

**18-MONTH OUTLOOK:**

# An Assessment of the Reliability of the Ontario Electricity System

From April 2007 to September 2008



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## Executive Summary

Ontario's supply-demand picture over the period covered by this Outlook remains generally positive, consistent with the most recent Outlooks produced each quarter by the Independent Electricity System Operator, IESO.

More than 1,400 MW of new supply is expected over the next 18 months, including two gas-fired generating facilities that will make important contributions to maintaining reliability in and around the Greater Toronto Area. Phase One of the Goreway gas-fired station (485 MW) is expected to come into service in the summer of 2007, and Phase One of the Portlands Energy Centre (250 MW) is planned to come into service before the summer of 2008. Phase Two of the Goreway station (375 MW) is planned to come into service in the fall of 2008.

In addition, 200 MW of wind generation is scheduled to come into service during the 18-month study period.

Under Normal Weather conditions, with all of the planned generation additions, there are forecast to be sufficient resources within Ontario to meet expected requirements over most of the period covered in this Outlook. However, there are conditions under which the system could be strained and Ontario would need to rely on additional supplies from outside the province. This is particularly true under extreme weather conditions or if new facilities are delayed from coming into service as scheduled.

The consistent economic growth experienced in Ontario in the last decade has resulted in a number of area loads reaching or exceeding the capability of the existing transformer stations. To address this problem and provide additional transformer capacity for future load growth Hydro One has commenced work on ten new load supply transformer stations most of which will be placed in service during the timeframe of this Outlook.

A high-voltage shunt capacitor at Richview TS suffered significant damage recently and is not expected to return to service before summer 2007. As a result of its subsequent investigation, Hydro One has imposed temporary restrictions on the use of high voltage shunt capacitors across the province. Remedial actions are underway to enable these capacitors to return to normal operations. The IESO expects to be able to supply power demands without the capacitor, although some risk remains that mitigating measures may be required if remedial actions are delayed or if additional contingencies are experienced.

The forecast for peak demand is very similar to the previous Outlook. The forecast for energy demand is lower due to a combination of lower industrial demand and increased levels of conservation. Conservation and demand response programs being pursued by the Ontario Power Authority (OPA) and local distribution companies are underway and will continue to grow moving forward. This Outlook includes the effects of the OPA's demand response programs.

Weather corrected energy demand for 2006 was 152.3 terawatt hours (TWh), a drop of 1.6% from 2005. Energy demand is expected to grow 1.1% to 154.0 TWh in 2007.

The following table summarizes the peak demands for the upcoming seasons under the different weather scenarios.

Season	Seasonal Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Summer 2007	25,762	27,575
Winter 2007-08	24,772	25,576
Summer 2008	26,011	27,824

The Independent Electricity System Operator (IESO) regularly assesses the adequacy and reliability of Ontario's power system. This 18-Month Outlook provides the IESO assessment of the reliability of the power system from April, 2007 to September, 2008 utilizing the most up to date forecast information and taking into account experience gained from past operations.

The 18-Month Outlook is intended for operational planning purposes, and for the scheduling of 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 April 2007 to September 2008. It supersedes the report titled “An Assessment of the Reliability of the Ontario Electricity System from January 2007 to June 2008”, dated December 21, 2006.

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 April 2007 to September 2008” (IESO\_REP\_0362) (found on the IESO web site at [http://www.ieso.ca/imoweb/pubs/marketReports/18Month\\_ODF\\_2007mar.pdf](http://www.ieso.ca/imoweb/pubs/marketReports/18Month_ODF_2007mar.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\\_2006sep.pdf](http://www.ieso.ca/imoweb/pubs/marketReports/Methodology_RTAA_2006sep.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\\_2007mar.pdf](http://www.ieso.ca/imoweb/pubs/marketReports/OntTxSystem_2007mar.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 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 generally publishes Interim Updates to the 18-Month Outlook during each month for which a full Outlook is not issued. 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 supersedes 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 2006. The economic outlook and weather scenarios have been updated based on the most recent data.

Overall, the updated demand forecast has slightly higher peak demands but with lower overall energy demand. The lower energy demand is due to a combination of lower industrial demand and increased levels of conservation.

### 2.2 Updates to Resources

Since the previous Outlook report was published, there has been an increase of 25 MW in the total installed capacity connected to the IESO controlled grid. Trail Road Landfill Gas Project (5 MW) and a runner upgrade (20 MW) to an existing unit at the Abitibi Canyon generating station make up this increase.

The Goreway gas fired generating units that come into service in the second quarter will remain in service for summer 2007. The units will, then, be removed from service and will return to service as a combined-cycle plant in the fall of 2008. In the last Outlook, the gas units were assumed to be in-service from before the summer of 2007 to the end of that Outlook period, June 2008.

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 February 7, 2007 were used.

### 2.3 Updates to Transmission Outlook

The list of transmission projects and planned and forced transmission outages have been updated from the previous 18-Month Outlook. For this Outlook, transmission outage plans submitted to the IOMS as of January 16, 2007 were used.

This outlook also presents a discussion of some of the transmission enhancements that are forecast to be in service within the outlook period as well as some transmission projects that are currently under construction.

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### 3.0 Historical Review

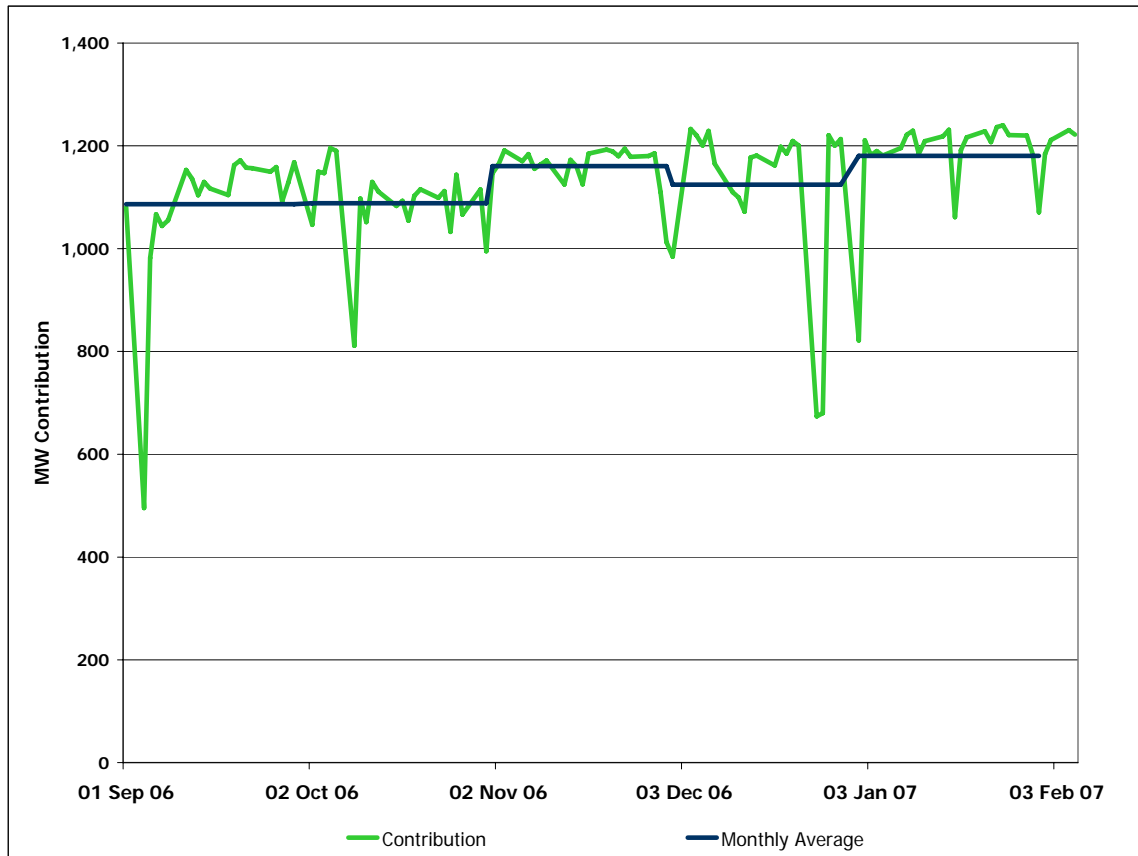
This section provides a review of past power system operation, including the most recent months of operation, to identify noteworthy observations, emerging problems and variations from forecast.

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

The figures from 3.1 to 3.3 show the contributions made by self scheduling generators, wind generators and imports at the time of weekday peak for the period from September 1, 2006 to February 6, 2007.

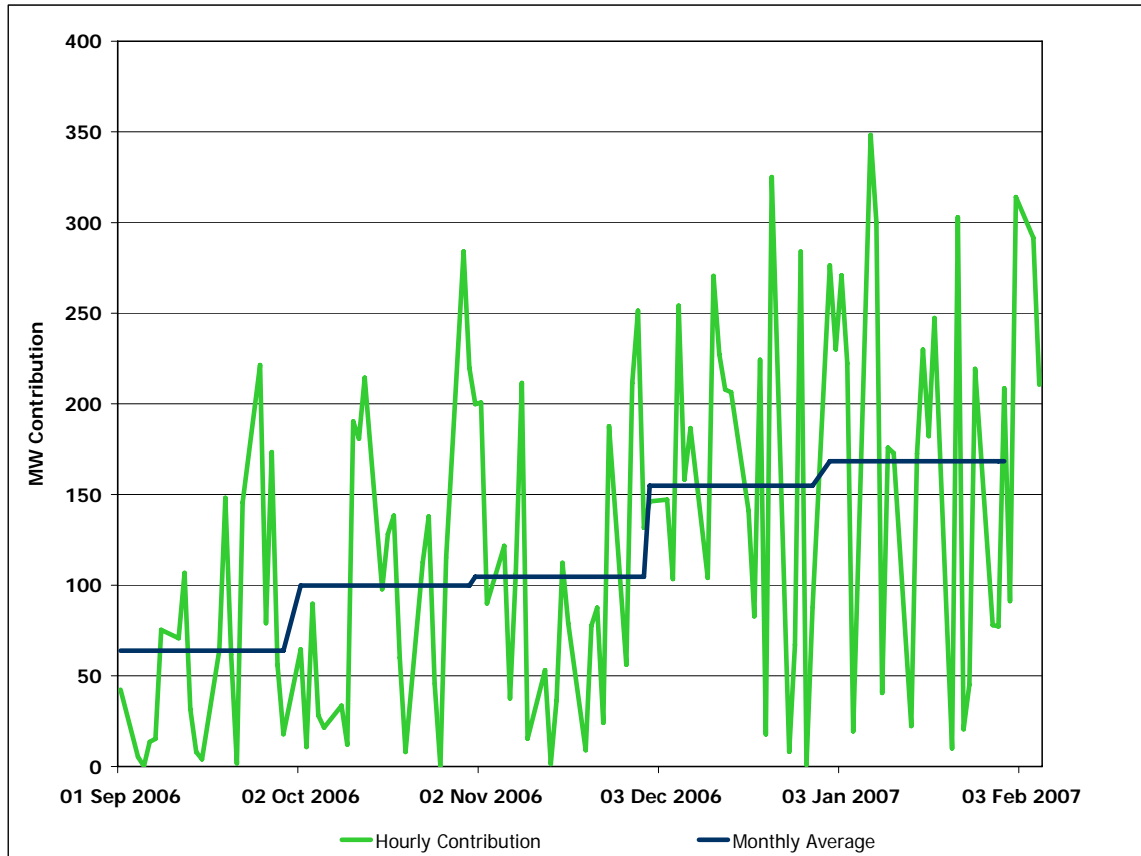
In figure 3.1, the large deviations in contributions from the monthly average are generally due to the outages to the generators and/or holiday shutdowns.

**Figure 3.1 Self Scheduling Generation, other than Hydro, Contributions at the Time of Weekday Peak**



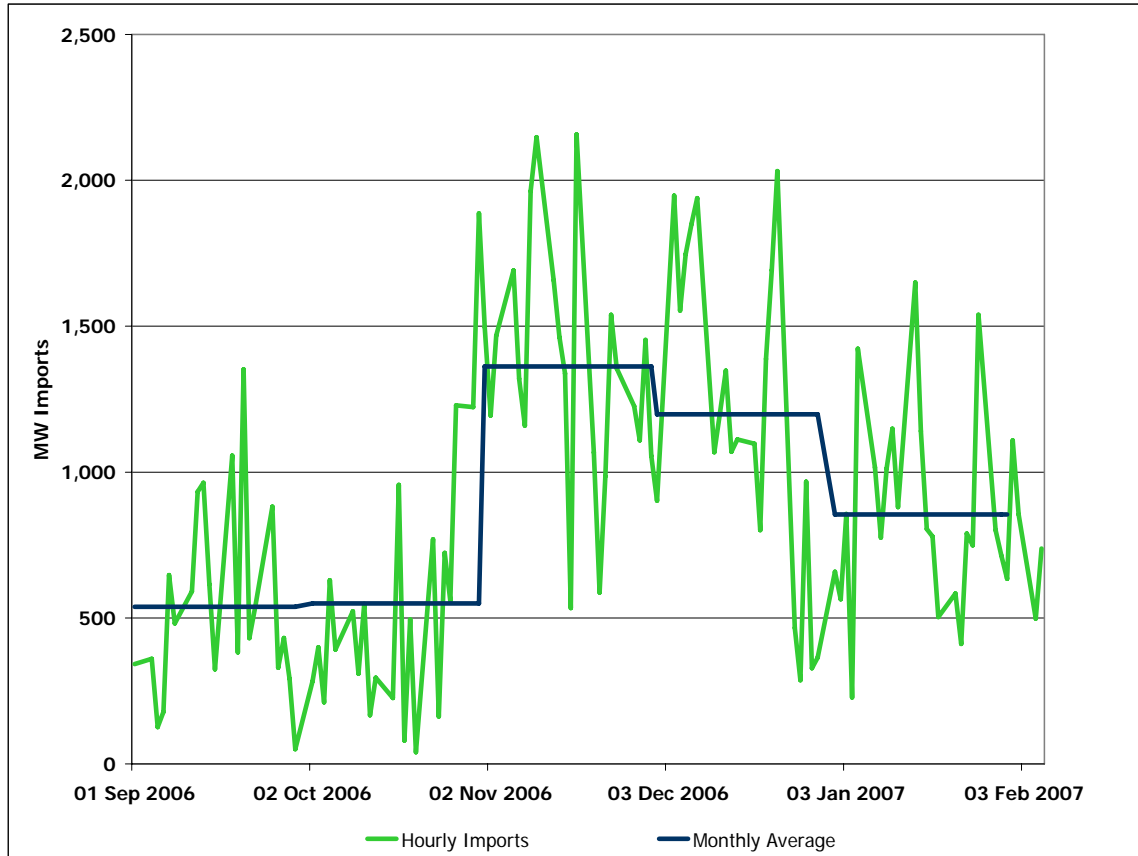
The installed capacity of wind generation was increased by 90 MW in early November with the in-service of Prince II Wind Power Project.

Figure 3.2 Wind Generation Contributions at the Time of Weekday Peak



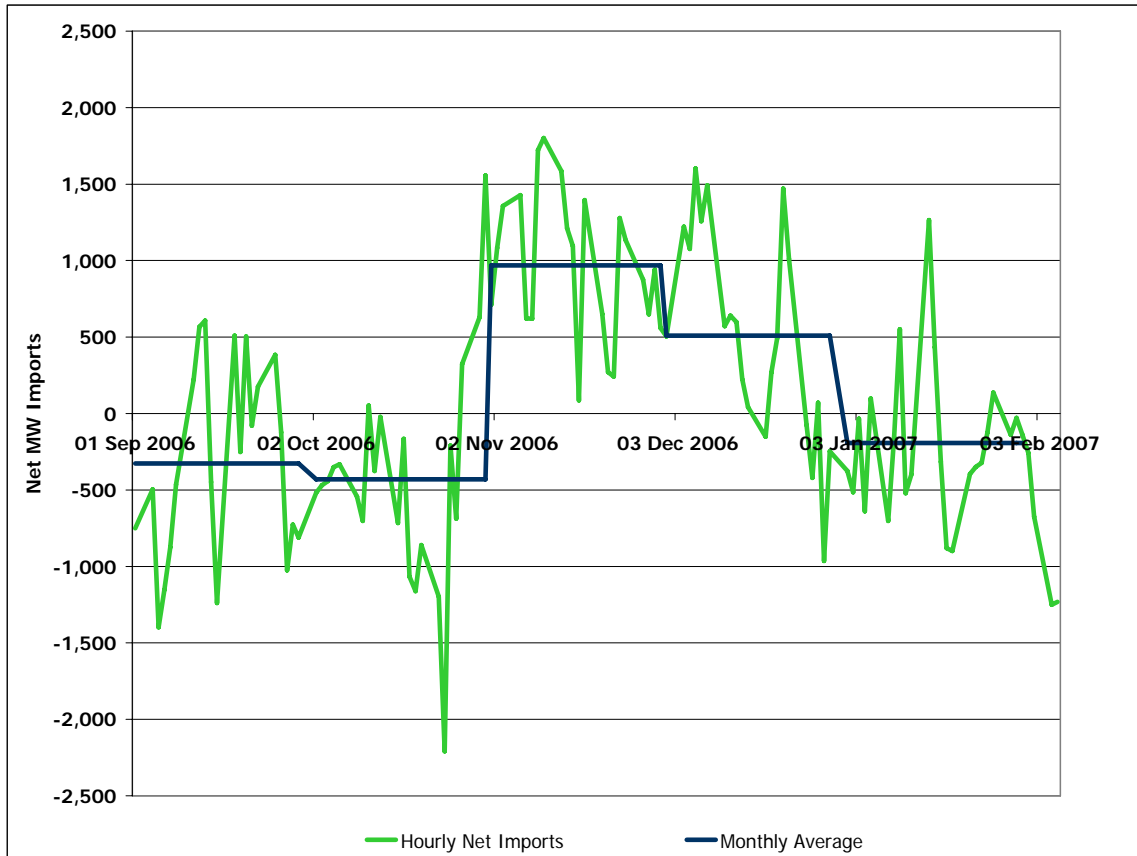
In September and October, Ontario experienced large supply cushions which influenced the low import levels. As planned generator outages increased later in the year, the supply cushion diminished and imports increased in response.

Figure 3.3 Imports into Ontario at the Time of Weekday Peak



Net imports, which is the difference between total imports and total exports, at the time of weekday peak are shown in the figure 3.4

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



### 3.2 Weather and Demand Historical Review

The winter of 2006-07 started off very mild but is finishing as a more typical winter. November was generally quite mild leading to a relatively low monthly peak demand of 21,267 MW. December was extremely mild and the peak demand reflected that with a peak of just 22,941 MW. January continued on the same trend with two very mild weeks before the weather shifted to more typical winter temperatures in the latter half of the month. This gave rise to a January peak of 23,537 MW. The cold weather continued into February giving with a winter peak demand of 23,935 MW on February 13<sup>th</sup>. Over the last 20 years, the winter peak has occurred in February three times, in 1993, 1995 and 2002. February 13<sup>th</sup> is the latest winter peak we have observed as previous peaks occurred on the 1<sup>st</sup>, 4<sup>th</sup> and 6<sup>th</sup> of February.

- 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 economic outlook has been updated but the theme remains the same as what we have seen over the past year where growth is not broad-based but very sector specific. Overall, Ontario's economic growth has remained positive but our large manufacturing base has meant that we have lagged the other provinces.

- The appreciation of the Canadian dollar against the U.S. dollar has eroded the competitiveness of Ontario exporters.
- Resource sectors that have experienced increasing commodity prices have seen excellent growth. Those sectors where commodity prices have not outpaced the appreciation of the dollar have and will continue to struggle.
- Low interest rates continue to foster business investment and consumption. Despite the mixed performance of the Ontario economy, house and motor vehicle sales have remained quite strong.
- Despite the overall economic growth, electricity demand will grow only modestly as some of the large energy intensive industries are lagging the rest of the economy.

The demand models were updated and re-estimated to capture the most recent actual data and economic forecast.

The weather-corrected energy demand for 2006 was 1.6% lower than 2005 due largely to the reduction in energy-intensive industrial demand. Conservation and Demand Management (CDM) initiatives have also taken effect. The OPA and local distribution companies (LDCs) have introduced a number of programs, which encourage electricity customers to adopt energy efficiency measures and engage in demand response activities. Targeted CDM savings totalling more than 1,000 MW are being pursued by a number of market participants, including the OPA. Continued economic growth and better performance overall will push energy demand up 1.1% in 2007 relative to 2006. The summer 2007 Monthly Normal peak demand is expected to be 25,516 MW. The Monthly Normal winter 2007-08 peak is expected to be 24,566 MW.

### Demand Forecast Assumptions

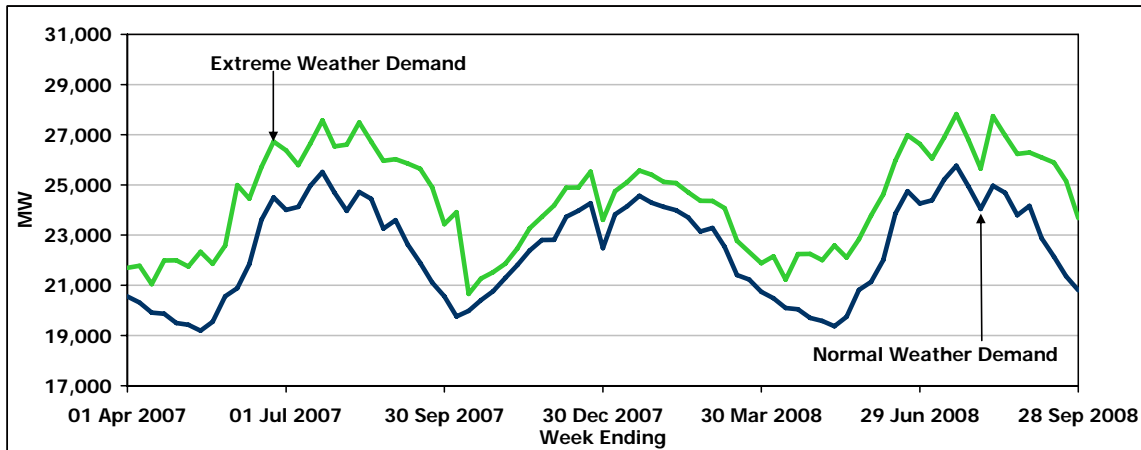
The adequacy assessments contained in this Outlook take into consideration a range of peak demands that can occur under various weather conditions with varying probability of occurrence. The IESO focuses on two demand forecast scenarios, which are based on:

- Monthly 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.

Figure 4.1 shows the Monthly Normal and Extreme 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. In recognition of the uncertainty which 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).

The IESO assumes in the FRS that a limited set of planned resource additions will occur on their forecast in-service dates, whereas the PRS is developed on the assumption that all planned resource changes will occur within the 18-month study period.

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

Results of the adequacy assessment, as well as an analysis of risk factors, are described in Sections 5.1 through 5.4. Observations, findings and conclusions are provided in Section 7, and detailed tables of results can be found in Appendix A of this document.

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

#### Resource Assumptions

The Planned Resource Scenario assumes quantities of demand measures and generation capacity based on existing resources plus significant new generation facilities that are scheduled to come into service within the 18-month study period. These include:

- A. Existing Installed Resources: total capacity of 31,214 MW (refer to Table 5.1)
- B. New generation facilities and capacity changes and retirements to the existing facilities (refer to Table 5.2)
  - o Includes generation projects in the IESO's Connection Assessment and Approval Process (CAA)<sup>1</sup> that are under construction and projects contracted by the OPA.
  - o 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.
  - o All gas units at the Goreway Station are assumed to be removed from service to allow for completion of the steam turbines after the summer 2007. The station is

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<sup>1</sup> 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 [www.ieso.ca](http://www.ieso.ca) under the "Participant Services - Connection Assessments" link.

subsequently scheduled to return to service as a combined-cycle plant in the fall of 2008.

C. Forecast of demand measures:

- Demand measures include dispatchable loads and loads contracted with the OPA.
- Table A2 or A5 in Appendix A summarizes the changes to the capacity equivalent from demand measures over the course of the forecast.
- Demand measures range from 386 MW to a maximum of 552 MW (refer to column “Demand Measures” in Table A2 or A5 in Appendix A).
- Demand measures are forecast based on market participant information and actual market experience.
- Based on historical data, it is assumed that 56% of dispatchable demand is available at the time of the weekly peak.

**Table 5.1 Existing Installed Generation Resources**

Fuel Type	Total Capacity (MW)	Number of Stations
Nuclear	11,419	5
Hydroelectric	7,788	68
Coal	6,434	4
Oil / Gas	5,103	22
Wind	395	4
Biomass / Landfill Gas	75	5
<b>Total</b>	<b>31,214</b>	<b>108</b>

**Table 5.2 Committed and Contracted Generation Resources**

Proponent/Project Name	Zone	Fuel Type	Capacity MW	Estimated Effective Date	Considered in Resource Scenario	
					FRS	PRS
Goreway Station Phase 1	Toronto	Gas	485	2007-Q2 <sup>(1)</sup>		Yes
Nuclear Upgrade	N/A	Uranium	27	2007-Q3 <sup>(1)</sup>	Yes	Yes
Retirement of Sandy Falls 25 Hz generation to convert to 60 Hz	Northeast	Water	-3	2007-Q3 <sup>(2)</sup>	Yes	Yes
Ripley Wind Power Project	Southwest	Wind	76	2007-Q4 <sup>(1)</sup>		Yes
Lac Seul Project - English River	Northwest	Water	13	2007-Q4 <sup>(1)</sup>		Yes
Abitibi Canyon Runner Upgrade	Northeast	Water	10	2008-Q1 <sup>(1)</sup>	Yes	Yes
Great Northern Tri-Gen	West	Gas	12	2008-Q1 <sup>(1)</sup>		Yes
Retirement of Lower Sturgeon 25 Hz generation to convert to 60 Hz	Northeast	Water	-5	2008-Q1 <sup>(2)</sup>	Yes	Yes
Umbata Falls Hydroelectric	Northwest	Water	23	2008-Q2 <sup>(1)</sup>		Yes
Durham College District Energy	Toronto	Gas	2	2008-Q2 <sup>(1)</sup>		Yes
Portland Energy Centre Phase I	Toronto	Gas	250	2008-Q2 <sup>(1)</sup>		Yes
Countryside London Cogen	West	Gas	12	2008-Q2 <sup>(1)</sup>		Yes
Warden Energy Centre	Toronto	Gas	5	2008-Q2 <sup>(1)</sup>		Yes
Retirement of Wawatin 25 Hz generation to convert to 60 Hz	Northeast	Water	-11	2008-Q2 <sup>(2)</sup>	Yes	Yes
Melancthon II Wind Project	Southwest	Wind	132	2008-Q2 <sup>(1)</sup>		Yes
Nuclear Upgrade	N/A	Uranium	27	2008-Q3	Yes	Yes
Goreway Station Phase 2	Toronto	Gas	375	2008-Q3		Yes
<b>Total</b>			<b>1,429</b>			

**Notes to Table 5.2:**

The total may not add up due to rounding.

- (1). The Estimated Effective Date for the project hasn't changed from the last Outlook.
- (2). The retirement of the existing 25 Hz generation in the Northeast zone, to convert to 60 Hz, was not included in the last Outlook.

Over the course of the Outlook period, the contracted amount of IESO and OPA demand response programs grows by about 240 MW

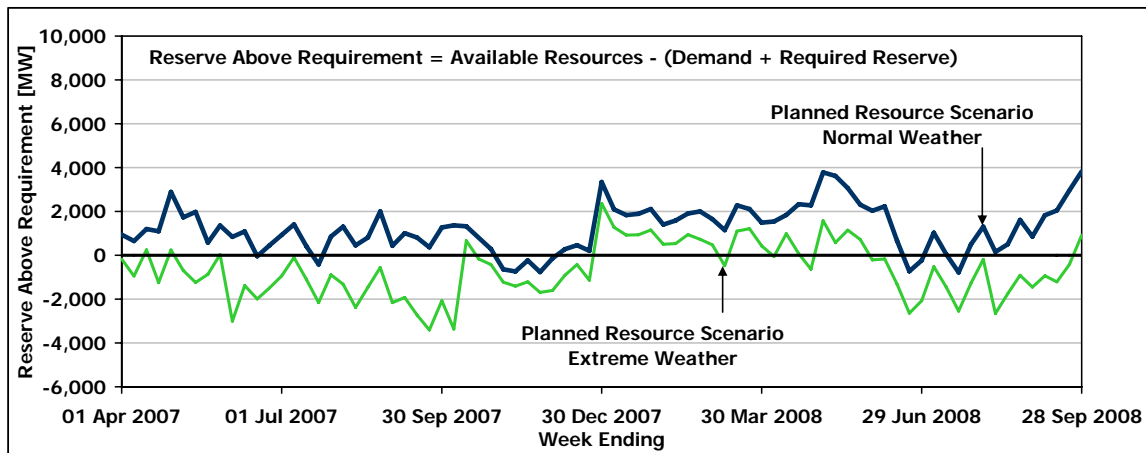
The generation capability assumptions are as follows:

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

### Weekly Adequacy Assessments

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**



## 5.2 Firm Resource Scenario with Normal and Extreme Weather

### Resource Assumptions

The Firm Resource Scenario 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 “Considered in Resource Scenario”). This scenario includes:

- Existing Installed Resources: total capacity of 31,214 MW (refer to Table 5.1).
- Capacity changes to some existing facilities.
- Additional generating resources that have started their commissioning activities with contributions beginning on the date that the facility is expected to be in-service.
- Additional generating resources that are expected to become available in the next three months (regardless of commissioning status), with contributions beginning on the date that the facility is expected to be in-service.

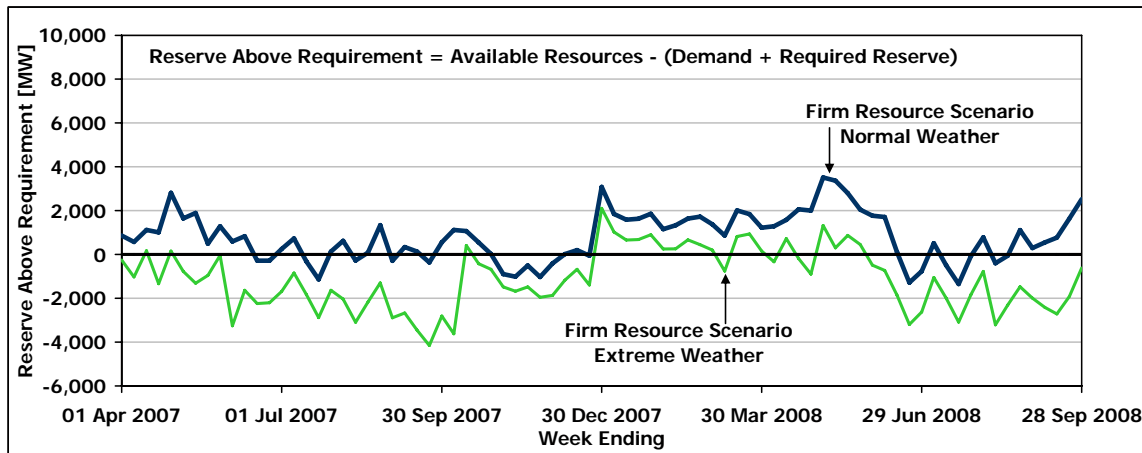
- E. Forecast demand measures assumed fixed at 307 MW for the entire period of the Outlook (refer to column "Demand Measures" in Table A1 or A4 in Appendix A).

With respect to forecasts of generation capabilities, the Firm Resource Scenario is based on the same assumptions as the Planned Resource Scenario.

**Weekly Adequacy Assessments**

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**



### 5.3 Comparison of Resource Scenarios

Table 5.3 shows a snapshot of the forecast available resources, under the two scenarios, at the time of the seasonal peak demands over the study period.

The monthly forecast of energy production capability, as provided by market participants, is included in Appendix A, Table A6.

**Table 5.3 Summary of Available Resources**

Notes	Description \ Year	Summer Peak 2007		Winter Peak 2008		Summer Peak 2008	
		Firm Resource Scenario	Planned Resource Scenario	Firm Resource Scenario	Planned Resource Scenario	Firm Resource Scenario	Planned Resource Scenario
1	Installed Resources (MW)	31,214	31,699	31,248	31,821	31,259	32,268
2	Imports (MW)	0	0	0	0	0	0
3	Total Resources (MW)	31,214	31,699	31,248	31,821	31,259	32,268
4	Total Reductions in Resources (MW)	3,173	3,173	2,179	2,745	3,177	3,885
5	Demand Measures (MW)	307	552	307	552	307	552
6	Available Resources (MW)	28,348	29,078	29,375	29,628	28,388	28,935

**Notes to Table 5.3:**

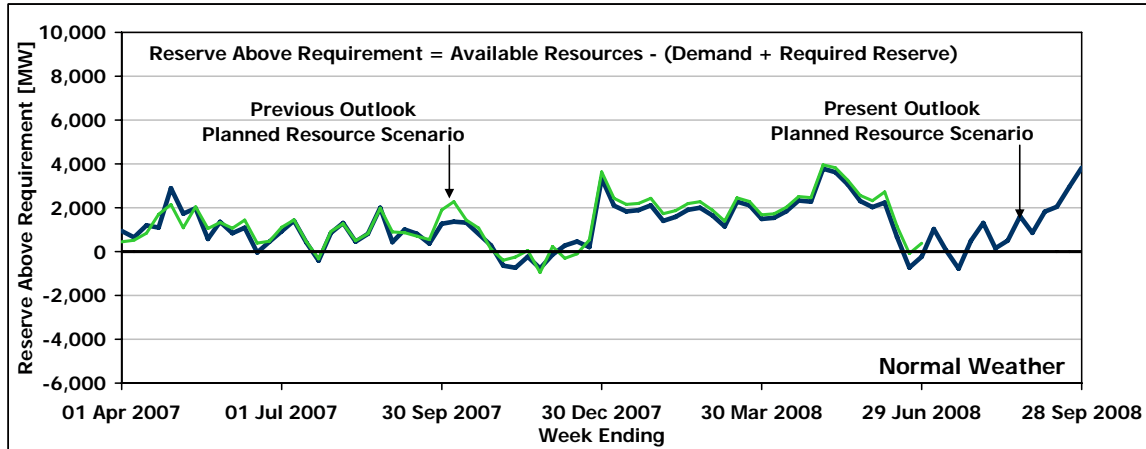
1. Installed Resources (MW): This is the total capacity of the generation resources in Ontario assumed to be installed at the time of the summer and winter peaks in the 18 month time span. Initially, this value includes all generators registered to participate in the IESO-administered markets at the 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).



## Weekly Adequacy Assessments

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 October 2, 2006.

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



## 5.4 Resource Adequacy Risks

The forecast reserve levels for both the Firm Resource Scenario and the Planned Resource Scenario should be assessed bearing in mind the risks discussed below.

### 5.4.1 Extreme Weather

The Firm Resource Scenario and the Planned Resource Scenario 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 Firm Resource Scenario and the Planned Resource Scenario 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 there are circumstances under which reliance on interconnected supply is likely. This emphasizes the continued need for reliable supply and demand response within Ontario.

#### 5.4.2 New Resource Risks

For the 18 month period under study, the improving demand-supply situation, seen mainly in the Planned Resource Scenario, is dependent on the additional generation and demand measures coming into service as forecast. Many timely regulatory approvals are required for the significant number of new supply and transmission enhancements required in such a short period of time. Some delays have already been experienced and others are growing in potential. The development of expedited, but thorough, approvals processes is needed to ensure timely completion of the new facilities.

#### 5.4.3 Extensions to Generator Planned Outages

A number of large generating units are scheduled to return to service from outage prior to summers 2007 and 2008 and winter 2007/2008. 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 planned generator outages.

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 stretch the ability of generator owners/operators to accommodate larger amounts 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. However, the dual peaking nature of the Ontario system (roughly equivalent peaks in winter and summer) means that outages must be scheduled in shorter spring and fall periods. Inevitably this means that some long duration outages have to be scheduled into the start of the peak seasons, creating the potential that any extensions of these outages occur when the generation is most needed.

#### 5.4.4 Higher than Forecast Generator Unavailability

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.

#### 5.4.5 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.

Water-flow conditions are primarily influenced by the amount of precipitation received. To accurately forecast precipitation amounts far in advance is little better than chance. 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.

#### 5.4.6 Wind Resource Risks

Wind generator output varies on a continuous basis due to the variability of wind. 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 levels increase, should mitigate some of the risk associated with wind speed variability.

IESO is currently examining wind issues with stakeholders in the Wind Power Integration Working Group (SE-29). The assumed capacity factor at the time of the peak is an issue this stakeholdering process will address.

#### 5.4.7 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.

Forecast models include an equivalent forced outage rate that is intended to capture the random nature of generator capacity limitations, deratings, and forced outages. There is a risk that actual outages and deratings may be higher than forecast, and there is also a risk that certain types of deratings or outages may not be completely random. Some outages and deratings, such as environmental limitations, may be more likely to occur at roughly the same time as the extreme weather conditions which drive peaks in demand.

#### 5.4.8 Transmission Constrained Resource Utilization

There is a risk that transmission constraints occur more often than expected, or have greater impact than expected on the ability to deliver generation to load centres. A limited number of transmission limitations are modeled without all probabilities of failure included. There is a risk that certain transmission limitations, which may not be modeled, may have an unforeseen impact. Similarly, transmission equipment failures could occur which significantly impact the utilization of resources for the period, until repairs are made. This is particularly true for large transformers whose repair or replacement time can be much longer than for transmission lines. There is also a risk that these limitations may not be due to completely random outages but can occur under the same conditions which create high demand. 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.

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.

#### 5.4.9 Failure of Import Transactions

There is a risk that import transactions scheduled with neighbouring markets fail to be delivered. These failures represent expected supply that is suddenly not available in real-time. The failures are especially problematic due to the timing and size of the failures. Since the implementation of the Day Ahead Commitment Process in June 2006, the import failure rate has decreased significantly.

**- End of Section -**

## 6.0 Transmission Reliability Assessment

This section provides an assessment of the reliability of the Ontario transmission system.

### 6.1 Transmission Projects

The IESO relies on the transmitters to provide information on the transmission projects that are planned for completion within the 18 month period under study. The complete list of major transmission projects is shown in Appendix B. The list also includes some projects that are planned in service just outside the period under study but require major system outages during the study period. The list includes only the transmission projects that are considered to provide significant improvement to the system reliability. Minor transmission equipment replacements or refurbishments are excluded. For projects assessed or being assessed under the 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 Planned Transmission Outages

A principal purpose 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.

Another purpose 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, the transmission outages are reviewed to identify transmission system reliability concerns and to highlight those outages that should be rescheduled or changed. As an example, a change to an outage may include reducing the scheduled duration or 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. The identification of a constrained resource is generally not reflected in the assessment of weekly resource adequacy, which is detailed in Section 5.1, since there is typically sufficient outage scheduling flexibility to avoid constraining off resources when such resources are needed for reliability. 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 January 16, 2007 were used.

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/or interconnection limits. Where multiple outages are scheduled during the same period, the combined effect of all outages on the reduction in transmission interface and/or interconnection limits is presented. 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).

A number of the transmission outages planned within the timeframe of this Outlook are judged to have a material impact on the overall reliability of the IESO controlled grid as indicated in Appendix C. Specifically, the multiple outages related to Lambton and Sarnia-Scott station reconfigurations and refurbishments scheduled for the spring and fall of 2007 will result in a significant reduction in FABC limit, BLIP limit and NBLIP limit as well as the capability of the Ontario - Michigan interconnection. Most of these outages are not recallable. Transmission outages in the Ottawa area, related to the first phase of the Ontario - Québec high voltage direct current interconnection will result in a small reduction in Flow into Ottawa (FIO) limit. Other spring outages related to St. Lawrence switchyard will result in a reduction of 200 MW in the capability of the Ontario to New York interconnection. An assessment of the scheduled generation outages in conjunction with the transmission outages and the projected capability of the transmission interfaces and the inter-ties shows that the transmission system will be adequate to supply the load forecast for the Outlook period.

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 which have a combined scheduled duration of greater than five days. The IESO recognizes that there are expected to be additional outage requirements and/or changes 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 large number of system changes identified to be completed in this 18 Month Outlook will require a substantial number of planned outages to incorporate the new facilities.

### **6.3 Load Supply Enhancements**

The consistent economic growth experienced in Ontario in the last decade has resulted in a number of area loads reaching or exceeding the capability of the existing transformer stations. To address this problem and provide additional transformer capacity for future load growth, Hydro One has commenced work on ten new load supply transformer stations, most of which will be placed in service during the timeframe of this Outlook.

Connection assessments performed by the IESO concluded that the new transformer stations will provide relief to the existing stations, some of which are presently overloaded, and will improve the supply reliability to the area loads. In some cases the IESO found that the local transmission

system may be reaching its capability and identified the need for additional transmission reinforcements and installation of local voltage support equipment. In response to these findings Hydro One initiated the installation of reactive compensation at a number of locations in the system. All these projects are listed in Appendix C of this report.

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

#### **6.4 Adequacy of the Existing Transmission System**

The Ontario transmission system is expected to be adequate to supply the 2007 and 2008 summer demand under forecast conditions.

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 in the planning period. This could result in congestion of low priced resources that must be replaced by higher priced resources, and would increase costs to market loads. 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 2007 and summer 2008. IESO has also been working closely with the Ontario Power Authority to specify the locations, timing and minimum generation requirements to satisfy reliability standards.

For summer 2007 and 2008, the following areas of the grid are expected to be improved over last summer, and to provide an increased level of reliability.

##### **6.4.1 Toronto and Surrounding Area**

For the summer forecast conditions, the projected power flows over the Trafalgar autotransformers and Middleport autotransformers are approaching but not exceeding the maximum station capability. The Cherrywood autotransformers are adequate to supply the load forecast within the timeframe of this Outlook.

In the previous two summers, the Claireville Transformer Station (TS) autotransformers were loaded above their continuous ratings, relying on their long term emergency ratings to supply the demand in the western GTA. Timely completion of the Goreway Station Phase One will reduce the loading on these autotransformers starting this summer, and reduce the risk of overloading in the event of a long term failure of one of these autotransformers.

The Portlands Energy Centre Phase One is scheduled for completion before summer 2008. Timely completion of this project will alleviate possible future overloads of the Manby TS and Leaside TS transformers.

Completion by Hydro One of the John TS to Esplanade TS link by the spring of 2008 will also enhance supply reliability to central Toronto by increasing the capability to transfer some loads from their normal supply east of the city, to an alternate supply from the west, and vice versa.

A high-voltage shunt capacitor at Richview TS suffered significant damage recently and is not expected to return to service before summer 2007. As a result of its investigation into the capacitor failure, Hydro One has imposed temporary restrictions on the use of high voltage shunt capacitors across the province. With the exception of the damaged capacitor at Richview TS, Hydro One has developed plans to enable other high voltage shunt capacitors to return to normal operations. Hydro One is working with suppliers to acquire the necessary materials to complete this work before summer 2007. A risk exists that some capacitors may not be available and some may continue to require operating restrictions into the summer.

The IESO expects to be able to supply the extreme weather forecast demand with the unavailability of the 410 Mvar Richview shunt capacitor and existing reactive restrictions at Pickering and Darlington, but the grid will be heavily stressed. Any additional equipment outages including capacitors that are still unavailable may require special operating procedures to maintain the reliability of the IESO-controlled grid.

In the York Region, the transformer station capacity has been exceeded due to the rapidly growing loads in the Newmarket and Aurora area. There is an immediate need for a new transformer station in the area. Hydro One plans to have a new transformer station in service before the end of 2008 to address the immediate needs.

#### 6.4.2 Beck-Middleport-Hamilton/Burlington Area

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

Once in service the reinforcement project will increase the capability of the transmission system connecting the Niagara River generation at Queenston 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.

Limitations associated with the Burlington TS, previously identified by the IESO, are to be resolved partly before summer 2008 and completely by the end of 2008. This work will alleviate concerns related to the ability of the transmission system to supply the Burlington area loads.

#### 6.4.3 Woodstock Area

The first phase of a major manufacturing development in the Woodstock area is planned in service by summer 2007. The new load will increase the stresses on the transmission which might result, during extreme weather conditions, in very low voltages in the area.

To alleviate these concerns Hydro One is planning to add a second supply point to the area by extending the 230 kV transmission lines from Ingersoll to Woodstock area and installing a new transformer station. This plan will provide an increased level of supply reliability and support further load growth in the area.

#### 6.4.4 St. Lawrence to Hinchinbrooke and Ottawa Area

As reported in the last Outlook, Hydro One and TransÉnergie have signed an agreement to build a high voltage direct current (HVDC) interconnection between Hawthorne TS in Ontario and



Outaouais station in Québec with a capacity of 1,250 MW. Although the project is not scheduled in service in the timeframe of this Outlook, transmission outages have been scheduled to facilitate the construction of the 230 kV double circuit line from Hawthorne to the border. The new interconnection will be accompanied by a new Special Protection System (SPS) to be installed at St. Lawrence TS and Hawthorne TS. The new SPS will maximize simultaneous imports from Québec and New York and while maintaining the functionality of the existing St. Lawrence SPS.

The IESO entered into a Reliability Must Run (RMR) Contract with OPG for Lennox GS until late 2007. Studies performed by the IESO indicated that there could be significant adverse local area reliability impacts if Lennox is removed from the IESO-controlled grid and the IESO-administered markets without adequate replacement. When the new interconnection with Québec is completed (outside the timeframe of this Outlook), the resulting transmission improvements in the Ottawa area may reduce/eliminate the reliance on Lennox for the local area need. However, the capability of the station is 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 OPA has notified the IESO that it will undertake development of a solution to the Lennox requirements.

Summer 2005 operation exhibited very heavy loading on the 230 kV circuits westward from St. Lawrence TS to Hinchinbrooke TS. An existing SPS at St. Lawrence was modified for summer 2006, allowing increased westward transfers. This SPS is planned to be enhanced further, to increase its functionality and reliability under peak load conditions, and to maximize simultaneous import capability from Hydro Québec and New York.

#### 6.4.5 Lambton-Sarnia Generation

To prepare the power system to reliably incorporate additional generation facilities around the Lambton area, including the St. Clair Power and Greenfield Energy Centre projects, extensive work needs to be completed at the Lambton switchyard. The modifications are required to connect the new generation facilities and to manage the expected increase in short circuit levels when new generation facilities at St. Clair Power and Greenfield Energy Centre begin their commissioning activities while generating units at Lambton continue to operate. To complete the work on time, a large volume of equipment outages must proceed as scheduled.

Examination of outages in this area have revealed several days when transmission work requires specific Lambton generating units to be off line, thus reducing the available generation to supply Ontario demand. Specific transmission outages that are expected to materially restrict Lambton generation have been reflected in lower availability of Lambton generation. The Reserve Above Requirement values, shown earlier in the Outlook, are lower, as a result.

Major concerns were not identified with respect to the adequacy of the transmission system to supply the load or the reduced capability of the Michigan to Ontario interconnection for the period of these outages.

#### 6.4.6 Michigan Interconnection

Phase angle regulators (PARs) are installed on the Michigan - Ontario interconnection but are not available to regulate flows except in emergencies, pending agreement by the International Transmission Company in Michigan to permit full regulation.

The inability to regulate flows combined with limiting ratings on the PAR equipment can result in significant congestion of imports from Michigan. This was experienced in summer 2005. Before summer 2006, the IESO, the Midwest ISO, Hydro One and International Transmission Company, agreed to temporarily bypass the phase angle regulators for normal operation until an agreement is reached to make full use of their regulating capability. Bypassing the PARs increases Ontario's transfer capability to and from Michigan by 300 to 350 MW in the summer and by about 400 MW in the winter.

Full regulating capability on the Michigan interface combined with increased import capability from the Niagara direction following completion of the Niagara expansion project, will provide a significant increase in the combined import capability from New York and Michigan. It is uncertain whether these improvements will occur within the period covered by this report.

The 230 kV interconnection line, B3N, between Scott TS in Ontario and Bunce Creek in Michigan was recently returned to service thus restoring the Michigan Ontario interconnection to its full capability under the current configuration with the PARs bypassed.

#### 6.4.7 Mississagi to Hanmer

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

For the near-term, the IESO has recommended that a new Special Protection System with generation rejection be installed as soon as possible at Mississagi TS and Algoma TS to unbottle the generation west of Mississagi and eliminate the congestion over this transmission interface.

#### 6.4.8 Niagara 25 Hz System

In January 2007, National Grid, a transmission entity in the United States, informed IESO it had retired the US portion of the Niagara 25 Hz system, reducing 25 Hz load served from Ontario and paving the way for the retirement of some supporting transmission facilities at the Sir Adam Beck 1 Generating Station. This will leave two generating units and the frequency changer to supply the two remaining Ontario customers on this system. The IESO advised its 25 Hz customers in 2005 that the 25 Hz supply would be retired in April 2009 to address declining equipment reliability and market inefficiencies of the 25 Hz system. The IESO meets regularly with 25 Hz stakeholders to assess progress towards this objective.

**- End of Section -**

## 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 69 of 79 weeks in the study period. Reserves are forecast to be below requirements for ten weeks of the Outlook timeframe. Where this situation occurs, Ontario may need to rely on external supplies. During other periods where planned maintenance is the most significant contributor to lower reserves, some planned generator outages are at risk of cancellation by the IESO, for reliability reasons, depending on their priority and the resource adequacy situation at the time their approval is being sought. Opportunities will exist for additional planned generator maintenance and exports in the other weeks of the Outlook period where reserves exceed requirements.
- Under the Firm Resource-Normal Weather Scenario, the reserves are forecast to be below requirements for 18 weeks of the Outlook timeframe.
- Extreme weather during the peak periods will result in significantly increased reliance on imports to supplement Ontario generation and higher potential for use of emergency operating procedures.
- Results of the resource adequacy assessment are summarized in the matrix below. The different shadings are intended to suggest the degree of concern regarding 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>	- there are ten weeks when reserves are lower than required (planned outages at risk or imports potentially required) - opportunities for additional outages/exports exist in most other weeks	- many planned outages at risk - imports required during some peak periods - higher risk of requiring emergency operating procedures up to and including rotational load shedding
<b>Firm Resource Scenario</b>	- there are 20 weeks when reserves are lower than required (planned outages at risk or imports potentially required) - opportunities for additional outages/exports exist in many other weeks	- many planned outages at risk - imports required during some peak periods - higher risk of requiring emergency operating procedures up to and including rotational load shedding

- The magnitude of resource deficiencies under both normal and extreme weather emphasizes the continued need for additions of reliable supply, conservation and demand measures within Ontario.

- For the 18 month period under study, the improved demand-supply situation for the Planned Resource Scenario is dependent on the additional generation and demand measures coming into the market as forecast.
- A number of large generating units are scheduled to return to service from outage prior to the summers 2007 and 2008 and winter 2007/08. Meeting these planned outage schedules is critical to maintaining adequate reserve levels over the peak seasons.
- 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 entered in a Reliability Must Run Contract with OPG for Lennox GS until late 2007. When the new interconnection with Québec is completed (outside the timeframe of this Outlook), the resulting transmission improvements in the Ottawa area may reduce/eliminate the reliance on Lennox for local area need. However, the capability of the station is critical to provincial resource adequacy and must be retained or replaced.
- Over the 18 month period under study, the Northeast Power Coordinating Council resource adequacy criterion is expected to be met. As permitted to meet 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.
- The historical review of the last six months is helpful in illustrating two aspects of change being experienced in Ontario: the growing contribution that wind is making, and the decreased reliance on imports for Ontario supply. Both these elements are quite variable, however, and the IESO will continue monitoring and reporting long-term trends.

### **Transmission Adequacy**

- The Ontario transmission system is expected to be adequate to supply the 2007 and 2008 summer demand under forecast conditions.
- A high-voltage shunt capacitor at Richview TS suffered significant damage recently and is not expected to return to service before summer 2007. The failure prompted Hydro One to review the operation of all high-voltage shunt capacitors across the province, and imposed temporary restrictions on their use. The IESO expects to be able to supply the extreme weather forecast demand with the unavailability of the 410 Mvar Richview shunt capacitor and existing reactive restrictions at Pickering and Darlington, but the grid will be heavily stressed under these conditions. Any additional equipment outages including capacitors that are still unavailable may require special operating procedures to maintain the reliability of the IESO-controlled grid.
- The projected power flows over the Trafalgar autotransformers and Middleport autotransformers are approaching but not exceeding the maximum station capability. The Cherrywood autotransformers are adequate to supply the load forecast within the timeframe of this Outlook.
- Timely completion of the Goreway Station Phase One will reduce the loading on the Claireville TS autotransformers in summer 2007, and reduce the risk of overloading in the event of a long term failure of one of these autotransformers

- Completion by Hydro One of the John Transformer Station (TS) to Esplanade TS link by the spring of 2008 will also enhance supply reliability to central Toronto by increasing the capability to transfer some loads from their normal supply east of the city, to an alternate supply from the west, and vice versa.
- The Queenston Flow West project continues to be delayed. Once in service it will increase the capability of the transmission system connecting the Niagara River generation at Queenston to the grid in the Hamilton area by about 800 MW. It 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.
- Hydro One and TransÉnergie have signed an agreement to build a high voltage direct current (HVDC) interconnection between Hawthorne TS in Ontario and Outaouais station in Québec with a capacity of 1250 MW. Although the project is not scheduled for in service in the timeframe of this Outlook and transmission outages have been scheduled to facilitate the construction of the 230 kV double circuit line from Hawthorne to the border.
- Extensive work needs to be completed at the Lambton switchyard to connect the new St. Clair Power and Greenfield Energy Centre generation projects. To complete the work on time, a large volume of equipment outages must proceed as scheduled, or risk delays to the replacement generation for Lambton coal capacity. Some of these outages will restrict the output of the existing Lambton generation, reducing the resources available to supply Ontario demand during those periods.
- Phase angle regulators (PARs) are installed on the Michigan Ontario interconnection but are temporarily bypassed until an agreement is reached to make full use of their regulating capability. The 230 kV interconnection line, B3N, between Scott TS in Ontario and Bunce Creek in Michigan was recently returned to service thus restoring the Michigan Ontario interconnection to its full capability with the PARs bypassed.
- The transmission corridor East of Mississagi has been experiencing increased congestion due to the connection of the 200 MW Prince Park Wind Farm and the unbottling of Brookfield generation following the completion of the GLP 230 kV transmission reinforcement between Wawa TS and Third Line TS.

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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
01-Apr-07	31,214	7,186	338	24,366	23,502	18.5	3,809	14.3	2,945	864
08-Apr-07	31,214	7,760	307	23,761	23,191	17.0	3,454	14.2	2,884	570
15-Apr-07	31,214	7,455	307	24,066	22,944	20.9	4,153	15.2	3,031	1,122
22-Apr-07	31,214	7,800	307	23,721	22,711	19.4	3,856	14.3	2,846	1,010
29-Apr-07	31,214	6,399	307	25,122	22,311	28.9	5,626	14.4	2,815	2,811
06-May-07	31,214	7,538	307	23,983	22,332	23.5	4,561	15.0	2,910	1,651
13-May-07	31,214	7,463	307	24,058	22,166	25.3	4,864	15.5	2,972	1,892
20-May-07	31,214	7,874	307	23,647	23,156	21.0	4,099	18.5	3,608	491
27-May-07	31,214	5,936	307	25,585	24,303	24.4	5,018	18.2	3,736	1,282
03-Jun-07	31,214	6,490	307	25,031	24,438	19.9	4,148	17.0	3,555	593
10-Jun-07	31,214	5,526	307	25,995	25,159	19.0	4,151	15.2	3,315	836
17-Jun-07	31,214	4,592	307	26,929	27,214	14.1	3,320	15.3	3,605	-285
24-Jun-07	31,214	3,441	307	28,080	28,364	14.6	3,579	15.8	3,863	-284
01-Jul-07	31,214	3,340	307	28,181	27,933	17.4	4,178	16.4	3,930	248
08-Jul-07	31,214	3,251	307	28,270	27,540	17.2	4,142	14.1	3,412	730
15-Jul-07	31,214	3,193	307	28,328	28,640	13.5	3,371	14.8	3,683	-312
22-Jul-07	31,214	3,173	307	28,348	29,483	11.1	2,832	15.6	3,967	-1,135
29-Jul-07	31,214	3,183	307	28,338	28,203	14.8	3,653	14.3	3,518	135
05-Aug-07	31,241	3,444	307	28,104	27,481	17.3	4,139	14.7	3,516	623
12-Aug-07	31,241	3,444	307	28,104	28,380	13.7	3,381	14.8	3,657	-276
19-Aug-07	31,241	3,444	307	28,104	28,024	15.0	3,661	14.7	3,581	80
26-Aug-07	31,241	3,444	307	28,104	26,761	20.8	4,845	15.1	3,502	1,343
02-Sep-07	31,241	4,950	307	26,598	26,887	12.7	3,005	14.0	3,294	-289
09-Sep-07	31,238	4,853	307	26,691	26,352	18.0	4,068	16.5	3,729	339
16-Sep-07	31,238	5,874	307	25,670	25,538	17.3	3,777	16.7	3,645	132
23-Sep-07	31,238	7,289	307	24,255	24,619	14.9	3,145	16.6	3,509	-364
30-Sep-07	31,238	7,723	307	23,821	23,267	15.8	3,258	13.2	2,704	554
07-Oct-07	31,238	7,887	307	23,657	22,541	19.8	3,904	14.1	2,788	1,116
14-Oct-07	31,238	7,827	307	23,717	22,649	18.7	3,738	13.4	2,670	1,068
21-Oct-07	31,238	7,892	307	23,652	23,105	15.9	3,245	13.2	2,698	547
28-Oct-07	31,238	7,841	307	23,703	23,679	14.2	2,939	14.0	2,915	24
04-Nov-07	31,238	8,184	307	23,360	24,256	9.7	2,063	13.9	2,959	-896
11-Nov-07	31,238	7,730	307	23,814	24,824	9.2	2,005	13.8	3,015	-1,010
18-Nov-07	31,238	6,689	307	24,855	25,358	11.0	2,470	13.3	2,973	-503
25-Nov-07	31,238	6,638	307	24,906	25,938	9.2	2,102	13.7	3,134	-1,032
02-Dec-07	31,238	6,122	307	25,422	25,830	11.4	2,608	13.2	3,016	-408
09-Dec-07	31,238	4,794	307	26,750	26,734	12.8	3,025	12.7	3,009	16
16-Dec-07	31,238	4,283	307	27,261	27,060	13.7	3,289	12.9	3,088	201
23-Dec-07	31,238	4,251	307	27,293	27,345	12.5	3,023	12.7	3,075	-52

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
30-Dec-07	31,238	2,815	307	28,729	25,641	27.8	6,246	14.1	3,158	3,088
06-Jan-08	31,238	2,755	307	28,789	26,942	20.8	4,960	13.1	3,113	1,847
13-Jan-08	31,248	2,732	307	28,822	27,240	19.3	4,671	12.8	3,089	1,582
20-Jan-08	31,248	2,179	307	29,375	27,745	19.6	4,809	12.9	3,179	1,630
27-Jan-08	31,248	2,188	307	29,366	27,510	20.9	5,080	13.3	3,224	1,856
03-Feb-08	31,248	3,075	307	28,479	27,328	18.0	4,349	13.3	3,198	1,151
10-Feb-08	31,248	3,082	307	28,472	27,145	18.7	4,485	13.2	3,158	1,327
17-Feb-08	31,248	3,070	307	28,484	26,843	20.2	4,783	13.3	3,142	1,641
24-Feb-08	31,248	3,661	307	27,893	26,166	20.5	4,751	13.1	3,024	1,727
02-Mar-08	31,248	3,661	307	27,893	26,517	19.8	4,610	13.9	3,234	1,376
09-Mar-08	31,242	4,927	307	26,622	25,757	18.2	4,091	14.3	3,226	865
16-Mar-08	31,242	4,927	307	26,622	24,617	24.3	5,210	15.0	3,205	2,005
23-Mar-08	31,242	5,409	307	26,140	24,296	23.1	4,905	14.4	3,061	1,844
30-Mar-08	31,242	6,702	307	24,847	23,625	19.8	4,106	13.9	2,884	1,222
06-Apr-08	31,242	6,850	307	24,699	23,416	20.6	4,215	14.3	2,932	1,283
13-Apr-08	31,242	6,930	307	24,619	23,044	22.5	4,527	14.7	2,952	1,575
20-Apr-08	31,242	6,477	307	25,072	23,008	25.1	5,028	14.8	2,964	2,064
27-Apr-08	31,242	7,364	307	24,185	22,183	22.8	4,485	12.6	2,483	2,002
04-May-08	31,242	5,331	307	26,218	22,703	33.9	6,639	16.0	3,124	3,515
11-May-08	31,242	5,751	307	25,798	22,436	33.2	6,425	15.8	3,063	3,362
18-May-08	31,242	5,771	307	25,778	22,979	30.5	6,028	16.4	3,229	2,799
25-May-08	31,242	5,264	307	26,285	24,242	26.3	5,466	16.4	3,423	2,043
01-Jun-08	31,242	5,286	307	26,263	24,496	24.3	5,129	15.9	3,362	1,767
08-Jun-08	31,232	4,503	307	27,035	25,326	22.9	5,033	15.1	3,324	1,709
15-Jun-08	31,232	3,993	307	27,545	27,441	15.4	3,684	15.0	3,580	104
22-Jun-08	31,232	4,145	307	27,393	28,675	10.7	2,641	15.9	3,923	-1,282
29-Jun-08	31,232	4,064	307	27,474	28,244	13.3	3,220	16.5	3,990	-770
06-Jul-08	31,232	3,242	307	28,296	27,785	16.0	3,904	13.9	3,393	511
13-Jul-08	31,259	3,190	307	28,375	28,871	12.6	3,166	14.5	3,662	-496
20-Jul-08	31,259	3,177	307	28,388	29,734	10.2	2,623	15.4	3,969	-1,346
27-Jul-08	31,259	3,181	307	28,384	28,457	13.8	3,450	14.1	3,523	-73
03-Aug-08	31,259	3,387	307	28,178	27,391	17.2	4,132	13.9	3,345	787
10-Aug-08	31,259	3,358	307	28,207	28,604	13.0	3,240	14.6	3,637	-397
17-Aug-08	31,259	3,367	307	28,198	28,254	14.2	3,511	14.5	3,567	-56
24-Aug-08	31,259	3,365	307	28,200	27,091	18.5	4,402	13.8	3,293	1,109
31-Aug-08	31,259	3,828	307	27,737	27,443	14.8	3,568	13.6	3,274	294
07-Sep-08	31,259	4,464	307	27,101	26,559	18.5	4,231	16.1	3,689	542
14-Sep-08	31,259	4,986	307	26,579	25,815	20.1	4,439	16.6	3,675	764
21-Sep-08	31,259	5,034	307	26,531	24,894	24.2	5,177	16.6	3,540	1,637
28-Sep-08	31,259	5,509	307	26,056	23,537	25.3	5,253	13.1	2,734	2,519



**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
01-Apr-07	31,214	7,186	417	24,445	23,502	18.9	3,888	14.3	2,945	943
08-Apr-07	31,214	7,760	386	23,840	23,191	17.4	3,533	14.2	2,884	649
15-Apr-07	31,214	7,455	386	24,145	22,944	21.3	4,232	15.2	3,031	1,201
22-Apr-07	31,214	7,800	386	23,800	22,711	19.8	3,935	14.3	2,846	1,089
29-Apr-07	31,214	6,399	386	25,201	22,311	29.3	5,705	14.4	2,815	2,890
06-May-07	31,214	7,538	386	24,062	22,332	23.9	4,640	15.0	2,910	1,730
13-May-07	31,214	7,463	386	24,137	22,166	25.8	4,943	15.5	2,972	1,971
20-May-07	31,214	7,874	386	23,726	23,156	21.4	4,178	18.5	3,608	570
27-May-07	31,214	5,936	386	25,664	24,303	24.8	5,097	18.2	3,736	1,361
03-Jun-07	31,214	6,490	552	25,276	24,438	21.0	4,393	17.0	3,555	838
10-Jun-07	31,214	5,526	552	26,240	25,159	20.1	4,396	15.2	3,315	1,081
17-Jun-07	31,214	4,592	552	27,174	27,214	15.1	3,565	15.3	3,605	-40
24-Jun-07	31,699	3,441	552	28,810	28,363	17.6	4,309	15.8	3,862	447
01-Jul-07	31,699	3,340	552	28,911	27,982	20.5	4,908	16.6	3,979	929
08-Jul-07	31,699	3,251	552	29,000	27,590	20.2	4,872	14.4	3,462	1,410
15-Jul-07	31,699	3,193	552	29,058	28,644	16.4	4,101	14.8	3,687	414
22-Jul-07	31,699	3,173	552	29,078	29,492	14.0	3,562	15.6	3,976	-414
29-Jul-07	31,699	3,183	552	29,068	28,210	17.8	4,383	14.3	3,525	858
05-Aug-07	31,726	3,444	552	28,834	27,527	20.3	4,869	14.9	3,562	1,307
12-Aug-07	31,726	3,444	552	28,834	28,381	16.6	4,111	14.8	3,658	453
19-Aug-07	31,726	3,444	552	28,834	28,024	18.0	4,391	14.7	3,581	810
26-Aug-07	31,726	3,444	552	28,834	26,836	24.0	5,575	15.4	3,577	1,998
02-Sep-07	31,726	4,950	552	27,328	26,893	15.8	3,735	14.0	3,300	435
09-Sep-07	31,723	4,853	552	27,422	26,420	21.2	4,799	16.8	3,797	1,002
16-Sep-07	31,723	5,874	552	26,401	25,591	20.6	4,508	16.9	3,698	810
23-Sep-07	31,723	7,289	552	24,986	24,628	18.4	3,876	16.7	3,518	358
30-Sep-07	31,723	7,723	552	24,552	23,285	19.4	3,989	13.2	2,722	1,267
07-Oct-07	31,799	8,440	552	23,911	22,541	21.1	4,158	14.1	2,788	1,370
14-Oct-07	31,799	8,380	552	23,971	22,649	20.0	3,992	13.4	2,670	1,322
21-Oct-07	31,799	8,445	552	23,906	23,104	17.2	3,499	13.2	2,697	802
28-Oct-07	31,799	8,394	552	23,957	23,677	15.4	3,193	14.0	2,913	280
04-Nov-07	31,811	8,750	552	23,613	24,255	10.9	2,316	13.9	2,958	-642
11-Nov-07	31,811	8,286	552	24,077	24,820	10.4	2,268	13.8	3,011	-743
18-Nov-07	31,811	7,245	552	25,118	25,355	12.2	2,733	13.3	2,970	-237
25-Nov-07	31,811	7,194	552	25,169	25,936	10.4	2,365	13.7	3,132	-767
02-Dec-07	31,811	6,678	552	25,685	25,827	12.6	2,871	13.2	3,013	-142
09-Dec-07	31,811	5,360	552	27,003	26,732	13.8	3,278	12.7	3,007	271
16-Dec-07	31,811	4,849	552	27,514	27,057	14.8	3,542	12.9	3,085	457
23-Dec-07	31,811	4,817	552	27,546	27,343	13.5	3,276	12.7	3,073	203

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
30-Dec-07	31,811	3,381	552	28,982	25,641	28.9	6,499	14.1	3,158	3,341
06-Jan-08	31,811	3,321	552	29,042	26,942	21.9	5,213	13.1	3,113	2,100
13-Jan-08	31,821	3,298	552	29,075	27,240	20.4	4,924	12.8	3,089	1,835
20-Jan-08	31,821	2,745	552	29,628	27,745	20.6	5,062	12.9	3,179	1,883
27-Jan-08	31,821	2,754	552	29,619	27,510	22.0	5,333	13.3	3,224	2,109
03-Feb-08	31,821	3,641	552	28,732	27,328	19.1	4,602	13.3	3,198	1,404
10-Feb-08	31,833	3,648	552	28,737	27,147	19.8	4,750	13.2	3,160	1,590
17-Feb-08	31,833	3,636	552	28,749	26,844	21.3	5,048	13.3	3,143	1,905
24-Feb-08	31,833	4,217	552	28,168	26,168	21.7	5,026	13.1	3,026	2,000
02-Mar-08	31,833	4,217	552	28,168	26,519	21.0	4,885	13.9	3,236	1,649
09-Mar-08	31,827	5,483	552	26,897	25,756	19.4	4,366	14.3	3,225	1,141
16-Mar-08	31,827	5,484	552	26,896	24,619	25.6	5,484	15.0	3,207	2,277
23-Mar-08	31,827	5,975	552	26,405	24,298	24.4	5,170	14.4	3,063	2,107
30-Mar-08	31,827	7,268	552	25,112	23,627	21.1	4,371	13.9	2,886	1,485
06-Apr-08	31,827	7,416	552	24,964	23,418	21.9	4,480	14.3	2,934	1,546
13-Apr-08	31,827	7,496	552	24,884	23,046	23.9	4,792	14.7	2,954	1,838
20-Apr-08	31,827	7,043	552	25,337	23,010	26.4	5,293	14.8	2,966	2,327
27-Apr-08	31,827	7,920	552	24,460	22,185	24.2	4,760	12.6	2,485	2,275
04-May-08	31,850	5,920	552	26,483	22,705	35.3	6,904	16.0	3,126	3,778
11-May-08	31,850	6,340	552	26,063	22,438	34.5	6,690	15.8	3,065	3,625
18-May-08	31,850	6,360	552	26,043	22,981	31.9	6,293	16.4	3,231	3,062
25-May-08	31,850	5,853	552	26,550	24,243	27.5	5,731	16.5	3,424	2,307
01-Jun-08	31,850	5,875	552	26,528	24,498	25.5	5,394	15.9	3,364	2,030
08-Jun-08	32,109	5,064	552	27,597	25,369	25.4	5,595	15.3	3,367	2,228
15-Jun-08	32,109	4,564	552	28,097	27,437	17.8	4,236	15.0	3,576	660
22-Jun-08	32,109	4,723	552	27,938	28,667	12.9	3,186	15.8	3,915	-729
29-Jun-08	32,109	4,653	552	28,008	28,244	15.5	3,754	16.5	3,990	-236
06-Jul-08	32,241	3,963	552	28,830	27,795	18.2	4,438	14.0	3,403	1,035
13-Jul-08	32,268	3,898	552	28,922	28,873	14.7	3,713	14.5	3,664	49
20-Jul-08	32,268	3,885	552	28,935	29,723	12.3	3,170	15.4	3,958	-788
27-Jul-08	32,268	3,888	552	28,932	28,442	16.0	3,998	14.1	3,508	490
03-Aug-08	32,268	4,094	552	28,726	27,420	19.5	4,680	14.0	3,374	1,306
10-Aug-08	32,268	4,065	552	28,755	28,606	15.2	3,788	14.6	3,639	149
17-Aug-08	32,268	4,075	552	28,745	28,240	16.4	4,058	14.4	3,553	505
24-Aug-08	32,268	4,072	552	28,748	27,134	20.8	4,950	14.0	3,336	1,614
31-Aug-08	32,268	4,535	552	28,285	27,432	17.0	4,116	13.5	3,263	853
07-Sep-08	32,643	4,687	552	28,508	26,682	24.7	5,638	16.7	3,812	1,826
14-Sep-08	32,643	5,209	552	27,986	25,938	26.4	5,846	17.2	3,798	2,048
21-Sep-08	32,643	5,228	552	27,967	25,017	31.0	6,613	17.2	3,663	2,950
28-Sep-08	32,643	5,703	552	27,492	23,666	32.2	6,689	13.8	2,863	3,826

Table A3 Demand Forecast Range for Required Resources Calculation

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
01-Apr-07	20,557	21,698	06-Jan-08	23,829	24,753
08-Apr-07	20,307	21,783	13-Jan-08	24,151	25,114
15-Apr-07	19,913	21,047	20-Jan-08	24,566	25,576
22-Apr-07	19,865	21,986	27-Jan-08	24,286	25,401
29-Apr-07	19,496	21,993	03-Feb-08	24,130	25,118
06-May-07	19,422	21,749	10-Feb-08	23,987	25,075
13-May-07	19,194	22,332	17-Feb-08	23,701	24,708
20-May-07	19,548	21,853	24-Feb-08	23,142	24,362
27-May-07	20,567	22,579	02-Mar-08	23,283	24,361
03-Jun-07	20,883	24,991	09-Mar-08	22,531	24,072
10-Jun-07	21,844	24,454	16-Mar-08	21,412	22,769
17-Jun-07	23,609	25,713	23-Mar-08	21,235	22,327
24-Jun-07	24,501	26,730	30-Mar-08	20,741	21,883
01-Jul-07	24,003	26,375	06-Apr-08	20,484	22,153
08-Jul-07	24,128	25,786	13-Apr-08	20,092	21,225
15-Jul-07	24,957	26,640	20-Apr-08	20,044	22,242
22-Jul-07	25,516	27,575	27-Apr-08	19,700	22,246
29-Jul-07	24,685	26,539	04-May-08	19,579	22,002
05-Aug-07	23,965	26,604	11-May-08	19,373	22,586
12-Aug-07	24,723	27,492	18-May-08	19,750	22,105
19-Aug-07	24,443	26,722	25-May-08	20,819	22,831
26-Aug-07	23,259	25,962	01-Jun-08	21,134	23,784
02-Sep-07	23,593	26,029	08-Jun-08	22,002	24,618
09-Sep-07	22,623	25,850	15-Jun-08	23,861	25,965
16-Sep-07	21,893	25,642	22-Jun-08	24,752	26,980
23-Sep-07	21,110	24,907	29-Jun-08	24,254	26,627
30-Sep-07	20,563	23,438	06-Jul-08	24,392	26,050
07-Oct-07	19,753	23,909	13-Jul-08	25,209	26,892
14-Oct-07	19,979	20,658	20-Jul-08	25,765	27,824
21-Oct-07	20,407	21,270	27-Jul-08	24,934	26,787
28-Oct-07	20,764	21,525	03-Aug-08	24,046	25,653
04-Nov-07	21,297	21,863	10-Aug-08	24,967	27,737
11-Nov-07	21,809	22,469	17-Aug-08	24,687	26,967
18-Nov-07	22,385	23,275	24-Aug-08	23,798	26,233
25-Nov-07	22,804	23,727	31-Aug-08	24,169	26,286
02-Dec-07	22,814	24,178	07-Sep-08	22,870	26,097
09-Dec-07	23,725	24,888	14-Sep-08	22,140	25,889
16-Dec-07	23,972	24,896	21-Sep-08	21,354	25,154
23-Dec-07	24,270	25,525	28-Sep-08	20,803	23,684
30-Dec-07	22,483	23,615			

**Table A4 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
01-Apr-07	31,214	7,186	338	24,366	24,623	12.3	2,668	13.5	2,925	-257
08-Apr-07	31,214	7,760	307	23,761	24,795	9.1	1,978	13.8	3,012	-1,034
15-Apr-07	31,214	7,447	307	24,074	23,907	14.4	3,027	13.6	2,860	167
22-Apr-07	31,214	7,817	307	23,704	25,034	7.8	1,718	13.9	3,048	-1,330
29-Apr-07	31,214	6,489	307	25,032	24,876	13.8	3,039	13.1	2,883	156
06-May-07	31,214	7,596	307	23,925	24,699	10.0	2,176	13.6	2,950	-774
13-May-07	31,214	7,463	307	24,058	25,375	7.7	1,726	13.6	3,043	-1,317
20-May-07	31,214	7,874	307	23,647	24,600	8.2	1,794	12.6	2,747	-953
27-May-07	31,214	5,936	307	25,585	25,629	13.3	3,006	13.5	3,050	-44
03-Jun-07	31,214	6,490	307	25,031	28,278	0.2	40	13.2	3,287	-3,247
10-Jun-07	31,214	5,526	307	25,995	27,622	6.3	1,541	13.0	3,168	-1,627
17-Jun-07	31,214	4,592	307	26,929	29,165	4.7	1,216	13.4	3,452	-2,236
24-Jun-07	31,214	3,441	307	28,080	30,281	5.1	1,350	13.3	3,551	-2,201
01-Jul-07	31,214	3,340	307	28,181	29,863	6.9	1,806	13.2	3,488	-1,682
08-Jul-07	31,214	3,213	307	28,308	29,153	9.8	2,522	13.1	3,367	-845
15-Jul-07	31,214	3,188	307	28,333	30,157	6.4	1,693	13.2	3,517	-1,824
22-Jul-07	31,214	3,165	307	28,356	31,240	2.8	781	13.3	3,665	-2,884
29-Jul-07	31,214	3,125	307	28,396	30,023	7.0	1,857	13.1	3,484	-1,627
05-Aug-07	31,241	3,444	307	28,104	30,138	5.6	1,500	13.3	3,534	-2,034
12-Aug-07	31,241	3,444	307	28,104	31,193	2.2	612	13.5	3,701	-3,089
19-Aug-07	31,241	3,444	307	28,104	30,278	5.2	1,382	13.3	3,556	-2,174
26-Aug-07	31,241	3,444	307	28,104	29,395	8.3	2,142	13.2	3,433	-1,291
02-Sep-07	31,241	4,950	307	26,598	29,491	2.2	569	13.3	3,462	-2,893
09-Sep-07	31,238	4,853	307	26,691	29,359	3.3	841	13.6	3,509	-2,668
16-Sep-07	31,238	5,874	307	25,670	29,126	0.1	28	13.6	3,484	-3,456
23-Sep-07	31,238	7,289	307	24,255	28,407	-2.6	-652	14.1	3,500	-4,152
30-Sep-07	31,238	7,723	307	23,821	26,629	1.6	383	13.6	3,191	-2,808
07-Oct-07	31,238	7,887	307	23,657	27,277	-1.1	-252	14.1	3,368	-3,620
14-Oct-07	31,238	7,827	307	23,717	23,307	14.8	3,059	12.8	2,649	410
21-Oct-07	31,238	7,892	307	23,652	24,074	11.2	2,382	13.2	2,804	-422
28-Oct-07	31,238	7,841	307	23,703	24,381	10.1	2,178	13.3	2,856	-678
04-Nov-07	31,238	8,184	307	23,360	24,838	6.9	1,497	13.6	2,975	-1,478
11-Nov-07	31,238	7,730	307	23,814	25,487	6.0	1,345	13.4	3,018	-1,673
18-Nov-07	31,238	6,689	307	24,855	26,337	6.8	1,580	13.2	3,062	-1,482
25-Nov-07	31,238	6,638	307	24,906	26,863	5.0	1,179	13.2	3,136	-1,957
02-Dec-07	31,238	6,122	307	25,422	27,289	5.2	1,244	12.9	3,111	-1,867
09-Dec-07	31,238	4,760	307	26,784	27,957	7.6	1,896	12.3	3,069	-1,173
16-Dec-07	31,238	4,241	307	27,303	27,978	9.7	2,407	12.4	3,082	-675
23-Dec-07	31,238	4,223	307	27,321	28,715	7.0	1,796	12.5	3,190	-1,394

(Table A4 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
30-Dec-07	31,238	2,828	307	28,716	26,611	21.6	5,101	12.7	2,996	2,105
06-Jan-08	31,238	2,759	307	28,785	27,763	16.3	4,032	12.2	3,010	1,022
13-Jan-08	31,248	2,709	307	28,845	28,183	14.9	3,731	12.2	3,069	662
20-Jan-08	31,248	2,146	307	29,408	28,732	15.0	3,832	12.3	3,156	676
27-Jan-08	31,248	2,131	307	29,423	28,521	15.8	4,022	12.3	3,120	902
03-Feb-08	31,248	3,024	307	28,530	28,287	13.6	3,412	12.6	3,169	243
10-Feb-08	31,248	3,063	307	28,491	28,233	13.6	3,416	12.6	3,158	258
17-Feb-08	31,248	3,084	307	28,470	27,798	15.2	3,762	12.5	3,090	672
24-Feb-08	31,248	3,661	307	27,893	27,444	14.5	3,531	12.7	3,082	449
02-Mar-08	31,248	3,661	307	27,893	27,692	14.5	3,532	13.7	3,331	201
09-Mar-08	31,242	4,927	307	26,622	27,376	10.6	2,550	13.7	3,304	-754
16-Mar-08	31,242	4,927	307	26,622	25,800	16.9	3,853	13.3	3,031	822
23-Mar-08	31,242	5,402	307	26,147	25,214	17.1	3,820	12.9	2,887	933
30-Mar-08	31,242	6,687	307	24,862	24,702	13.6	2,979	12.9	2,819	160
06-Apr-08	31,242	6,841	307	24,708	25,044	11.5	2,555	13.1	2,891	-336
13-Apr-08	31,242	6,911	307	24,638	23,915	16.1	3,413	12.7	2,690	723
20-Apr-08	31,242	6,489	307	25,060	25,242	12.7	2,818	13.5	3,000	-182
27-Apr-08	31,242	7,453	307	24,096	24,994	8.3	1,850	12.4	2,748	-898
04-May-08	31,242	5,342	307	26,207	24,889	19.1	4,205	13.1	2,887	1,318
11-May-08	31,242	5,752	307	25,797	25,501	14.2	3,211	12.9	2,915	296
18-May-08	31,242	5,764	307	25,785	24,912	16.7	3,680	12.7	2,807	873
25-May-08	31,242	5,334	307	26,215	25,761	14.8	3,384	12.8	2,930	454
01-Jun-08	31,242	5,296	307	26,253	26,735	10.4	2,469	12.4	2,951	-482
08-Jun-08	31,232	4,503	307	27,035	27,766	9.8	2,417	12.8	3,148	-731
15-Jun-08	31,232	3,993	307	27,545	29,401	6.1	1,580	13.2	3,436	-1,856
22-Jun-08	31,232	4,145	307	27,393	30,590	1.5	413	13.4	3,610	-3,197
29-Jun-08	31,232	3,993	307	27,545	30,173	3.5	918	13.3	3,546	-2,628
06-Jul-08	31,232	3,196	307	28,342	29,394	8.8	2,292	12.8	3,344	-1,052
13-Jul-08	31,259	3,164	307	28,401	30,391	5.6	1,509	13.0	3,499	-1,990
20-Jul-08	31,259	3,175	307	28,390	31,476	2.0	566	13.1	3,652	-3,086
27-Jul-08	31,259	3,127	307	28,438	30,275	6.2	1,651	13.0	3,488	-1,837
03-Aug-08	31,259	3,366	307	28,199	28,970	9.9	2,546	12.9	3,317	-771
10-Aug-08	31,259	3,359	307	28,206	31,416	1.7	469	13.3	3,679	-3,210
17-Aug-08	31,259	3,363	307	28,202	30,511	4.6	1,235	13.1	3,544	-2,309
24-Aug-08	31,259	3,387	307	28,178	29,651	7.4	1,945	13.0	3,418	-1,473
31-Aug-08	31,259	3,844	307	27,721	29,714	5.5	1,435	13.0	3,428	-1,993
07-Sep-08	31,259	4,448	307	27,117	29,531	3.9	1,020	13.2	3,434	-2,414
14-Sep-08	31,259	4,944	307	26,621	29,331	2.8	732	13.3	3,442	-2,710
21-Sep-08	31,259	5,034	307	26,531	28,451	5.5	1,377	13.1	3,297	-1,920
28-Sep-08	31,259	5,509	307	26,056	26,671	10.0	2,372	12.6	2,987	-615

**Table A5 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
01-Apr-07	31,214	7,186	417	24,445	24,623	12.7	2,747	13.5	2,925	-178
08-Apr-07	31,214	7,760	386	23,840	24,795	9.4	2,057	13.8	3,012	-955
15-Apr-07	31,214	7,447	386	24,153	23,907	14.8	3,106	13.6	2,860	246
22-Apr-07	31,214	7,817	386	23,783	25,034	8.2	1,797	13.9	3,048	-1,251
29-Apr-07	31,214	6,489	386	25,111	24,876	14.2	3,118	13.1	2,883	235
06-May-07	31,214	7,596	386	24,004	24,699	10.4	2,255	13.6	2,950	-695
13-May-07	31,214	7,463	386	24,137	25,375	8.1	1,805	13.6	3,043	-1,238
20-May-07	31,214	7,874	386	23,726	24,600	8.6	1,873	12.6	2,747	-874
27-May-07	31,214	5,936	386	25,664	25,629	13.7	3,085	13.5	3,050	35
03-Jun-07	31,214	6,490	552	25,276	28,278	1.1	285	13.2	3,287	-3,002
10-Jun-07	31,214	5,526	552	26,240	27,622	7.3	1,786	13.0	3,168	-1,382
17-Jun-07	31,214	4,592	552	27,174	29,165	5.7	1,461	13.4	3,452	-1,991
24-Jun-07	31,699	3,441	552	28,810	30,295	7.8	2,080	13.3	3,565	-1,485
01-Jul-07	31,699	3,340	552	28,911	29,851	9.6	2,536	13.2	3,476	-940
08-Jul-07	31,699	3,213	552	29,038	29,140	12.6	3,252	13.0	3,354	-102
15-Jul-07	31,699	3,188	552	29,063	30,156	9.1	2,423	13.2	3,516	-1,093
22-Jul-07	31,699	3,165	552	29,086	31,244	5.5	1,511	13.3	3,669	-2,158
29-Jul-07	31,699	3,125	552	29,126	30,018	9.8	2,587	13.1	3,479	-892
05-Aug-07	31,726	3,444	552	28,834	30,155	8.4	2,230	13.4	3,551	-1,321
12-Aug-07	31,726	3,444	552	28,834	31,210	4.9	1,342	13.5	3,718	-2,376
19-Aug-07	31,726	3,444	552	28,834	30,295	7.9	2,112	13.4	3,573	-1,461
26-Aug-07	31,726	3,444	552	28,834	29,395	11.1	2,872	13.2	3,433	-561
02-Sep-07	31,726	4,950	552	27,328	29,483	5.0	1,299	13.3	3,454	-2,155
09-Sep-07	31,723	4,853	552	27,422	29,353	6.1	1,572	13.6	3,503	-1,931
16-Sep-07	31,723	5,874	552	26,401	29,127	3.0	759	13.6	3,485	-2,726
23-Sep-07	31,723	7,289	552	24,986	28,395	0.3	79	14.0	3,488	-3,409
30-Sep-07	31,723	7,723	552	24,552	26,624	4.8	1,114	13.6	3,186	-2,072
07-Oct-07	31,799	8,440	552	23,911	27,276	0.0	2	14.1	3,367	-3,365
14-Oct-07	31,799	8,380	552	23,971	23,306	16.0	3,313	12.8	2,648	665
21-Oct-07	31,799	8,445	552	23,906	24,072	12.4	2,636	13.2	2,802	-166
28-Oct-07	31,799	8,394	552	23,957	24,379	11.3	2,432	13.3	2,854	-422
04-Nov-07	31,811	8,750	552	23,613	24,836	8.0	1,750	13.6	2,973	-1,223
11-Nov-07	31,811	8,286	552	24,077	25,485	7.2	1,608	13.4	3,016	-1,408
18-Nov-07	31,811	7,245	552	25,118	26,335	7.9	1,843	13.2	3,060	-1,217
25-Nov-07	31,811	7,194	552	25,169	26,861	6.1	1,442	13.2	3,134	-1,692
02-Dec-07	31,811	6,678	552	25,685	27,287	6.2	1,507	12.9	3,109	-1,602
09-Dec-07	31,811	5,325	552	27,038	27,954	8.6	2,150	12.3	3,066	-916
16-Dec-07	31,811	4,807	552	27,556	27,976	10.7	2,660	12.4	3,080	-420
23-Dec-07	31,811	4,788	552	27,575	28,711	8.0	2,050	12.5	3,186	-1,136

(Table A5 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
30-Dec-07	31,811	3,394	552	28,969	26,611	22.7	5,354	12.7	2,996	2,358
06-Jan-08	31,811	3,325	552	29,038	27,760	17.3	4,285	12.2	3,007	1,278
13-Jan-08	31,821	3,275	552	29,098	28,180	15.9	3,984	12.2	3,066	918
20-Jan-08	31,821	2,712	552	29,661	28,729	16.0	4,085	12.3	3,153	932
27-Jan-08	31,821	2,697	552	29,676	28,518	16.8	4,275	12.3	3,117	1,158
03-Feb-08	31,821	3,589	552	28,784	28,285	14.6	3,666	12.6	3,167	499
10-Feb-08	31,833	3,629	552	28,756	28,231	14.7	3,681	12.6	3,156	525
17-Feb-08	31,833	3,650	552	28,735	27,795	16.3	4,027	12.5	3,087	940
24-Feb-08	31,833	4,217	552	28,168	27,440	15.6	3,806	12.6	3,078	728
02-Mar-08	31,833	4,217	552	28,168	27,688	15.6	3,807	13.7	3,327	480
09-Mar-08	31,827	5,483	552	26,897	27,371	11.7	2,825	13.7	3,299	-474
16-Mar-08	31,827	5,483	552	26,897	25,799	18.1	4,128	13.3	3,030	1,098
23-Mar-08	31,827	5,963	552	26,417	25,212	18.3	4,090	12.9	2,885	1,205
30-Mar-08	31,827	7,253	552	25,127	24,698	14.8	3,244	12.9	2,815	429
06-Apr-08	31,827	7,397	552	24,983	25,041	12.8	2,830	13.0	2,888	-58
13-Apr-08	31,827	7,477	552	24,903	23,912	17.3	3,678	12.7	2,687	991
20-Apr-08	31,827	7,055	552	25,325	25,242	13.9	3,083	13.5	3,000	83
27-Apr-08	31,827	8,019	552	24,361	24,992	9.5	2,115	12.3	2,746	-631
04-May-08	31,850	5,931	552	26,472	24,891	20.3	4,470	13.1	2,889	1,581
11-May-08	31,850	6,341	552	26,062	25,488	15.4	3,476	12.9	2,902	574
18-May-08	31,850	6,353	552	26,050	24,905	17.9	3,945	12.7	2,800	1,145
25-May-08	31,850	5,923	552	26,480	25,756	16.0	3,649	12.8	2,925	724
01-Jun-08	31,850	5,885	552	26,518	26,727	11.5	2,734	12.4	2,943	-209
08-Jun-08	32,109	5,064	552	27,597	27,763	12.1	2,979	12.8	3,145	-166
15-Jun-08	32,109	4,577	552	28,084	29,395	8.2	2,119	13.2	3,430	-1,311
22-Jun-08	32,109	4,706	552	27,955	30,597	3.6	975	13.4	3,617	-2,642
29-Jun-08	32,109	4,564	552	28,097	30,165	5.5	1,470	13.3	3,538	-2,068
06-Jul-08	32,241	3,917	552	28,876	29,396	10.9	2,826	12.8	3,346	-520
13-Jul-08	32,268	3,871	552	28,949	30,395	7.7	2,057	13.0	3,503	-1,446
20-Jul-08	32,268	3,883	552	28,937	31,482	4.0	1,113	13.2	3,658	-2,545
27-Jul-08	32,268	3,835	552	28,985	30,262	8.2	2,198	13.0	3,475	-1,277
03-Aug-08	32,268	4,074	552	28,746	28,942	12.1	3,093	12.8	3,289	-196
10-Aug-08	32,268	4,067	552	28,753	31,417	3.7	1,016	13.3	3,680	-2,664
17-Aug-08	32,268	4,071	552	28,749	30,506	6.6	1,782	13.1	3,539	-1,757
24-Aug-08	32,268	4,094	552	28,726	29,643	9.5	2,493	13.0	3,410	-917
31-Aug-08	32,268	4,552	552	28,268	29,721	7.5	1,982	13.1	3,435	-1,453
07-Sep-08	32,643	4,670	552	28,525	29,462	9.3	2,428	12.9	3,365	-937
14-Sep-08	32,643	5,167	552	28,028	29,248	8.3	2,139	13.0	3,359	-1,220
21-Sep-08	32,643	5,228	552	27,967	28,386	11.2	2,813	12.9	3,232	-419
28-Sep-08	32,643	5,703	552	27,492	26,582	16.1	3,808	12.2	2,898	910

**Table A6 Energy Production Capability Forecast**

<b>Month</b>	<b>Firm Resource Scenario Forecast Energy Production Capability (GWh)</b>	<b>Planned Resource Scenario Forecast Energy Production Capability (GWh)</b>
Apr 2007	14,709	14,709
May 2007	15,885	15,885
Jun 2007	16,919	16,919
Jul 2007	17,712	18,021
Aug 2007	17,371	17,680
Sep 2007	15,551	15,849
Oct 2007	15,369	15,695
Nov 2007	15,330	15,653
Dec 2007	17,476	17,810
Jan 2008	17,876	18,198
Feb 2008	15,931	16,227
Mar 2008	16,089	16,430
Apr 2008	15,347	15,677
May 2008	15,752	16,109
Jun 2008	16,916	17,427
Jul 2008	17,308	17,866
Aug 2008	17,051	17,608
Sep 2008	16,500	17,271

- End of Section -



## Appendix B Transmission Projects

Table B Transmission Projects

Zone	CAA-ID#	Transmitter	Description	Proposed I/S Date
East	2005-198	Hydro One Networks Inc.	Whitby TS new transformer station	2007-Q3
	N/A	Hydro One Networks Inc.	Kingston-Gardiner TS#2 new transformer station	2008-Q3
Essa	2006-233	Hydro One Networks Inc.	Orangeville TS Shunt Capacitor	2007-Q4
	2006-227	Hydro One Networks Inc.	Everett TS new transformer station	2007-Q3
	2006-211	Hydro One Networks Inc.	Holland Marsh TS new transformer station	2008-Q3
	2006-EX277	Hydro One Networks Inc.	Essa TS: Retermination of 230 kV circuits E27 and M6E	2007-Q3
Niagara	2002-085	Hydro One Networks Inc.	Queenston Flow West	To be determined
	N/A	Hydro One Networks Inc.	Improve thermal rating of 115 kV circuits Q12S, Q3L, Q4N Q1N, Q5G	2007-Q4
	N/A	Hydro One Networks Inc.	Improve thermal rating of 115 kV circuits D9HS, D10S and Q11S	2007-Q3
	2007-258	Hydro One Networks Inc.	Vansickle TS new transformer station	2009-Q1
Northeast	2002-EX070	Great Lakes Power Ltd.	P21G 230 kV cct Upgraded to 374 MVA continuous rating	2007-Q1
	N/A	Great Lakes Power Ltd.	Replacement of 250 MVA Autotransformer @ Third Line TS	2007-Q4
	N/A	Great Lakes Power Ltd.	Magple TS 115 kV structure replacement	2007-Q4
	N/A	Great Lakes Power Ltd.	Mackay TS 115 kV yard refurbishment - on going	2008-Q4
	N/A	Great Lakes Power Ltd.	Third Line TS 115 kV yard refurbishment - on going	2009-Q4
	2002-086	Hydro One Networks Inc.	Modify Moosonee SS	2007-Q3
	2002-086	Hydro One Networks Inc.	Modify Otter Rapids SS	2007-Q3
	2002-086	Hydro One Networks Inc.	Reinforce existing transmission facilities to supply Victor Mine	2008-Q2
	N/A	Hydro One Networks Inc.	Porcupine TS - Complete replacement of 500 kV and 115 kV breakers and reconfiguration of 500 kV terminations	2007-Q3
Northwest	2006-228	Hydro One Networks Inc.	Red Lake TS new transformer station	2007-Q3
	2006-247	Hydro One Networks Inc.	Lakehead TS static var compensator (SVC)	2008-Q4
Southwest	2006-233	Hydro One Networks Inc.	Detweller TS Shunt Capacitor	2007-Q3
	2006-225	Hydro One Networks Inc.	Toyota Woodstock TS new transformer station	2008-Q2
	2006-225	Hydro One Networks Inc.	Woodstock TS low voltage shunt capacitors	2007-Q4
	2006-215	Hydro One Networks Inc.	Install Preston 230-115 kV auto-transformer	2007-Q4
	2006-221	Hydro One Networks Inc.	Halton TS and Meadowvale TS low voltage shunt capacitors	2007-Q2
	2006-EX299	Hydro One Networks Inc.	Burlington TS: Replace the lower rated 230/115 kV transformer. Buswork that limits the station capability.	2008-Q4 2008-Q2
Toronto	2002-057	Hydro One Networks Inc.	John x Esplanade 115 kV cable	2008-Q1
	2006-209	Hydro One Networks Inc.	Oshawa Area TS new transformer station	2009-Q1
	2006-213	Hydro One Networks Inc.	Pleasant TS new transformer station	2008-Q2

(Table B continued)

Zone	CAA-ID#	Transmitter	Description	Proposed I/S Date
West	2006-212	Hydro One Networks Inc.	London Talbot TS new transformer station	2007-Q3
	2005-EX228	Hydro One Networks Inc.	Essex TS: Reconfigure the 115 kV termination	2007-Q3
	2005-194	Hydro One Networks Inc.	Tilbury TS: Reconfigure 115 kV circuit terminations	2007-Q2
	2007-EX318	Hydro One Networks Inc.	Belle River TS low voltage shunt capacitors	2007-Q4
	N/A	Hydro One Networks Inc.	Lambton TS: Replace Air Blast breakers with SF6 breakers, replace buswork (strain bus with rigid bus) and reconfigure lines	2008-Q2

- 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**

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
No Transmission Outages to report									

**Table C2 East Zone**

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
East	Mar 05 2007 5:00 AM	Mar 30 2007 6:00 PM	St.Lawrence TS: L2L2L4, HL24, HT4L24, L24A::HAWTHORNE_TS::ST.LAWRENCE_TS, DL24, L24A::HAWTHORNE_TS::ST.LAWRENCE_TS	3885418	8 Hour	CWW	Replace all PLC & teleprotection equipment and replace and modify A and B Protection equipment on Line L24A at St Lawrence and Hawthorne	FIO	100MW
East	Aug 09 2006 7:00 AM	Aug 09 2007 3:00 PM	Lennox TS: KL522	4154657	2 Hour	CWW	CT mtce.	None	
East	Feb 26 2007 4:00 AM	May 04 2007 7:00 PM	Lennox TS: T51, T51-K, 12R51-T, 12T51-H	4622821	7 Day	CWW	To perform a Lennox TS T51 Oil Drain/Corrective Repair	See Other comments	
East	Mar 19 2007 5:00 AM	Mar 30 2007 6:00 PM	Cataragui TS: 29T2-X3H, T2, T2-P, T2DR21, SS2-X, T2DR22	4623152	Non-Recallable	CWW	Mid life rehab	None	
East	Oct 01 2007 5:00 AM	Oct 26 2007 6:00 PM	Chenaua TS: R4-S, T4, T4-A, TR4-T	4623170	Non-Recallable	CWW	Mid life Refurb	None	
East	May 07 2007 5:00 AM	May 18 2007 6:00 PM	St.Lawrence TS: PS33-2, PS33, PS33-1	4623284	Non-Recallable	CWW	capital work	NY-St. Lawrence Interconnection Flow Limits (Table 5.2 in the Ontario Transmission System document)	200MW for imports and exports
East	Jul 23 2007 8:00 AM	Jul 31 2007 6:00 PM	Cobden TS: 23M55-1, 69X2Y-23	4782655	Non-Recallable	CWW	Wood Pole Structure Replacement on ckt X2Y section Haley JCT X Cobden TS	None	
East	May 31 2007 2:01 PM	Oct 31 2007 2:01 PM	Dobbin TS: T2-A, T2, T2-K	4796534	Immediate	CWW	Off pot for summer operation	None	
East	May 30 2008 2:01 PM	Oct 31 2008 2:01 PM	Dobbin TS: T2-K, T2-A, T2	4796540	Immediate	CWW	Off pot for summer operation	None	

**Table C3 Essa Zone**

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
Essa	Oct 23 2007 12:00 PM	Nov 10 2007 6:00 PM	Minden TS: AL4, L4L81, D4M::MINDEN_TS::OTTER_CREEK_JCT, D4M::MINDEN_TS::OTTER_CREEK_JCT, D4M::DES_JOACHIMS_TS::OTTER_CREEK_JCT, D4M::DES_JOACHIMS_TS::OTTER_CREEK_JCT, HL4, AL4	4336774	4 Hour	CWW	Extended Line Outage (including all terminals) is required to complete: 1. Replacement of Line D4M B Relay & Installation of Breaker Failure Protection Scheme on 2 breakers at Des Joachims TS 2. Replacement of Line D4M B Relay & Installation of Breaker	None	
Essa	Mar 24 2007 6:00 PM	Apr 14 2007 5:00 AM	Essa TS: AT3	4337305	Non-Recallable	CWW	Const to remove the Essa AT3 lower bus in Bay 4 Const to remove (12) 230KV insulators from support structure 58A Const to install new Breaker and switches	None	
Essa	Apr 14 2007 5:00 AM	Apr 22 2007 5:00 AM	Cooper's Falls JCT: M6E::COOPER'S_FALLS_JCT::ORILLIA_TS, M6E::MINDEN_TS::COOPER'S_FALLS_JCT, 80M6E-18, HT4, T3, M6E::COOPER'S_FALLS_JCT::BRACEBRIDGE_JCT, 80M6E-87, M6E::COOPER'S_FALLS_JCT::BRACEBRIDGE_JCT, M6E::BRACEBRIDGE_JCT::MUSKOKA_TS, M6E::BRACEBRIDGE_JCT::BRACEBRIDGE_TS, AT3, M6E::ESSA_TS::MIDHURST_JCT, HL7, 18-M6E, M6E::ESSA_TS::MIDHURST_JCT, M6E::MIDHURST_TS::MIDHURST_JCT, M6E::MIDHURST_JCT::ORILLIA_TS, 30T2-M6E, M6E::BRACEBRIDGE_JCT::MUSKOKA_TS, 92T1-M6E, M6E::MIDHURST_JCT::ORILLIA_TS, M6E::BRACEBRIDGE_JCT::BRACEBRIDGE_TS, T1-M6E, T1-M6E, M6E::MIDHURST_TS::MIDHURST_JCT, 87-M6E, M6E::MINDEN_TS::COOPER'S_FALLS_JCT, HL9, M6E::COOPER'S_FALLS_JCT::ORILLIA_TS	4337308	2 Day	CWW	To relocate the M6E from the H Bus to between the old AT3 Breaker and the new one installed with NOMS slip 118826 P&C to change H Bus protection modifications for the removal of M6E and Prep work for the addition on E27	None	
Essa	Apr 30 2007 5:00 AM	May 07 2007 5:00 AM	Essa TS: 18T2-A, 18-E27, 18-E27, AL26, AL8, AT3, E27::WAUBAUSHENE_JCT::WAUBAUSHENE_TS, SC21A, E27::WAUBAUSHENE_JCT::WAUBAUSHENE_TS, 98-E27, SC21, E27::PARRY_SOUND_TS::WAUBAUSHENE_JCT, 77T1-E27, A_BUS, E27::WAUBAUSHENE_JCT::WAUBAUSHENE_TS, SC21SC, E27::ESSA_TS::WAUBAUSHENE_JCT, E27::PARRY_SOUND_TS::WAUBAUSHENE_JCT	4337344	4 Hour	CWW	To dis-connect the E27 from the A Bus To install new L27CVTs P&C to change A Bus protection modifications for the removal of E27 Old L27PC to be call APC at the end of this outage still needed for A Bus protections	None	
Essa	May 07 2007 5:00 AM	May 13 2007 6:00 PM	Essa TS: 18-E27, E27::PARRY_SOUND_TS::WAUBAUSHENE_JCT, E27::PARRY_SOUND_TS::WAUBAUSHENE_JCT, E27::ESSA_TS::WAUBAUSHENE_JCT, 98-E27, 77T1-E27, E27::WAUBAUSHENE_JCT::WAUBAUSHENE_TS, HT4, HL9, HL7, E27::ESSA_TS::WAUBAUSHENE_JCT	4337365	4 Hour	CWW	Lines Const To connect the E27 to the New 18-E27 Switch Station Const To Connect New 18-E27 Switch to the H Bus Station Const To Connect new L27CVT	None	
Essa	Mar 19 2007 10:00 AM	Apr 05 2007 4:00 PM	Des Joachims TS: 5-D2M, AL2, T2L2	4777712	1 Week	CWW	Extended Line Outage (including all terminals) is required to complete on Feb 8/07: 1. Replacement of Line D2M B Relay & Installation of Breaker Failure Protection	None	
Essa	Mar 19 2007 8:00 AM	Apr 12 2007 6:00 PM	Des Joachims JCT: 87D6-40, 40D6-5	4782644	Non-Recallable	CWW	Wood Pole Structure Replacement on ckt D6 section Des Joachims jct X Deep River	None	

Table C4 Niagara Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
No Transmission Outages to report									

Table C5 Northeast Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
Northeast	Nov 22 2005 12:00 AM	Jun 14 2030 11:59 PM	Mackay TS: ANJIGAMI LINE #1, ANJIGAMI LINE #1	3663682	Non-Recallable	CWW	Anjigami 115 kv line coming out of service because new 230 line going in service Anjigami Line being decommissioned	None	
Northeast	May 07 2007 5:30 AM	Jun 15 2007 5:00 PM	Fauquier DS: T1-L, T1	3988766	8 Hour	CWW	SCD to replace transformer pad (Concrete) with new concrete. SCD to install new Revenue Metering Instrument Transformers.	None	
Northeast	Mar 05 2007 6:00 AM	May 04 2007 6:00 PM	Porcupine TS: K3K4	4174493	4 Week	CWW	To replace K3K4 ABB with new SF6 breaker. To change insulators, breaker disconnect switches and remove K3K4 CT's at Porcupine	None	
Northeast	Apr 30 2007 8:00 AM	May 17 2007 4:00 PM	Algoma TS: T6, T6-K, T6-A, T6-S22	4359325	8 Hour	CWW	Algoma Transformer T6 A&B Protections Replacement	None	
Northeast	Mar 24 2007 8:01 AM	Apr 13 2007 4:01 PM	Aubrey Falls CGS: G1T1, 20-P26W, T1	4575714	Non-Recallable	CWW	Aubrey G1 - headgate overhaul, gov and breaker overhaul, T1 deluge replacement and cooling water piping replacement	None	
Northeast	May 14 2007 7:01 AM	Jun 03 2007 4:01 PM	Wells CGS: 27-T27P, T27	4575883	Non-Recallable	CWW	Wells G2 - Annual maintenance and T27 transformer replacement and breaker overhauls.	None	
Northeast	Nov 26 2007 8:01 AM	Dec 16 2007 4:01 PM	Wells CGS: 27-T28P, T28	4576307	Non-Recallable	CWW	Wells G1 - Annual maintenance AND T28 transformer replacement (if available)	None	
Northeast	May 22 2007 5:00 AM	Jun 15 2007 6:00 PM	Otto Holden TS: T4-Y, T4, T4-K, T4-D	4622833	Non-Recallable	CWW	Cooling rad refurbishment by CMS and SMS Routine diagnostic mtcn on T4 transformer and tertiary bus, general oil testing on T4	None	
Northeast	Jan 03 2007 8:30 AM	Mar 30 2007 4:01 PM	Goulais Bay: 584, SAULT3::GOULAIS_BAY::THIRD_LINE_TS, SAULT3::GOULAIS_BAY::THIRD_LINE_TS, 588, 470	4661863	Non-Recallable	CWW	Sault # 3 outage required from Third Line TS to Goulais Bay TS to resting new conductor.	None	
Northeast	Mar 26 2007 7:00 AM	Apr 05 2007 5:00 PM	Tembec Smooth Rk JCT: 33H9K-27, 42H9K-MSO2	4668973	4 Hour	CWW	Lines to replace 9 wood pole structures. H9K Line section between Tembec Jct X Fauquier Jct.	None	
Northeast	Jun 11 2007 7:00 AM	Jun 18 2007 5:00 PM	Clarabelle TS: T2-S22A, 9-S22A, 26-S22A	4669279	4 Hour	CWW	Lines to replace 22 wood pole structures. Line Circuit S22A between Clarabelle TS X Algoma TS	None	
Northeast	Oct 09 2007 7:00 AM	Oct 18 2007 5:00 PM	Des Joachims TS: 5-D5H, D5H::DES_JOACHIMS_TS::OTTO_HOLDEN_TS, D5H::DES_JOACHIMS_TS::OTTO_HOLDEN_TS, 6-D5H	4669526	4 Hour	CWW	Replace insulators at Str # 258, #261, #262, #284, #288 & #289. Line section D5H between Des Joachims TS X Otto Holden TS	Flow North (FN), Flow South (FS)	FN reduced by 350MW, FS reduced by 400MW
Northeast	Aug 07 2007 7:00 AM	Aug 17 2007 5:00 PM	Nine Mile JCT: D3K::NINE_MILE_JCT::DANE_JCT, D3K::NINE_MILE_JCT::DANE_JCT, 32-D3K, D3K::DYMOND_TS::NINE_MILE_JCT, D3K::DYMOND_TS::NINE_MILE_JCT, 68D3K-32	4669531	4 Hour	CWW	Lines to replace 8 wood pole structures. Line section D3K between Dymond TS and Dane Jct.	None	
Northeast	Nov 23 2006 8:01 AM	Dec 31 2007 11:59 PM	Garthshore GS: 766, 765	4670038	Non-Recallable	CWW	AB 765 and CB 766 will remain open at Garthshore GS for ongoing reconfiguration work of New Garthshore TS	None	
Northeast	Aug 20 2007 7:00 AM	Aug 31 2007 5:00 PM	Clarabelle TS: T2-S22A, 9-S22A, 26-S22A	4716848	4 Hour	CWW	Lines to replace 22 wood pole structures. Line Circuit S22A between Clarabelle TS X Algoma TS	None	
Northeast	Oct 09 2007 7:00 AM	Oct 26 2007 5:00 PM	Algoma TS: 26-S22A, T2-S22A, 9-S22A	4716853	4 Hour	CWW	Lines to replace 22 wood pole structures. Line Circuit S22A between Clarabelle TS X Algoma TS	None	
Northeast	Dec 17 2006 11:07 PM	Apr 27 2007 6:00 PM	Pinard TS: T1-R, T1-D501P, 31T1-K, T1	4747660	Non-Recallable	CWW	Pinard T1 requires replacement	None	
Northeast	Mar 12 2007 5:00 AM	Jun 14 2007 6:00 PM	Porcupine TS: H2L501	4802520	8 Week	CWW	To replace H2L501 with new SF6 breaker. To remove H2L501 CT's	None	
Northeast	Mar 26 2007 4:00 AM	May 18 2007 7:00 PM	Upper Notch JCT: D2L::UPPER_NOTCH_JCT::CASSELS_JCT, D2L::DYMOND_TS::UPPER_NOTCH_JCT, D2L::UPPER_NOTCH_JCT::CASSELS_JCT, 32-D2L, D2L::DYMOND_TS::UPPER_NOTCH_JCT, 35D2L-32	4802603	24 Hour	CWW	Lines Construction to replace Sky wire on D2L In section Dymond TS x Upper Notch Jct Poles 86 - 261	None	

Table C6 Northwest Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
Northwest	May 28 2007 6:30 AM	Jun 15 2007 6:30 PM	Fort Frances TS: F25A::FORT_FRANCES_TS::MACKENZIE_TS, 22-F25A, 20-F25A, F25A::FORT_FRANCES_TS::MACKENZIE_TS	4444218	4 Hour	CWW	Provincial Lines To replace structures F25A - Fort Frances TS X Mackenzie TS	OMTE, OMTW, EWTE, EWTF, MPFN, MPFS	OMTE - 70 MW OMTW - 250 MW EWTE - 75 MW EWTF - 50 MW MPFN - 50 MW
Northwest	Oct 10 2006 9:01 AM	Dec 31 2007 11:59 PM	Sterling Chem. CTS: S-T1, S-B1B, 13.8KV, S-T2, T1, T2, B1	4501423	Non-Recallable	CWW	Permanent Shutdown of Plant.	None	
Northwest	Jul 09 2007 7:00 AM	Jul 20 2007 5:00 PM	Reserve JCT: A6P-LC, 2A6P	4720902	4 Hour	CWW	Provincial Lines to replace structures on Circuit A6P - Section A6P-LC x Port Arthur	None	
Northwest	May 03 2007 8:00 AM	May 25 2007 6:00 PM	Fort Frances TS: K24F::KENORA_TS::FORT_FRANCES_TS, K24F::KENORA_TS::FORT_FRANCES_TS	4726250	15 Minute	DWW	K24F HOLD OFF Material Delivery for Structure Replacement	OMTE, OMTW, EWTE, MPFN, MPFS	OMTE - 50 MW OMTW - 250 MW EWTE - 75 MW MPFN - 50 MW MPFS - 140 MW

Table C7 Ottawa Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
Ottawa	Sep 04 2007 8:00 AM	Sep 14 2007 4:00 PM	Merivale TS: SC11L, SC11, SC11SC	4506040	6 Hour	CWW	Major SC11SC and SC11L brk mtce. and SC11 cap bank mtce. Double SC11NVT	FIO	50 MW
Ottawa	Mar 05 2007 7:00 AM	Mar 30 2007 6:00 PM	St Lawrence TS: 49-L24A, L24A::HAWTHORNE_TS::ST LAWRENCE_TS, 48-L24A, L24A::HAWTHORNE_TS::ST LAWRENCE_TS	4697809	4 Hour	CWW	Provincial Lines to change u bolts on ckt L24A Hawthorne x St. Lawrence	FIO	100 MW
Ottawa	Jan 15 2007 12:00 AM	May 31 2007 5:00 PM	Borrowme JCT: 64H9A-48, 48-H9A	4781118	Non-Recallable	CWW	Lines Construction to dismantle circuit H9A Hawthorne x Borrowme Jct. as the first phase of the HO project. A new double circuit tower will be built to replace the existing H9A towerline. Construction staging diagrams to follow.	None	
Ottawa	May 11 2007 7:00 AM	May 18 2007 3:00 PM	South March TS: ATA2	4802713	8 Hour	CWW	Major breaker mtce.	FIO	170 MW

Table C8 Southwest Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
Southwest	Aug 13 2007 5:00 AM	Oct 13 2007 7:00 PM	Nanticoke TS: T12-H, T12-F, T12	4416584	36 Hour	CWW	To perform a Nanticoke T12 Oil Dripout/Corrective Repair	None	
Southwest	Apr 02 2007 7:01 AM	May 11 2007 4:01 PM	Scheffele CTS: T1, T1-D6V	4564592	8 Hour	CWW	To Install Containment Pit Around Scheffele T1	None	
Southwest	May 21 2007 7:01 AM	Jun 29 2007 4:01 PM	Scheffele CTS: T2, T2-D7V	4564672	8 Hour	CWW	Install Containment Pit Around Scheffele T2	None	
Southwest	Mar 05 2007 4:00 AM	Apr 27 2007 7:00 PM	Nanticoke TS: T11-H, T11-E, T11	4674832	4 Hour	CWW	Station Construction to install spill pits for Nanticoke T11	None	
Southwest	Sep 04 2007 4:00 AM	Oct 25 2007 7:00 PM	Nanticoke TS: T12-H, T12-F, T12	4674837	4 Hour	CWW	Station Construction to install spill pits for Nanticoke T12	None	
Southwest	Apr 16 2007 5:00 AM	Apr 22 2007 6:00 PM	Detweiler TS: SC21, SC21AT, ASC21, T2SC21	4684584	4 Hour	CWW	Station Construction to replace Detweiler SC21 Reactor Station Maintenance to In service the Reactor B&C update SC21 Protections	None	
Southwest	Mar 26 2007 4:00 AM	Jun 09 2007 7:00 PM	Owen Sound TS: 51H::OWEN_SOUND_TS::HANOVER_TS, 51H::OWEN_SOUND_TS::HANOVER_TS, 36-51H, C2-51H	4687363	24 Hour	CWW	Lines Construction to replace Sky wire on 51H Str 1-350	None	
Southwest	Sep 11 2007 5:00 PM	Sep 21 2007 6:00 AM	Nanticoke TS: K1L1, P1L22	4714038	40 Hour	CWW	Replace bus, structures and insulators on P1 bus East of column 11 (P1-MSO1) Replace bus, structures and insulators on K1 bus East of column 11 (K1-MSO1) Replace K1L1-K and P1L22-P switches	FETT	0 or 100 MW
Southwest	Sep 21 2007 5:00 PM	Oct 05 2007 7:00 PM	Nanticoke TS: F_BUS, K1L5, P1F, P1P2, K1K2, RSS4-F, P1F, L5F, T12-F	4714049	40 Hour	CWW	Replace bus, structures and insulators on P1 bus between column 9 & 11 Replace bus, structures and insulators on K1 bus between column 9 & 11 Replace K1L5-K, P1F-P, P1P2-1 and P1P2-2 switches	FETT	0 or 100 MW
Southwest	Oct 30 2007 5:00 PM	Nov 10 2007 6:00 AM	Nanticoke TS: K2L21, P2L6	4714103	40 Hour	CWW	Replace bus, structures and insulators on P2 bus west of column 5 Replace bus, structures and insulators on K2 bus East of column 5 Replace K2L21-K and P2L6-P switches	FETT	0 or 100 MW
Southwest	Nov 10 2007 5:00 PM	Nov 23 2007 7:00 PM	Nanticoke TS: K1K2, K2E, K2E, P2L2, RSS3-E, T11-E, E_BUS, L2E, P1P2, L2E	4714129	40 Hour	CWW	Replace bus, structures and insulators on P2 bus between column 5 & 7 Replace bus, structures and insulators on K2 bus between column 5 & 7 Replace bus, structures and insulators on E Bus Replace K1L21-K, P2L2-P, P1P2-2 and K1K2-2 switches	FETT FABC	0 or 100 MW 50 to 100 MW
Southwest	Dec 03 2007 4:00 AM	Dec 10 2007 7:00 PM	Caledonia JCT: N1M::CALEDONIA_JCT::MIDDLEPORT_TS, 59-N22J, N1M::CALEDONIA_JCT::CALEDONIA_TS, K1L1, N1M::CALEDONIA_JCT::MIDDLEPORT_TS, N1M::CALEDONIA_JCT::CALEDONIA_TS, 25-N1M, N1M::NANTICOKE_TS::CALEDONIA_JCT, N2T1-N1M,	4714155	30 Hour	CWW	Replace bus, structures and insulators on N1M and N22J Terminals Replace K1L1-1, L1L22-1 and N1M-G switches Replace N1CVT	FETT FABC	0 or 100 MW 50 to 100 MW
Southwest	Dec 11 2007 4:00 AM	Dec 18 2007 7:00 PM	Nanticoke TS: L1L22, L1L22, K1L1, N22J::NANTICOKE_TS::STELCO_JCT, P1L22, K1L1, T3-N22J, 59-N1M, N22J::STELCO_CTS::STELCO_JCT, N22J::JARVIS_TS::STELCO_JCT, N22J::NANTICOKE_TS::STELCO_JCT,	4714168	30 Hour	CWW	Replace bus, structures and insulators on N1M and N22J Terminals Replace P1L22-22, L1L22-22 and N22J-G switches Replace N22CVT	FETT FABC	0 or 100 MW 50 to 100 MW
Southwest	Apr 30 2007 4:00 AM	May 17 2007 6:00 PM	St.Marys Cement CTS: L7S::ST.MARYS_CEMENT_CTS::PORTLAND_JCT, L7S::ST.MARYS_TS::PORTLAND_JCT, L7S::ST.MARYS_TS::PORTLAND_JCT, L7S::DEVIZES_JCT::PORTLAND_JCT,	4715821	4 Hour	CWW	Tower recoating project section Devizes Jct x Portland Jct	None	
Southwest	May 30 2007 4:00 AM	Jun 07 2007 6:00 PM	Buchanan TS: W12W::BUCHANAN_TS::INGERSOLL_TS, 19-W12W, 38W12W-19, W12W::BUCHANAN_TS::INGERSOLL_TS	4715908	4 Hour	CWW	Tower recoating project section Buchanan x Ingersoll	None	
Southwest	Feb 20 2007 5:00 PM	Jun 08 2007 6:00 PM	Freeport JCT: 60-D7G-67	4721086	8 Hour	CWW	Freeport Jct o/s to install new breaker as part of Preston Auto transformer project	None	
Southwest	Feb 22 2007 5:00 PM	Jun 08 2007 6:00 PM	Freeport JCT: 60-D9G-67	4721121	8 Hour	CWW	Freeport Jct o/s to install new breaker as part of Preston Auto transformer project	None	
Southwest	Apr 02 2007 7:01 AM	May 11 2007 4:01 PM	Scheffele CTS: T1	4806928	8 Hour	CWW	To Install Containment Pit Around Scheffele T1	None	
Southwest	May 21 2007 7:01 AM	Jun 29 2007 4:01 PM	Scheffele CTS: T2	4806931	8 Hour	CWW	Install Containment Pit Around Scheffele T2	None	

Table C9 Toronto Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction In Limit
Toronto	Jan 01 2008 7:00 AM	Jan 26 2008 2:30 PM	Bermondsey TS: T4B, T4Y, T4-C14L, T4	2491118	36 Hour	CWW	CMS to do major mtce and oil leak repairs and Doble test on T4 SMS to do major mtce due to FAO readings on T4B	None	
Toronto	Jan 01 2008 7:00 AM	Jan 27 2008 6:00 PM	Pickering B SS: L27R, P27C::CHERRYWOOD_TS::PICKERING_B_SS, L26L27, KL27, T5L27, P27C::CHERRYWOOD_TS::PICKERING_B_SS	3017187	2 Day	CWW	Both B & A Relays Plus Interface to MUX Replacement	None	
Toronto	Jan 01 2008 7:00 AM	Jan 22 2008 6:00 PM	Pickering A SS: T2L8, L8D, KL8, P8C::PICKERING_A_SS::CHERRYWOOD_TS, L8L24, P8C::PICKERING_A_SS::CHERRYWOOD_TS	3048944	2 Day	CWW	Both B & A Relays Plus Interface to MUX Replacement	None	
Toronto	Jan 01 2008 7:00 AM	Jan 06 2008 6:00 PM	Pickering A SS: P6C::CHERRYWOOD_TS::PICKERING_A_SS, L6K, L3L6, P6C::CHERRYWOOD_TS::PICKERING_A_SS, DL6, T11A	3057139	2 Day	CWW	Both B & A Relays Plus Interface to MUX Replacement	None	
Toronto	Mar 30 2007 6:30 AM	Apr 05 2007 2:00 PM	Richview TS: H2L18	4209164	4 Hour	CWW	EMD to do major mtce	None	
Toronto	Oct 11 2007 6:00 AM	Oct 26 2007 3:30 PM	Bowmanville SS: R56-X520B, H2L520, L20L42, T2-X520B, X520B-LENNOX_TS::BOWMANVILLE_SS, R56-X520B, X520B-LENNOX_TS::BOWMANVILLE_SS	4216582	6 Hour	CWW	Major mtce on GIS switches: R56-X520B, X520B-G, L520-G, H2L520-L & H2L520-G1, L20L42-20 & L20L42-G2	None	
Toronto	Apr 02 2007 7:00 AM	May 25 2007 6:00 PM	Wilson JCT: M29C::ALMONTE_TS::WILSON_JCT, T3-M29C, T1 M29C, M29C::WHITBY_JCT::CHERRYWOOD_TS, M29C::WILSON_JCT::WILSON_TS, M29C::WILSON_JCT::WHITBY_JCT, T4-M29C, T3-M29C, M29C::MERIVALE_TS::ALMONTE_TS, 6-M29C, M29C::WHITBY_JCT::WHITBY_TS, T4-M29C, M29C::WHITBY_JCT::CHERRYWOOD_TS, M29C::WHITBY_JCT::WHITBY_TS, M29C::WILSON_JCT::WHITBY_TS, M29C::WILSON_JCT::WHITBY_JCT, M29C-1, M29C::MERIVALE_TS::ALMONTE_TS, M29C::ALMONTE_TS::WILSON_JCT, 81-M29C, M29C::WILSON_JCT::WILSON_TS	4486827	8 Hour	CWW	Line M29C (See Telecom Slip #113072) Modify and replace A & B protection relaying, teleprotection and PLC equipment at Merivale, Oshawa-Wilson and Cherrywood TS. Includes Line traps & CVT's at Cherrywood & Wilson and Line Traps only Whitby TS & Merivale.	None	
Toronto	Oct 29 2007 4:00 AM	Dec 28 2007 7:00 PM	Cherrywood TS: T16, T16-SS6, T16-HT16, T16-W3	4622703	36 Hour	CWW	To perform a Cherrywood TS T16 Oil Dripout/Corrective Repair -	None	
Toronto	Oct 29 2007 5:00 AM	Dec 28 2007 6:00 PM	Cherrywood TS: T16-SS6	4622830	Non-Recallable	CWW	L1TC Refurb	None	
Toronto	Jun 04 2007 6:00 AM	Jun 28 2007 6:00 PM	Cherrywood TS: B1-C28C, C28C::CHERRYWOOD_TS::MARINE_JCT, C28C::CHATS_FALLS_SS::MARINE_JCT, 2-C28C, C28C::CHATS_FALLS_SS::MARINE_JCT, C28C::CHERRYWOOD_TS::MARINE_JCT, C28C::MARINE_JCT::OTONABEE_TS, T2-C28C, C28C::MARINE_JCT::OTONABEE_TS	4705372	4 Hour	CWW	Provincial Lines order to replace defective U bolts on 62 towers in circuit C28C.	None	
Toronto	Oct 08 2007 6:00 AM	Oct 21 2007 6:00 PM	Leaside TS: H1L::BLOOR_STREET_JCT::LEASIDE_TS, H1L::GERRARD_TS::BLOOR_STREET_JCT, H1L-34, H1L::BLOOR_STREET_JCT::LEASIDE_TS, 34-H1L, H1L::GERRARD_TS::BLOOR_STREET_JCT	4747457	Non-Recallable	CWW	Contractor to pull in new section of cable, freeze and cut existing cables & pipe and splice in new section of H1L cable.	None	
Toronto	Jan 07 2008 7:00 AM	Jan 14 2008 5:00 PM	Gerrard TS: H3L-34, H3L::BLOOR_STREET_JCT::LEASIDE_TS, H3L::GERRARD_TS::BLOOR_STREET_JCT, H3L::BLOOR_STREET_JCT::LEASIDE_TS, 34-H3L, H3L::GERRARD_TS::BLOOR_STREET_JCT	4747559	4 Hour	DWW	Contractor to erect scaffolding, install new terminations and remove scaffolding.	None	
Toronto	Jan 15 2008 6:00 AM	Jan 22 2008 6:00 PM	Bloor Street JCT: H3L::GERRARD_TS::BLOOR_STREET_JCT, H3L::BLOOR_STREET_JCT::LEASIDE_TS, H3L-34, H3L::GERRARD_TS::BLOOR_STREET_JCT, 34-H3L, H3L::BLOOR_STREET_JCT::LEASIDE_TS	4747565	4 Hour	DWW	Contractor to erect scaffolding, install new terminations and remove scaffolding.	None	
Toronto	Apr 02 2007 4:00 AM	Jun 08 2007 7:00 PM	Claireville TS: T14-HT14, T14-W2, T14-SS1, T14	4787036	7 Day	CWW	To perform a Claireville TS T14 Oil Dripout/Corrective Repair -	FETT	250 MW
Toronto	Mar 12 2007 4:00 AM	Apr 13 2007 4:00 PM	Bowmanville SS: H4L543, H4A	4789467	3 Hour	CWW	Hydro One P&C protection mtce during unit 4 outage. Darlington G4 O/S.	None	
Toronto	Apr 23 2007 8:01 AM	Apr 28 2007 3:01 PM	Markham MTS #1: B BUS	4808856	2 Hour	CWW	Change "B" bus Wholesale Metering, PT's and CT's on T-1	None	
Toronto	Apr 30 2007 8:01 AM	May 05 2007 3:01 PM	Markham MTS #1: Y BUS	4808877	2 Hour	CWW	Change "Y" bus Wholesale Metering, PT's and CT's on T-1	None	

Table C10 West Zone

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
West	Dec 25 2005 8:00 AM	Dec 25 2007 4:00 PM	Bruce A TS: B562L::LONGWOOD_TS::BRUCE_A_TS, HL562, PL562, W52-B562L, W52-B562L, Z1-B562L, B562L::LONGWOOD_TS::BRUCE_A_TS	2902390	3 Hour	CWW	Switch overhaul & /repairs to the following switches: W52-B562L & HL562-L.	None	
West	May 28 2007 4:00 AM	Jun 09 2007 6:00 PM	Lambton TS #2: D, BUS, TS, T5D, T5-L23, DY, T5D	3848920	4 Hour	CWW	Revenue Metering Partial upgrade (1)	None	
West	Apr 23 2007 4:00 AM	May 02 2007 4:00 PM	Lambton TS #2: T6-P1, DY, T6Y, Y, BUS, T6, T6Y	3848928	4 Hour	CWW	Revenue Metering Partial upgrade (1)	None	
West	Jun 09 2006 6:30 AM	Dec 31 2007 6:00 PM	Lambton TS #2: PSS1-1, PSS1-2, PSS1	4219977	30 Minute	CWW	PSS1 bypassed for summer to improve the import thermal limits.	None	
West	Sep 17 2007 6:00 AM	Sep 30 2007 6:00 PM	Sarnia Scott TS: L21L27	4300795	Non-Recallable	CWW	Stn Construction to replace oil breaker with new SF6 breaker.	None	
West	Oct 09 2007 4:00 AM	Oct 22 2007 5:00 PM	Sarnia Scott TS: L6L23	4385678	Non-Recallable	CWW	Stn Construction to replace oil breaker with new SF6 breaker.	None	
West	Oct 29 2007 4:00 AM	Nov 11 2007 5:00 PM	Sarnia Scott TS: L7L22	4385681	Non-Recallable	CWW	Stn Construction to replace oil breaker with new SF6 breaker.	None	
West	Apr 23 2007 4:00 AM	May 06 2007 5:00 PM	Sarnia Scott TS: AL3	4385693	Non-Recallable	CWW	Stn Construction to replace oil breaker with new SF6 breaker.	None	
West	Jun 11 2007 4:00 AM	Jun 24 2007 5:00 PM	Sarnia Scott TS: AL21	4385722	Non-Recallable	CWW	Stn Construction to replace oil breaker with new SF6 breaker.	None	
West	Apr 23 2007 4:00 AM	May 02 2007 4:00 PM	Lambton TS #2: T6Y, P1-MSO3, T6, T6-P1	4411992	Non-Recallable	CWW	Replace section of P1 Bus adjacent to T6 Replace T6-P1 switch	None	
West	May 28 2007 4:00 AM	Jun 09 2007 4:00 PM	Lambton TS #2: T5D, T5-L23, T5	4412158	Non-Recallable	CWW	Replace section of K1 Bus and connect T5 to K1 Bus Replace existing T5-L23	None	
West	Apr 23 2007 4:00 AM	Apr 29 2007 6:00 PM	Nova Moore JCT: L25N::NOVA_MOORE_JCT::PETROSAR_JCT, L25N::LAMBTON_TS_#2::NOVA_MOORE_JCT, L25N::NOVA_CORUNNA_CTS::PETROSAR_JCT, L25N::PETROSAR_JCT::SARNIA_SCOTT_TS, L25N::NOVA_MOORE_JCT::PETROSAR_JCT, L25N::NOVA_MOORE_JCT::NOVA_MOORE_CTS, L25N::NOVA_CORUNNA_CTS::PETROSAR_JCT, L25N::PETROSAR_JCT::SARNIA_SCOTT_TS, 27-L25N, L25N::LAMBTON_TS_#2::NOVA_MOORE_JCT, 40-L25N, L25N::NOVA_MOORE_JCT::NOVA_MOORE_CTS	4550741	Non-Recallable	CWW	Lines Construction to reconfigure circuit outside Lambton	FABC BLIP NBLIP	0 to 150 MW 500 MW 500 MW
West	May 09 2007 4:00 AM	May 16 2007 6:00 PM	St Clair CTS: L51D::ST_CLAIR_CTS::LAMBTON_TS_#2, PL51, PSS1-1, PSS1-2, PSS1-2, PSS1-S, L51L29, PSS1-1, PSS1-S, L51D::ST_CLAIR_CTS::LAMBTON_TS_#2, PSS1	4550923	Non-Recallable	CWW	Connect new L51D cable to old L24L Terminal (new L51D terminal). Upgrade buswork and install associated disconnects. Install new bypass breaker.	FABC BLIP NBLIP Michigan Export Michigan Import	0 to 150 MW 500 MW 500 MW 625 MW 500 MW
West	Jun 19 2007 5:00 PM	Jul 12 2007 6:30 AM	Lambton TS #2: PS4, PS4-1, PS4-2	4581928	4 Day	CWW	PS4 bypassed for EMD to do oil replacement on PS4 PS4 can be recalled in 4 days.	None	
West	Jul 23 2007 5:00 AM	Sep 07 2007 6:00 PM	Lambton TS #2: 27-T7, T7-L4D, T7	4622862	2 Day	CWW	Part of the oil leak reduction program	Michigan Export Michigan Import	about 300 MW
West	Jun 11 2007 5:00 AM	Jul 20 2007 6:00 PM	Lambton TS #2: 27-T8, T8-L4D, T8	4622886	3 Day	CWW	Part of the oil leak reduction program	Michigan Export Michigan Import	about 300 MW
West	May 22 2007 12:00 AM	Jun 02 2007 6:00 PM	Keith TS: PSR5, PSR5-2, PSR5-1	4623087	8 Hour	CWW	Radiator Refurbishment	None	
West	Jan 29 2007 4:00 AM	Jul 31 2007 7:00 PM	Talbot TS: T1-A	4687420	4 Hour	CWW	To Connect new Talbot T1 to Talbot A Bus Inservice new Talbot T1 (1/5 at the end of this outage) See other slips (To be put in a later date) to add Talbot T1 to Talbot A Bus Protections and Test Trip W36 Circuit A Bus and Transformer on last Day	None	
West	Jan 29 2007 4:00 AM	Jul 31 2007 7:00 PM	Talbot TS: T2-D	4687458	4 Hour	CWW	To Connect new Talbot T2 to D Bus Inservice new Talbot T2 (1/5 at the end of this outage) See other slips (To be put in a later date) to add Talbot T2 to D Bus Protections	None	
West	May 22 2007 4:00 AM	May 29 2007 6:00 PM	Buchanan TS: W7W::BUCHANAN_TS::INGERSOLL_TS, 38W7W, 19, W7W::BUCHANAN_TS::INGERSOLL_TS, 19, W7W	4715895	4 Hour	CWW	Tower recoating project section Buchanan x Ingersoll	None	
West	Apr 10 2007 6:00 AM	Apr 26 2007 6:00 PM	Essex TS: L8, BUS, L7, BUS, T2, T1, T1, L8, BUS, T1, T3, EBF::CHRYSLER_WAP_MTS::ESSEX_TS, Z7E::WALKER_JCT::ESSEX_TS, Z7E::LAUZON_TS::JEFFERSON_JCT, T1B, Z7E::LAUZON_TS::JEFFERSON_JCT, L2L7, T3O, T1B, T1L7, T1B, T2B, 15-E8F, L4L7, L1L8, L1L8, L7L8, L7L8, T1-L8, T1-L8, T2-L8, EBF::CHRYSLER_WAP_MTS::ESSEX_TS, Z7E::WALKER_JCT::ESSEX_TS	4727206	Non-Recallable	CWW	SCD & LCD to perform "EBF" & "Z7E" line swap at Essex on 115 kv.	None	
West	Apr 04 2007 4:00 AM	Apr 11 2007 4:00 PM	Dupont JCT: L23N::DUPONT_JCT::NOVA_ST_CLAIR_R_CTS, L23N::DUPONT_JCT::TALFORD_JCT, L23N::DUPONT_JCT::SHELL_SARNIA_CTS, L23N::DUPONT_JCT::TALFORD_JCT, 40-L23N, L23N::LAMBTON_TS_#2::TALFORD_JCT, L23N::DUPONT_JCT::NOVA_ST_CLAIR_R_CTS, P1-MSO3, L23N::SARNIA_SCOTT_TS::TALFORD_JCT, L23N::SARNIA_SCOTT_TS::TALFORD_JCT, L23N::LAMBTON_TS_#2::TALFORD_JCT, L23L24, L23L24, KL24, 27-L23N, L23N::DUPONT_JCT::SHELL_SARNIA_CTS, 27-L24L, T5-L23, 27-L23N, PL23	4745988	Non-Recallable	CWW	Install new structures and rigid bus. Replace insulators. Check alignment of Lambton 27-L23N	FABC BLIP NBLIP	0 to 300 MW 700 MW 700 MW
West	May 22 2007 4:00 AM	Jun 04 2007 5:00 PM	Sarnia Scott TS: HL23	4759479	Non-Recallable	CWW	Stn Construction to replace oil breaker with new SF6 breaker.	None	
West	Feb 12 2007 5:00 AM	Feb 16 2008 7:00 PM	Wanstead TS: T3-B, SC1B, B, BUS, SC1, M1, M1, BY	4760938	4 Hour	CWW	SCD to complete installation of switches, bus work and breaker for new Wanstead M3 feeder breaker.	None	
West	Dec 26 2006 8:00 AM	Dec 31 2007 6:00 PM	Lambton TS #2: PS4-1, PS4, PS4-2	4764494	30 Minute	CWW	PS4 bypassed for summer to improve the import thermal limits.	None	
West	May 09 2007 4:01 AM	May 16 2007 6:01 PM	Lambton TS #2: L51D, L51D	4785210	Non-Recallable	CWW	MISO outage affecting MICH-ONT interface	FABC BLIP NBLIP Michigan Export Michigan Import	0 to 150 MW 500 MW 500 MW 625 MW 500 MW
West	Apr 13 2007 4:00 PM	Apr 22 2007 4:00 AM	Lambton TS #2: P1-MSO3	4804947	Non-Recallable	CWW	Outage slip to indicate equipment o/s between Outages 19 and 20	None	

(Table C10 continued)

Zone	Planned Start Date	Planned End Date	Equipment O/S	Outage Request Id	Recall Time	Type	Purpose	Major Transmission Interface Impacted	Reduction in Limit
West	Apr 02 2007 6:00 AM	Apr 03 2007 4:00 PM	Lambton TS #2: K1_BUS	4017071	Non-Recallable	CWW	Install new K1-MSO3 loops. Connect L23N circuit to permanent 27-L23N disconnect. Disconnect temporary bypass from L23N to TS. Connect K1 Bus to new diameter at KL37-K P&C to commission new protections on L24L P&C and SMS to commission new L24L diamete	None	
West	May 27 2007 4:00 AM	May 27 2007 4:00 PM	Lambton TS #2: K1_BUS	4412102	Non-Recallable	CWW	Remove section of K1 Bus Remove loops K1-MSO3	None	
West	Jun 10 2007 4:00 AM	Jun 10 2007 4:00 PM	Lambton TS #2: K1_BUS	4412194	Non-Recallable	CWW	Install section of K1 Bus Connect new diameter to K1 Bus Sleeve out K1-MSO3	None	
West	Apr 22 2007 4:00 AM	Apr 22 2007 4:00 PM	Lambton TS #2:P1_BUS	4411935	Non-Recallable	CWW	Remove Ts Bypass	None	
West	May 03 2007 4:00 AM	May 03 2007 4:00 PM	Lambton TS #2:P1_BUS	4412071	4 Hour	CWW	Reconnect section of P1 Bus Connect in new diameter to P1 Bus Sleeve out P1-MSO3	None	
West	May 12 2007 4:00 AM	May 12 2007 6:00 PM	Lambton TS #2:P1_BUS	4848914	4 Hour	CWW	Clearance to install an oil/water separator tank	None	

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