TS: Reterminate 230 kV side of autotransformer T15 Reterminate 230 kV circuit V73R to Richview Reterminate 230 kV circuit V75R to Kleinburg (V44)	2008-Q4
	2006-220	Hydro One Networks Inc.	Claireville TS: Reterminate circuit 230 kV V71RP to Parkway (V71P) Reterminate circuit 230 kV V72R to Cardiff (V41H)	2009-Q4
	2006-246	Hydro One Networks Inc.	terminate 230 kV circuit V75R (V77R) into Richview TS & Claireville TS	2009-Q4
	2007-264	Hydro One Networks Inc.	Goreway TS: new T1/T2 DESN station	2009-Q4
West	2007-EX318	Hydro One Networks Inc.	Belle River TS: new shunt capacitors	2008-Q2
	2007-EX328	Hydro One Networks Inc.	Lambton TS: Replace Air Blast breakers with SF6 breakers; and replace buswork (strain bus with rigid bus)	2009-Q1

- End of Section -

## Appendix C Planned Transmission Outages

The following tables list the planned transmission outages by transmission zone, for transmission outages with an expected duration greater than five days, and/or for those transmission outages associated with a major project.

**Table C1 Bruce Zone**

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Oct 18 2008 7:00 AM	Oct 24 2008 5:00 PM	Longwood TS: B562L::LONGWOOD_TS::BRUCE_A_TS, HL562, B562L::LONGWOOD_TS::BRUCE_A_TS, W52-B562L, W52-B562L, PL562, 21-B562L	5046792	3 Hour	CWW	NBLIP FABC	500 750 - 950 MW

**Table C2 East Zone**

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
May 30 2008 2:01 PM	Oct 31 2008 2:01 PM	Dobbin TS: T2, T2-A, T2-K	4796540	Immediate	CWW	None	N/A
Oct 06 2008 4:01 AM	Oct 31 2008 4:01 PM	Chats Falls SS: DL33, C27P::DOBBIN_TS::GALETTA_JCT , C27P::GALETTA_JCT::CHATS_FALLS_SS, C27P::GALETTA_JCT::CHATS_FALLS_SS, HL27, DL3, AL27, C27P::DOBBIN_TS::GALETTA_JCT , D_BUS	5277035	8 Hour	CWW	FIO	30 MW
Sep 08 2008 8:00 AM	Sep 26 2008 6:00 PM	Easton JCT: L20H::EASTON_JCT::CROSBY_JCT , L20H::CROSBY_JCT::CROSBY_TS, L20H::CROSBY_JCT::CROSBY_TS, 10-L20H, L20H::EASTON_JCT::BROCKVILLE_TS, T3-L20H, 24T2-L20H, L20H::EASTON_JCT::BROCKVILLE_TS, L20H::EASTON_JCT::CROSBY_JCT , L20H::CROSBY_JCT::HINCHINBROOKE_SS, 49-L20H, L20H::ST.LAWRENCE_TS::EASTON_JCT, L20H::ST.LAWRENCE_TS::EASTON_JCT, T2-L20H, L20H::CROSBY_JCT::HINCHINBROOKE_SS	5299333	12 Hour	CWW	None	N/A

(Table C2 continued)

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Sep 21 2009 6:00 AM	Oct 09 2009 4:00 PM	Smiths Falls TS: L22H::EASTON_YULE_JCT::SMITH S_FALLS_TS, L22H::EASTON_YULE_JCT::ST.LA WRENCE_TS, L22H::EASTON_JCT::HINCHINBR OOKES_SS, L22H::EASTON_JCT::HINCHINBR OOKES_SS, 10-L22H, 49-L22H, L22H::EASTON_YULE_JCT::ST.LA WRENCE_TS, L22H::EASTON_YULE_JCT::EASTO N_JCT, L22H::EASTON_YULE_JCT::EASTO N_JCT, L22H::EASTON_YULE_JCT::SMITH S_FALLS_TS, 24T1-L22H, L22H::BROCKVILLE_TS::EASTON_ JCT, L22H::BROCKVILLE_TS::EASTON_	5310000	8 Hour	CWW	None	N/A
Mar 09 2009 6:00 AM	Mar 27 2009 6:00 PM	Easton Yule JCT: L21H::EASTON_YULE_JCT::SMITH S_FALLS_TS, L21H::CROSBY_JCT::CROSBY_TS, T4-L21H, L21H::ST.LAWRENCE_TS::EASTO N_YULE_JCT, 49-L21H, L21H::CROSBY_JCT::HINCHINBR OOKES_SS, L21H::ST.LAWRENCE_TS::EASTO N_YULE_JCT, T1-L21H, 10-L21H, L21H::EASTON_YULE_JCT::CROS BY_JCT, L21H::EASTON_YULE_JCT::CROS BY_JCT, T3-L21H, L21H::CROSBY_JCT::CROSBY_TS, L21H::CROSBY_JCT::HINCHINBR OOKES_SS, L21H::EASTON_YULE_JCT::SMITH S_FALLS_TS	5326751	8 Hour	CWW	None	N/A
Oct 13 2008 5:00 AM	Nov 07 2008 6:00 PM	Dobbin TS: T5-D, T5, T5-H	5541971	8 Hour	CWW	None	N/A
Aug 25 2008 5:00 AM	Oct 02 2008 6:00 PM	Fdrx-USA LxP TS: L33P::FDRX- USA_LXP_TS::ST.LAWRENCE_TS, PS33-1, R33, PS33-2, L33P::FDRX- USA_LXP_TS::ST.LAWRENCE_TS, PS33-S, PS33-1, PS33-S, PS33-2, PS33, PS33-2, R33-1, R33-2	5542138	16 Hour	CWW	NY import NY export	150 MW
Jul 14 2008 7:00 AM	Jul 23 2008 4:00 PM	Chats Falls SS: AH	5564691	8 Hour	CWW	None	N/A
Jul 28 2008 7:00 AM	Aug 08 2008 4:00 PM	Chats Falls SS: HL3	5564757	8 Hour	CWW	None	N/A
Jun 01 2008 2:01 PM	Oct 31 2008 2:01 PM	Dobbin TS: T2, T2-K, T2-A	5679026	Immediate	CWW	None	N/A
Nov 10 2008 6:00 AM	Nov 18 2008 12:00 PM	Hinchinbrooke SS: L3L23, DL3, H5L3, T2L5, T2, X3H::CATARAQUI_TS::HINCHINB ROOKE_SS, T2L3, X3H::CATARAQUI_TS::LENNOX_T S, X3H::CATARAQUI_TS::LENNOX_T S, HL3, X3H::CATARAQUI_TS::HINCHINB ROOKE_SS, P_BUS	5701131	3 Day	CWW	None	N/A
Sep 02 2008 4:00 AM	Oct 31 2008 7:00 PM	Lodgeroom DS: B1S::LODGEROOM_DS::SIDNEY_T S, 12-B1S, 38B1S-12, B1S::LODGEROOM_DS::SIDNEY_T S	6000064	6 Hour	CWW	None	N/A

**Table C3 Essa Zone**

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Sep 11 2008 5:00 PM	Sep 25 2008 7:00 AM	Essa TS: L7L8	5579073	Non-Recallable	CWW	None	N/A
Sep 02 2008 5:00 AM	Sep 14 2008 9:00 PM	Hanmer TS: X504E::HANMER_TS::ESSA_T S, X504E::HANMER_TS::ESSA_T S, 33-X504E, 18-X504E	5682719	36 Hour	CWW	FN FS	1400 MW 600 MW

**Table C4 Niagara Zone**

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Apr 22 2008 12:15 PM	Dec 31 2008 4:00 PM	Swann Rd 4: 1306, 1306	5006424	Non-Recallable	CWW	None	N/A
Sep 14 2008 11:00 PM	Dec 12 2008 6:00 PM	Beck #1 SS: E7_BUS	5797599	48 Hour	CWW	None	N/A
Apr 22 2008 12:15 PM	May 15 2009 6:00 PM	Beck #2 TS: R76-1, R76, R76, R76-1, R76-2, R76-2	5849717	2 Hour	CWW	NY import Summer Winter NY export Summer Winter FABC	440 MW 510 MW 680 MW 560 MW 50 to 100 MW on top of other outages, see Bruce, Southwest and West zones

Table C5 Northeast Zone

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Sep 09 2008 8:00 AM	Sep 14 2008 5:00 PM	Ansonville TS: T2-LT2, T2, T2-H1	5066717	4 Hour	CWW	None	Requires NE G/R to be selected to maintain acceptable post-contingency flows
Jul 07 2008 8:00 AM	Jul 18 2008 4:00 PM	Copper Cliff JCT: S1R::MARTINDALE_TS::COPPER_CLIFF_JCT, S1R::MARTINDALE_TS::COPPER_CLIFF_JCT	5482202	4 Hour	CWW	None	N/A
Oct 06 2008 5:00 AM	Oct 24 2008 6:00 PM	Algoma TS: 26-S22A, T2-S22A, S22A::MARTINDALE_TS::CLARABELLE_JCT	5525309	4 Hour	CWW	EWTE	50 MW
Jul 07 2008 5:00 AM	Jul 25 2008 6:00 PM	Otto Holden TS: H24S::OTTO_HOLDEN_TS::WIDDIFIELD_SS, H24S::OTTO_HOLDEN_TS::WIDDIFIELD_SS 38H24S-6, 6-H24S, 6-H24S, 38H24S-6	5528280	4 Hour	CWW	None	N/A
Jul 21 2008 5:00 AM	Aug 01 2008 6:00 PM	Porcupine TS: T7, 30T7-H, 30T7-T	5542165	8 Hour	CWW	None	Requires arming of SPS
Aug 11 2008 5:00 AM	Aug 22 2008 6:00 PM	Porcupine TS: 30T8-H2, 30T8-T, T8	5542170	8 Hour	CWW	None	Requires arming of SPS
Sep 08 2008 7:00 AM	Sep 19 2008 4:00 PM	Hanmer TS: 33T6-W, W6L504, W6L502	5578904	4 Hour	CWW	None	N/A
Nov 10 2008 5:30 AM	Nov 21 2008 6:00 PM	Cobden JCT: T1B::RED_ROCK_CGS::COBDEN_JCT, 69T1B-38, T1B::RED_ROCK_CGS::COBDEN_JCT	5579029	4 Hour	CWW	None	N/A
Jul 21 2008 1:00 PM	Aug 05 2008 10:00 AM	Mackay T.S.: GRTSH2::MACKAY_T.S.:GARTSHORE_TS, GRTSH2::MACKAY_T.S.:GARTSHORE_TS	5789119	2 Day	CWW	None	N/A
Aug 25 2008 9:30 AM	Sep 08 2008 3:00 PM	Mackay TS: 670, NORTH BUS, SAULT3::MACKAY_TS::BATCHAWANA, 661, PT9, 666, SAULT3::MACKAY_TS::BATCHAWANA, 593	5789564	2 Day	CWW	None	N/A
Jul 14 2008 12:00 PM	Jul 25 2008 5:00 PM	Steephill Falls GS: 1225, 1209, STEEPHILL_FALLS_GS, STEEPHILL_FALLS_GS, STEEPHILL_FALLS_GS	5982607	8 Hour	CWW	None	N/A



Table C6 Northwest Zone

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Jul 16 2008 7:00 AM	Jul 22 2008 5:00 PM	Kenora TS: K24F::KENORA_TS::FORT_FR ANCES_TS, 22-K24F, 34-K24F, K24F::KENORA_TS::FORT_FR ANCES_TS	5443061	4 Hour	CWW	OMTE, OMTW, MPFN, MPFS, EWTE	OMTE - 50 MW OMTW - 250 MW MPFN - 50 MW MPFS - 140 MW EWTE - 75 MW
Jul 30 2008 7:00 AM	Aug 05 2008 5:00 PM	Fort Frances TS: 22-K24F, 34- K24F, K24F::KENORA_TS::FORT_FR ANCES_TS, K24F::KENORA_TS::FORT_FR ANCES_TS	5443066	4 Hour	CWW	OMTE, OMTW, MPFN, MPFS, EWTE	OMTE - 50 MW OMTW - 250 MW MPFN - 50 MW MPFS - 140 MW EWTE - 75 MW
Aug 13 2008 7:00 AM	Aug 19 2008 5:00 PM	Kenora TS: 34-K24F, 22-K24F, K24F::KENORA_TS::FORT_FR ANCES_TS, K24F::KENORA_TS::FORT_FR ANCES_TS	5443071	4 Hour	CWW	Aug 13-17: OMTE, OMTW, MPFN, MPFS, EWTE  Aug 18-19: OMTE, OMTW, MPFN, MPFS, EWTE, EWTW	Aug 13-17: OMTE - 50 MW OMTW - 250 MW MPFN - 50 MW MPFS - 140 MW EWTE - 75 MW  Aug 18-19: These penalties are for K24F + W21M outage. OMTE - 150 MW OMTW - 250 MW MPFN - 50 MW MPFS - 140 MW EWTE - 105 MW EWTW - 200 MW
Aug 18 2008 8:00 AM	Sep 11 2008 6:00 PM	Marathon TS: 15-W21M, W21M::WAWA_TS::MARATHO N_TS, 14-W21M, W21M::WAWA_TS::MARATHO N_TS	5808939	2 Hour	CWW	Aug 18-19 and Aug 27-Sep 2: OMTE, OMTW, MPFN, MPFS, EWTE, EWTW  Aug 20-26 and Sep 3-11: OMTE, OMTW, EWTE, EWTW	Aug 18-19 and Aug 27-Sep 2: These penalties are for K24F + W21M outage. OMTE - 150 MW OMTW - 250 MW MPFN - 50 MW MPFS - 140 MW EWTE - 105 MW EWTW - 200 MW  Aug 20-26 and Sep 3-11: OMTE - 50 MW OMTW - 50 MW EWTE - 105 MW EWTW - 100 MW
Aug 27 2008 7:00 AM	Sep 02 2008 5:00 PM	Fort Frances TS: 22-K24F, K24F::KENORA_TS::FORT_FR ANCES_TS, 34-K24F, K24F::KENORA_TS::FORT_FR ANCES_TS	5443076	4 Hour	CWW	OMTE, OMTW, MPFN, MPFS, EWTE, EWTW	These penalties are for K24F + W21M outage. OMTE - 150 MW OMTW - 250 MW MPFN - 50 MW MPFS - 140 MW EWTE - 105 MW EWTW - 200 MW
Sep 15 2008 8:00 AM	Sep 25 2008 6:00 PM	Marathon TS: W22M::WAWA_TS::MARATHO N_TS, 14-W22M, W22M::WAWA_TS::MARATHO N_TS, 15-W22M	5808934	2 Hour	CWW	OMTE, OMTW, EWTE, EWTW	OMTE - 50 MW OMTW - 50 MW EWTE - 105 MW EWTW - 100 MW

Table C7 Ottawa Zone

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Nov 24 2008 4:30 AM	Dec 05 2008 4:00 PM	Riverdale TS: A5RK-CA, 46-A5RK	5336659	4 Hour	CWW	None	N/A
Oct 14 2008 5:00 AM	Oct 31 2008 4:00 PM	Merivale TS: L31L32	5505242	24 Hour	CWW	None	N/A
Sep 18 2008 7:00 AM	Oct 10 2008 3:00 PM	Merivale TS: PL31	5505258	24 Hour	CWW	None	N/A
Sep 28 2008 6:00 AM	Oct 04 2008 5:00 PM	Merivale TS: P3_BUS, T21-P3, P2-P3, PL30, P2_BUS, P1-P2, P1_BUS, P1-P2, PL31	5608381	4 Hour	CWW		N/A
Nov 10 2008 6:00 AM	Nov 15 2008 5:00 PM	Merivale TS: KL32, KL29, K2_BUS, K1-K2, K1_BUS, T22-K2, K1-K2	5608415	4 Hour	CWW	None	N/A

Table C8 Southwest Zone

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Jan 05 2009 6:00 AM	Jan 30 2009 3:00 PM	Trafalgar TS: K1K2	4702290	3 Day	CWW	None	N/A
Sep 15 2008 7:00 AM	Sep 26 2008 8:00 PM	Middleport TS: KL30	5286709	6 Day	CWW	None	N/A
Sep 29 2008 7:00 AM	Oct 14 2008 8:00 PM	Middleport TS: L1L30	5286754	6 Day	CWW	None	N/A
Oct 14 2008 7:00 AM	Oct 27 2008 8:00 PM	Burlington TS: A2L37	5286839	6 Day	CWW	None	N/A
Sep 02 2008 6:00 AM	Nov 21 2008 3:00 PM	Milton SS: L70L73	5335735	5 Day	CWW	None	N/A
Nov 04 2008 6:00 AM	Nov 14 2008 2:00 PM	Middleport TS: T3-LT3, T3-TL580, T3	5541951	8 Hour	CWW	None	N/A
Jun 16 2008 6:00 AM	Sep 05 2008 7:00 PM	Nanticoke TS: T11, T11-E, T11-H	5542119	36 Hour	CWW	None	N/A
Sep 08 2008 7:45 AM	Sep 19 2008 6:00 PM	Nanticoke TS: T7L581	5555508	4 Hour	CWW	None	N/A
Jul 21 2008 7:00 AM	Aug 01 2008 6:00 PM	Nanticoke TS: T6T11	5555708	4 Hour	CWW	None	N/A
Jun 16 2008 8:45 AM	Sep 05 2008 3:00 PM	Nanticoke TS: T11, T11-H, T11-E	5555841	4 Hour	CWW	None	N/A
Oct 20 2008 6:20 AM	Oct 31 2008 2:00 PM	Middleport TS: L2L33	5768932	8 Hour	CWW	None	N/A
Aug 18 2008 6:20 AM	Aug 29 2008 2:00 PM	Middleport TS: L81L85	5776356	24 Hour	CWW	FETT FABC	600 MW Aug. 18 - 23 100 - 400 MW Aug. 23 - 29 100 - 550 MW When temperature is hot, potential voltage problems could occur at Milton for M585M out of service. The outage needs to be rescheduled.
Sep 22 2008 6:30 AM	Oct 10 2008 3:00 PM	Detweiler TS: 26-M21D, ASC21, AL6, AL4, AL7, A_BUS	5779539	8 Hour	CWW	FABC	Sept. 22 - 24 250 - 750 MW Sept. 24 - 29 250 - 600 MW Sept. 29 - Oct. 9 360 - 710 MW Oct. 9 - 10 360 - 860 MW
Oct 21 2008 7:10 AM	Oct 31 2008 3:30 PM	Detweiler TS: SC11, SC11SC, SC11K	5884876	2 Day	CWW	None	N/A
Apr 22 2008 12:15 PM	Dec 31 2008 5:00 AM	Detweiler JCT: D7G-D1W, D7G-D1W	5988426	3 Hour	CWW	None	N/A
Jul 07 2008 7:00 AM	Jul 25 2008 3:00 PM	Burlington TS: L27L39	6053421	4 Hour	CWW	None	N/A
Jul 21 2008 7:00 AM	Aug 01 2008 3:00 PM	Beach TS: A1L18	6053501	4 Hour	CWW	None	N/A
Apr 27 2008 5:00 AM	Dec 31 2008 11:59 PM	Ingersoll TS: 38L12-WW1C	6061949	4 Hour	CWW	None	N/A

Table C9 Toronto Zone

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Apr 07 2009 8:40 AM	Apr 25 2009 3:10 PM	Hearn SS: SC12SC, SC12A, SC12, SC12A-A	5298978	15 Day	CWW	None	N/A
Sep 02 2008 6:30 AM	Sep 24 2008 2:30 PM	Cherrywood TS: L540A	5547780	8 Hour	CWW	None	N/A
Oct 14 2008 6:30 AM	Oct 24 2008 4:00 PM	MANBYWJCT: R15K::MANBYWJCT::RICHVIE W_TS, T3-R15K, R15K::MANBYWJCT::RICHVIE W_TS, 38-R15K, 88-R15K, R15K::VANSCO_JCT::MANBY WJCT,	5593984	2 Day	CWW	None	N/A
May 28 2008 6:00 AM	Jul 18 2008 2:00 PM	Claireville TS: AL510	5630149	7 Day	CWW	None	N/A
Sep 08 2008 4:00 AM	Oct 19 2008 7:00 PM	Wilson JCT: M29C::WILSON_JCT::WILSON _TS, M29C::WILSON_JCT::WILSON _TS, T3-M29C, 81-M29C, M29C::WILSON_JCT::WHITBY _JCT, M29C::WHITBY_JCT::WHITBY _TS, M29C::ALMONTE_TS::WILSO N_JCT, T1-M29C, M29C::ALMONTE_TS::WILSO N_JCT, M29C::WILSON_JCT::WHITBY _JCT, M29C-1, M29C::WHITBY_JCT::CHERRY WOOD_TS, M29C::WHITBY_JCT::CHERRY WOOD_TS, M29C::WHITBY_JCT::WHITBY _TS, T3-M29C, T4-M29C	5827272	2 Hour	CWW	None	N/A
Sep 15 2008 4:00 AM	Nov 03 2008 7:00 PM	Cherrywood TS: L9L23, L7H, L9Q, H_BUS, L7L36, L7H, T4L9, T3L7, T3Q, DL7, Q_BUS, T4H, T4L9, P9C::PICKERING_A_SS::CHER RYWOOD_TS, P7C::PICKERING_A_SS::CHER RYWOOD_TS, P7C::PICKERING_A_SS::CHER RYWOOD_TS, P9C::PICKERING_A_SS::CHER RYWOOD_TS, L9Q, KL9, T4H, T3L7, T3Q	5979694	Non-Recallable	CWW	None	N/A
Nov 01 2008 3:00 AM	Dec 31 2008 7:00 PM	Cherrywood TS: JL543, AL542	5980717	Non-Recallable	CWW	None	N/A
Jan 25 2009 3:00 AM	Mar 27 2009 7:00 PM	Cherrywood TS: AL543, JL542	5980721	Non-Recallable	CWW	None	N/A
Oct 03 2008 6:00 AM	Nov 03 2008 4:00 PM	Claireville TS: 51-B82V, L76L82, HL82	6020489	Non-Recallable	CWW	None	N/A
Sep 03 2008 6:00 AM	Oct 02 2008 4:00 PM	Claireville TS: K1L42, KT15, K1K2, KL76, KL76, L76L82, 51- V76R, KL72	6020628	Non-Recallable	CWW	None	N/A
Nov 04 2008 7:00 AM	Dec 10 2008 5:00 PM	Claireville TS: H1H2, H1L82, HL73, HL75, H1L73	6021506	Non-Recallable	CWW	None	N/A
Nov 17 2008 7:00 AM	Nov 22 2008 5:00 PM	Bowmanville SS: R56-B540C, B540C::BOWMANVILLE_SS::C HERRYWOOD_TS, 81-B540C, B540C::BOWMANVILLE_SS::C HERRYWOOD_TS	6051537	2 Hour	CWW	None	N/A
Nov 24 2008 7:00 AM	Nov 29 2008 5:00 PM	Cherrywood TS: 81-B541C, R56-B541C, B541C::BOWMANVILLE_SS::C HERRYWOOD_TS, B541C::BOWMANVILLE_SS::C HERRYWOOD_TS	6051542	2 Hour	CWW	None	N/A

Table C10 West Zone

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Sep 15 2008 5:00 AM	Oct 24 2008 6:00 PM	Lambton TS #2: T7-L4D, T7, 27-T7	4622886	3 Day	CWW	Mich. Imp. Mich. Exp.	about 300 MW about 300 MW
Oct 20 2008 5:00 AM	Oct 26 2008 6:00 PM	Bruce A TS: B562L::LONGWOOD_TS::BRUCE_A_TS, W52-B562L, 21-B562L, B562L::LONGWOOD_TS::BRUCE_A_TS	4675791	8 Hour	CWW	NBLIP FABC	500 MW 750 - 950 MW
Jun 18 2008 4:00 AM	Jul 15 2008 5:00 PM	Lambton TS #2: L27L28	5372672	Non-Recallable	CWW	None	N/A
Jun 19 2008 4:00 AM	Jul 07 2008 5:00 PM	Lambton TS #2: 27-L27V, PL27, L27L28	5372685	Non-Recallable	CWW	FABC BLIP	50 - 250 MW 500 MW
Aug 13 2008 4:00 AM	Sep 05 2008 5:00 PM	Lambton TS #2: PL23	5372721	Non-Recallable	CWW	None	N/A
Aug 23 2008 4:00 AM	Sep 03 2008 5:00 PM	Lambton TS #2: 27-L23N, L23L51, PL23	5372946	Non-Recallable	CWW	BLIP FABC	500 MW Aug. 23 - 29 100 - 550 MW Aug. 29 - Sept. 3 50 - 250 MW
Sep 07 2008 4:00 AM	Oct 02 2008 5:00 PM	Lambton TS #2: PL29	5372957	Non-Recallable	CWW	None	N/A
Sep 08 2008 4:00 AM	Sep 24 2008 5:00 PM	Lambton TS #2: 27-L29C, L25L29, PL29	5373254	Non-Recallable	CWW	BLIP  FABC	Sept. 8 - 12 500 MW Sept. 12 - 19 700 MW Sept. 19 - 24 500 MW  Sept. 8 - 12 50 - 250 MW Sept. 12 - 13 50 -400 MW Sept. 13 - 15 160 - 510 MW Sept. 15 - 19 260 - 760 MW Sept. 19 - 22 260 - 610 MW Sept. 22 -24 250 - 750 MW

(Table C10 continued)

Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Major Transmission Interface Impacted	Reduction in Limit
Oct 05 2008 4:00 AM	Nov 02 2008 5:00 PM	Lambton TS #2: P1P2	5373391	Non-Recallable	CWW	None	N/A
Nov 03 2008 4:00 AM	Nov 25 2008 5:00 PM	Lambton TS #2: KL28	5373638	Non-Recallable	CWW	None	N/A
Nov 26 2008 4:00 AM	Dec 19 2008 5:00 PM	Lambton TS #2: K1K2	5373729	Non-Recallable	CWW	None	N/A
Nov 03 2008 4:00 AM	Nov 14 2008 5:00 PM	Lambton TS #2: 27-L27V, KL28, 27-L28C, L27L28, L27L28, PL27	5378641	4 Hour	CWW	BLIP FABC	700 MW 150 - 650 MW
May 26 2008 6:00 AM	Jul 11 2008 5:00 PM	Buchanan TS: L42L45	5468321	Non-Recallable	CWW	None	N/A
Jul 14 2008 7:00 AM	Jul 19 2008 5:00 PM	Kettle Creek JCT: W3T::BUCHANAN_TS::KETTLE_CREEK_JCT, W3T::BUCHANAN_TS::KETTLE_CREEK_JCT, W3T::KETTLE_CREEK_JCT::S T.THOMAS_TS, 11W3T, W3T::KETTLE_CREEK_JCT::S T.THOMAS_TS, 19-W3T, W3T::KETTLE_CREEK_JCT::F ORD_TALBOTVILLE_CTS, W3T::KETTLE_CREEK_JCT::F ORD_TALBOTVILLE_CTS, 11W3T	5615148	3 Hour	CWW	None	N/A
Oct 09 2008 4:00 AM	Oct 17 2008 5:00 PM	Lambton TS #2: PL23, KL37, T6-P1, PL24, P1P2, PL29, P1_BUS	5650420	4 Hour	CWW	BLIP FABC	500 MW Oct.9 - 10 360 - 860 MW Oct. 10 - 17 150 - 500 MW
Oct 26 2008 4:00 AM	Nov 02 2008 5:00 PM	Lambton TS #2: P2-P3, PL4, P1P2, P2_BUS, PL27	5650634	4 Hour	CWW	None	N/A
Sep 12 2008 5:00 AM	Sep 19 2008 6:00 PM	Lambton TS #2: 27-L25V, L25L29, KL25	5699299	Non-Recallable	CWW	BLIP FABC	700 MW Sept. 12 - 13 50 - 400 MW Sept. 13 - 15 160 - 510 MW Sept. 15 - 19 260 - 760 MW
Nov 19 2008 6:00 AM	Nov 30 2008 4:00 PM	Lambton TS #2: KL26, 27-L26L, L26L38	5699337	Non-Recallable	CWW	BLIP FABC	500 MW 50 - 250 MW
Feb 03 2009 4:00 AM	Feb 28 2009 5:00 PM	Lambton TS #2: KL25	5757364	Non-Recallable	CWW	None	N/A
Jun 16 2008 4:45 AM	Jul 25 2008 5:30 PM	Talbot TS: T1	5854829	2 Week	CWW	None	N/A
Jul 28 2008 7:40 AM	Aug 08 2008 4:00 PM	Buchanan TS: HL45	5996672	3 Hour	CWW	None	N/A
Jan 12 2009 5:00 AM	Mar 27 2009 5:00 PM	Bostwick Road JCT: N22W::BOSTWICK_ROAD_JCT::WONDERLAND_TS, 19-N22W, N22W::BOSTWICK_ROAD_JCT::BUCHANAN_TS, T4-N22W, N22W::BOSTWICK_ROAD_JCT::WONDERLAND_TS, N22W::BOSTWICK_ROAD_JCT::BUCHANAN_TS, N22W::LUCASVILLE_JCT::SARNIA_SCOTT_TS, T5-N22W, N22W::LUCASVILLE_JCT::MO DELAND_TS, N22W::BOSTWICK_ROAD_JCT::LUCASVILLE_JCT, N22W::LUCASVILLE_JCT::SARNIA_SCOTT_TS, N22W::BOSTWICK_ROAD_JCT::LUCASVILLE_JCT, N22W::LUCASVILLE_JCT::MO DELAND_TS, 40-N22W	6000011	4 Hour	CWW	BLIP FABC	500 MW 50 - 250 MW

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