Independent Electricity Market Operator

18-Month Outlook:

An Assessment of the Reliability of the Ontario Electricity System from July 2003 to December 2004

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Executive Summary

The Independent Electricity Market Operator (IMO) publishes quarterly assessments of the reliability of the Ontario electricity system over the next 18 months. This report presents the IMO assessment of the 18-month period from July 2003 to December 2004. This assessment is based on the IMO's forecast of electricity demand, information provided by Ontario generators on the supply available and the latest information on the configuration and capability of the transmission system.

Updates since the last report

There are several updates in this Outlook from the quarterly Outlook published in March 2003, particularly as it relates to the immediate situation being faced this summer.

There remains uncertainty with the timing of the return to service of three laid up nuclear units at Bruce A and Pickering A. Until these nuclear units return to service, Ontario faces a summer supply situation similar to the one experienced last year when extreme temperatures resulted in the supply/demand balance being extremely tight at times with a heavy reliance on supply from other jurisdictions.

Bruce A Unit 4 is now forecast to begin producing power in the second half of July, to be followed by Unit 3 one month later. The first unit at Pickering A is forecast to begin producing power in July. The IMO continues to consider there to be a risk, particularly in July and August, that availability and production from these generating units may be lower than forecast.

These delays from previous forecasts mean that reserves are predicted to be below what is required for the summer, with an increased reliance on imported power expected, particularly during periods of extreme hot weather.

Ontario Power Generation advises that the schedule for the return to service of the second Pickering A unit is under review. At this point in time it is assumed that the unit will not be synchronized to the grid during the time frame of this report.

Following their installation, the temporary generators initiated by the provincial government will help address the tight supply situation to some extent, with the selected proposals representing 409 MW of capacity throughout Ontario.

There have been some updates to the generator outage schedule since the last published report, resulting in a few weeks with higher available resources, but with the majority of weeks having lower available resources.

The latest demand forecast is slightly higher for most weeks throughout the study period compared to the previous forecast. The expectation of continued strong economic performance in 2003 and 2004 has led to this increase.

Temporary Generators

The Ontario government has selected seven proposals to install natural gas-powered generators in Ontario, pending final contract negotiations, interconnection assessments and environmental approvals.

Once installed and made operational, this 409 MW of capacity will be used during emergency supply conditions, usually experienced under peak demand or extreme weather. In this Outlook, these temporary generators are not included in the calculation of available reserve and the associated capacity has not been included in either Resource Scenario presented herein.

Resource Outlook

Two resource scenarios are considered in this Outlook – an Existing Resource Scenario and a Planned Resource Scenario. These are updates to the scenarios presented in the previous Outlook and are summarized below.

Existing Resource Scenario

Under the **Existing Resource Scenario**, reserve margins are forecast to be negative for more than half of the study period. Resource shortfalls are most significant during the summer of 2003 under peak demand conditions, and in the fall of 2003 and May and June 2004, when substantial resource reductions are identified in submitted generator outage programs.

Negative reserve margins throughout much of the Outlook period indicate that forecast reserve levels are below planning requirements. As such, planned generator outages during negative margin weeks are at risk of cancellation by the IMO for reliability purposes depending on their priority and the resource adequacy situation at the time their approval is being sought.

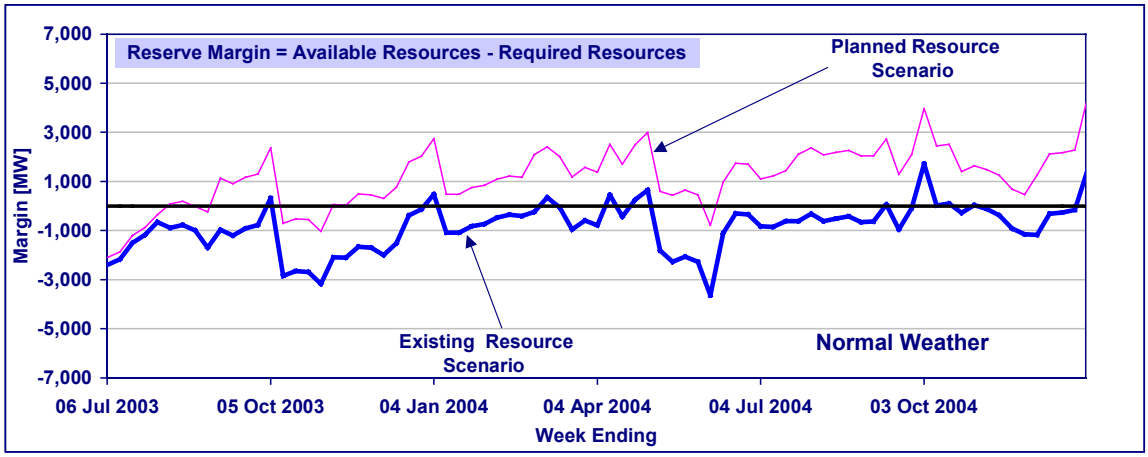
During most of the study period, a combination of high demand levels under extreme weather conditions and lower than forecast levels of available resources could lead to significant reliance on imports and upward pressure on wholesale market prices.

Planned Resource Scenario

The Planned Resource Scenario includes approximately 3,200 MW of additional generation resources that are scheduled to be placed in-service during the Outlook period and 300 MW of price-responsive demand, which was not considered in the Existing Resource Scenario. The generation resources consist of new facilities currently under construction and laid-up nuclear units returning to service, each assumed to be available on the dates provided by market participants.

Under the **Planned Resource Scenario**, the resource adequacy situation is significantly improved when compared to the Existing Resource Scenario. For most of the Outlook timeframe, the forecast available resources exceed the planning requirements. However, periods of negative reserve margins are forecast in July and August 2003, prior to all returning nuclear units being fully available. Negative margins are also forecast in October 2003 and one week in June 2004 when there is significant generator capacity scheduled to be on planned outage.

The following figure illustrates the weekly resource adequacy situation of the Ontario electricity system for the two resource availability scenarios under normal weather conditions. Reserve margins greater or equal to zero mean adequate resources, while reserve margins less than zero mean resources are below planning target levels.



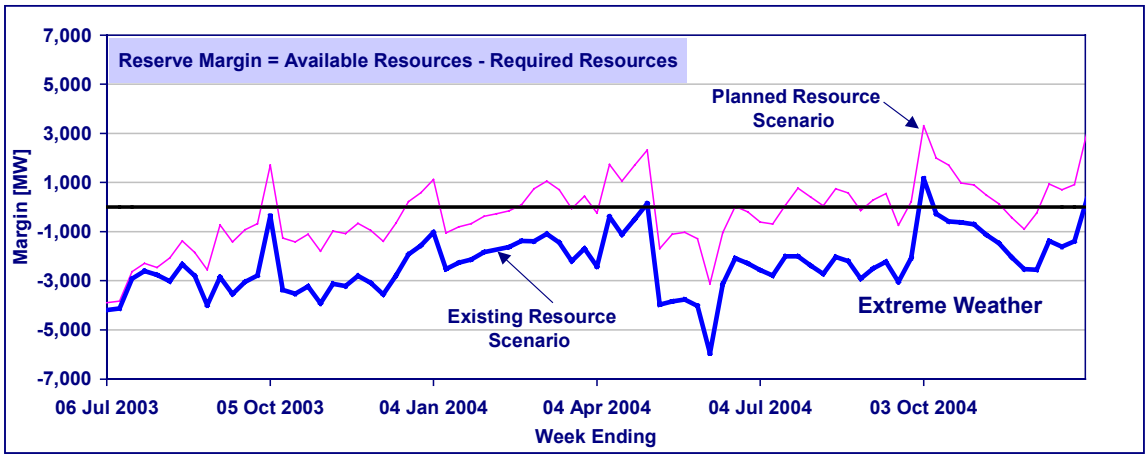
Weather impact

The potential for extremely hot and humid weather conditions, such as those experienced by Ontario during last summer, are covered by the Extreme weather scenario. Under this scenario, reserves range from 1,200 MW to 4,200 MW below the required reserve at the time of the summer 2003 weekly peaks. Increases in generating capacity as forecast in the Planned Resource Scenario or increases in the price responsiveness of wholesale market participants would decrease the reliance on electricity imports.

In order to illustrate the impact of extreme weather on forecast reserve margins during the Outlook period, both the Existing 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 of the period is extremely small; however, when one looks at an entire summer or winter period, the expectation of at least one occurrence of extreme weather becomes considerably higher.

The magnitude of resource deficiencies, under extreme weather and existing resources, clearly illustrates there are circumstances under which reliance on interconnected supply would approach and possibly reach the limits of the transmission system.

The results for extreme weather are shown in the following chart.



Ontario Demand Forecast

The IMO demand forecasting model has been updated to reflect actual economic, demand and weather data through to the end of April 2003. An improved economic outlook and strong performance through the end of 2002 and the beginning of 2003 has raised the forecast of energy and peak demands compared to the previous forecast. Energy demand is expected to be 153.4 TWh for 2003, up from 152.6 TWh in the previous forecast. This represents a 1.4% increase over the weather corrected total for 2002. The seasonal peaks of the forecast horizon are contained in the following table. The Expected Peak is based on the Normal Weather scenario, but accounts for the higher probability of observing extreme weather over an entire season compared with the weekly probability embedded in the Normal Weather forecast. For a more detailed discussion of demand please see the document titled Ontario Demand Forecast from July 2003 to December 2004 (IMO_REP_0122).

Season	Normal Weather Peak (MW)	Expected Peak (MW)	Extreme Weather Peak (MW)
Summer 2003	23,696	25,852	26,436
Winter 2004	24,154	25,452	26,166
Summer 2004	24,047	26,195	26,769

Transmission Outlook

The Outlook related to transmission continues to be similar to previous Outlooks. The transmission system is expected to be adequate to supply demand under the forecast conditions studied in this Outlook. Market participants should recognize that Lakeview, Pickering and Darlington units are required to provide reactive capability to maintain adequate voltage levels, especially during summer peak demand periods.

In the absence of generation additions, some transmission outages will be difficult to schedule without reliability impacts or may be recalled on short notice, as was the experience last year.

- End of Section -

Caution and Disclaimer

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1.0 Introduction

This Outlook covers the 18-Month period from July 1, 2003 to December 31, 2004. It supercedes the report titled "An Assessment of the Reliability of the Ontario Electricity System from April 2003 to September 2004", dated March 25, 2003. Its purpose is to advise market participants of the resource and transmission reliability of the Ontario electricity system, and to assess potentially adverse conditions that might be avoided through adjustment or coordination of maintenance plans for generation and transmission equipment.

Section 2 identifies the resources expected to be available during the study period and Section 3 presents an assessment of the adequacy of these resources under the current generation outage program. An assessment of the reliability of the transmission system is presented in Section 4. Overall observations, findings and conclusions are contained in Section 5.

This Outlook presents an assessment of resource and transmission adequacy based on the stated assumptions, and 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 judgement in considering possible future scenarios. This Outlook provides a base upon which updates in assumptions can be considered. The tables contained in the document can be downloaded from the IMO web site in MS Excel format.

In addition to the comprehensive Outlook, the IMO publishes Interim Updates to the 18-Month Outlook during each month for which a full Outlook is not issued. These updates consist of a spreadsheet which reflects changes to Total Resources, Total Reductions to Resources, and Reserve Margins for the Planned Resource Scenario. Similar to the full Outlooks, the Interim Updates are posted on the IMO web. 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 IMO web site on a weekly and daily basis that progressively supercede information presented in this report.

The contents of this Outlook document focus on the assessment of resource and transmission adequacy. Other supporting information and forecasts are contained in separate documents. These documents will be updated as required.

- The document entitled "Ontario Demand Forecast from July 2003 to December 2004" (IMO_REP_0122) (found on the IMO web site at www.theimo.com/imoweb/pubs/marketReports/18Month_ODF_2003jul.pdf) describes in detail the 18-month forecast of electricity demand for the Ontario Market used in this Outlook. The demand forecast document identifies the assumptions used to determine the forecast and identifies the details regarding peak and energy demand forecasts for the Ontario market and parts thereof. It also contains information regarding variations in demand due to weather, economic growth and calendar day types. Data from the demand forecast document can be downloaded in MS Excel format from the IMO web site.

- The document entitled "Methodology to Perform Long Term Assessments" (IMO_REP_0044) (found on the IMO web site at www.theimo.com/imoweb/pubs/marketReports/Methodology_RTAA_2003jul.pdf) contains information regarding the methodology used to perform the demand forecasts, resource adequacy assessments and transmission reliability assessments in this Outlook.
- The document entitled "Ontario Transmission System" (IMO_REP_0045) (found on the IMO web site at www.theimo.com/imoweb/pubs/marketReports/OntTxSystem_2003jul.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 the IMO Help Centre:

- Toll Free: 1-888-448-7777
- Tel: 905-403-6900
- Fax: 905-403-6921
- E-mail: helpcentre@theIMO.com.

1.1 Updates from Previous Outlook

Updates to Forecast Demands

This forecast of demand has been produced using an updated economic forecast, while the forecasting model itself has been re-estimated based on the most recently observed demand, weather and economic data. The forecasting methodology remains the same as that used in the previous forecast.

The economic outlook has improved significantly for 2003 and marginally for 2004 as Canada's economy is expected to continue its modest growth despite the struggling U.S. economy.

Actual energy demand to date and the economic outlook for the remainder of 2003 has pushed up the forecasted total energy demand for 2003. Energy demand is forecasted to be 153.4 TWh for 2003, 0.8 TWh higher than previously forecasted. More than half of the increase is due to higher actual demand values in the first part of the year, while the remainder is due to the higher forecasted economic growth. Peak demands are, on average, 80 MW higher than the previous forecast. The peaks are marginally higher in July and January (12 MW and 42 MW respectively) with the largest increases occurring in September and June (146 MW and 225 MW0.

Updates to Resources

Bruce A Unit 4 is now expected to begin producing power in the second half of July, and Unit 3 is expected to follow one month later. One Pickering A nuclear unit is identified to return to service within the 18-month period under study and is scheduled to begin producing power in July. The reactivation of the Bruce A units and the Pickering A unit is reflected only in the Planned Resource Scenario.

There have been some updates to the generator outages submitted by market participants.

Updates to Transmission Outlook

The in-service date of the L4D phase shifter has been updated from July 30, 2003 to April 30, 2004, thereby delaying the ability to regulate all the Michigan-Ontario interconnection.

The list of transmission projects and planned and forced transmission outages has been updated from the previous 18-Month Outlook.

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2.0 Resources

This section describes the generation resources that were considered in this Outlook based on information available to the IMO.

2.1 Existing Generation Resources Included in the Study

The existing installed generating capacity within Ontario is summarized in Table 2.1. This includes nuclear, coal, oil, gas, hydroelectric, wood and waste-fuelled generation and results in a total capacity of 30,481 MW.

The capacity of installed generation resources in Table 2.1 does not include Bruce A nuclear units, which are currently being prepared for reactivation. The Bruce A units, together with other additions to generating capacity identified to the IMO, were progressively added to the installed resources, under the Planned Resource Scenario only, as described in Section 2.4.

The four Pickering A nuclear units were included in the list of existing installed generation resources. Only the first Pickering A unit was identified as returning to service within the 18-month period. The reactivation of the Pickering A unit was reflected only in the Planned Resource Scenario.

Table 2.1 Existing Installed Generation Resources[1]

Fuel Type	Total Capacity (MW)	Number of Stations
Nuclear	10,836	4
Coal	7,546	5
Oil / Gas	4,364	22
Hydroelectric	7,669	61
Miscellaneous	66	2
Total	30,481	94

2.2 External Transactions

An ongoing firm purchase of 200 MW was assumed to be delivered to Ontario for the period from the beginning of the Outlook until October 31, 2003; this purchase was explicitly included in the generation resource scenarios described in Section 2.4. No other firm purchase contracts were identified for the study period. There were no firm sales identified at any point in the study period.

2.3 Potential Generation Resource Additions

Table 2.2 summarizes the generation projects in the IMO's Connection Assessment and Approval (CAA) process that are under construction, and are scheduled to be placed in-service within the

[1] In Table 2.1, the number of nuclear stations will increase to five with the operation of the first Bruce A unit.

18-month study period under the Planned Resource Scenario described in Section 2.4. Generator owners or operators have provided the information regarding the status of their projects and the in-service/restart dates listed in Table 2.2.

Table 2.2 Potential Generation Resource Additions in Ontario

Proponent/Project Name	Zone	Fuel Type	Capacity MW	Connection Applicant's Estimated I/S Date
Bruce Power Inc. - Bruce A G4	Bruce	Nuclear	770	July 2003*
Bruce Power Inc. - Bruce A G3	Bruce	Nuclear	770	August 2003*
Imperial Oil	West	Gas	98	April 2004
ATCO - Brighton Beach	West	Gas	578	May 2004
Total			2,216	

* estimated restart date

Details regarding the IMO's Connection Assessment and Approval process and the status of all projects in the queue, including copies of available Preliminary Assessment (PA) and System Impact Assessment (SIA) Reports, can be found on the IMO's web site www.theIMO.com under the "Services - Connection Assessments" link.

2.4 Summary of Generation Resource Scenarios

In assessing future resource adequacy, it is necessary to make a number of assumptions regarding the magnitude of generation resources expected to be available for operation. Two resource scenarios were considered in this Outlook: an Existing Resource Scenario and a Planned Resource Scenario. Both resource scenarios were established starting from the existing installed resources shown in Table 2.1.

The Ontario government has selected seven proposals to install natural gas-powered generators in Ontario, pending final contract negotiations, interconnection assessments and environmental approvals. In aggregate, the selected proposals represent 409 MW of emergency capacity throughout Ontario.

Once installed and made operational, this capacity will be used during emergency supply conditions, usually experienced under peak demand or extreme weather. In this Outlook, these temporary generators are not included in the calculation of available reserve and the associated capacity has not been included in either Resource Scenario presented in this 18-Month Outlook. However, these generating units will provide additional relief under emergency supply conditions.

Under the **Existing Resource Scenario** Ontario generation resources identified in Table 2.1 were assumed to be in-service with the exception of all of the Pickering A nuclear units, which were assumed to be out-of-service for the duration of the study period. Purchases of 200 MW were assumed available up to the end of October 2003. This resource scenario assumed that none of the additional generation resources listed in Table 2.2 would be placed in service over the study period.

Under the Planned Resource Scenario existing Ontario generation resources were assumed to be in-service with the exception of three of the Pickering A units, which were assumed to be out-of-service for the duration of the study period. One Pickering A nuclear unit was identified

as returning to service within the current 18-month period, and was assumed to begin generating electricity in July 2003. Ontario Power Generation advises that the schedule for the return to service of the second Pickering A unit is under review. At this point in time it is assumed that the unit will not be synchronized to the grid during the time frame of this report.

A firm purchase of 200 MW was assumed available up to the end of October 2003. Additionally, all potential generation additions listed in Table 2.2 were included under this scenario.

Forecasts of available resources were derived for each of the two resource scenarios described above, using information regarding generator output capabilities, planned outages, allowances for hydroelectric generation production below rated capacity, assumptions for the amount of price-responsive demand, and major transmission interface limitations.

Table 2.3 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 installed resources in Table 2.3 start with the values listed in Table 2.1 and are incremented, for the Planned Resource Scenario, by the generation resource additions listed in Table 2.2. Imports consist of the purchases that were assumed to be delivered to Ontario as described in Section 2.2. The total reductions to resources include generator deratings, generator planned outages under each resource scenario, capacity limitations due to transmission interface constraints and allowances for hydroelectric generation production below rated capacity. The total reductions were subtracted and the price-responsive demand was added to the total resources, to obtain the available resources. In this Outlook, an amount of 300 MW of price-responsive demand was assumed to be available only under the Planned Resource Scenario, as shown in Table 2.3.

Table 2.3 Summary of Available Resources

Notes	Description \ Year	Summer Peak 2003		Winter Peak 2004		Summer Peak 2004	
		Existing Resource Scenario	Planned Resource Scenario	Existing Resource Scenario	Planned Resource Scenario	Existing Resource Scenario	Planned Resource Scenario
1	Installed Resources (MW)	30,481	30,481	30,481	32,021	30,481	32,697
2	Imports (MW)	200	200	0	0	0	0
3	Total Resources (MW)	30,681	30,681	30,481	32,021	30,481	32,697
4	Total Reductions in Resources (MW)	5,319	5,319	3,949	4,217	3,685	4,015
5	Price-responsive Demand (MW)	0	300	0	300	0	300
6	Available Resources (MW)	25,362	25,662	26,532	28,104	26,796	28,982

Notes to Table 2.3:

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 IMO-administered markets at the beginning of the 18-month period, except Bruce A nuclear units. 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, under each of the two scenarios, the sum of generator deratings, generator planned outages under each resource scenario, generation

limitations due to transmission interface constraints and allowances for hydroelectric generation production below rated capacity.

5. Price-responsive Demand: This is the amount of price-responsive demand assumed under each resource scenario.

6. Available Resources (MW): This equals Total Resources (line3) minus Total Reductions in Resources (line 4) plus Price-responsive Demand (line 5).

2.5 Energy Production Capability Forecast

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

- End of Section -

3.0 Resource Adequacy Assessment

This section provides an assessment of the adequacy of the resources described in Section 2 to meet the forecast demand. The purpose of the two resource scenarios described in Section 2.4 is to present a range of possible outcomes, in recognition of the uncertainty which exists regarding the future availability of resources. The Existing Resource Scenario, which assumes no generation resource additions and no price-responsive demand, represents the lower boundary of the range, considering the potential for delays to the in-service dates of additional generation capacity, especially from nuclear resources. The Planned Resource Scenario, which assumes 300 MW of price-responsive demand and capacity additions based on project status and in-service date estimates, represents the higher boundary of the outcome range.

As mentioned in Section 1, the methodology used to carry out this assessment is described in detail in the document titled "Methodology to Perform Long Term Assessments" (IMO_REP_0044). Results of the adequacy assessment, as well as an analysis of risk factors, are described in Sections 3.1 through 3.4. Observations, findings and conclusions are provided in Section 5, and detailed tables of results can be found in Appendix A of this document.

3.1 Weekly Adequacy Assessment

The assessment of weekly adequacy takes into consideration a range of forecast demands based on a probability distribution of historical weather data. Margins have been calculated assuming both normal weather (with an allowance for the probability of experiencing extreme weather) and assuming extreme weather (with no further allowance for weather uncertainty). Figure 3.1 shows the normal and extreme weather demands assumed for each week in the study period.

Figure 3.1 Demand Forecast Range

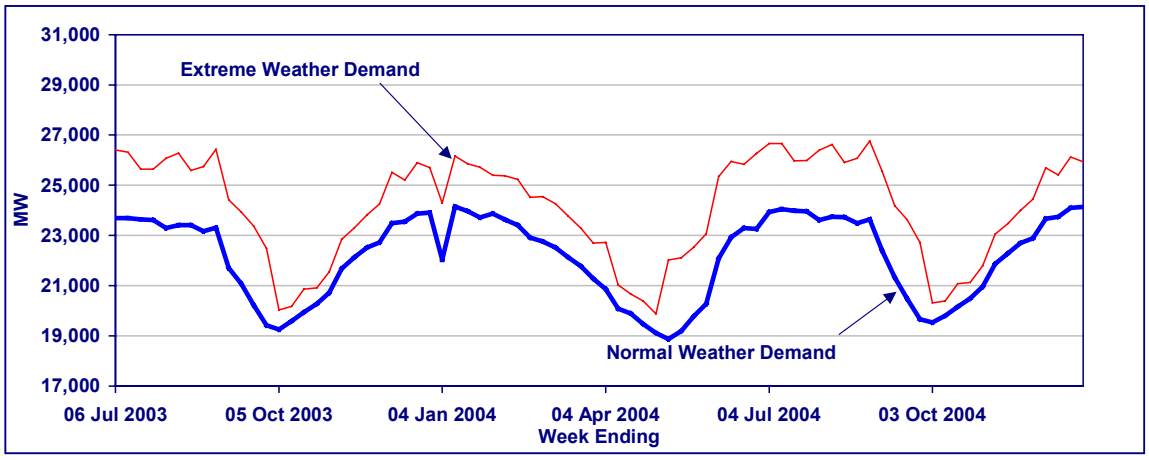


Figure 3.2 shows the Total Reductions in Resources used in the calculation of the Available Resources (as described in Section 2.4).

Figure 3.2 Total Reductions in Resources

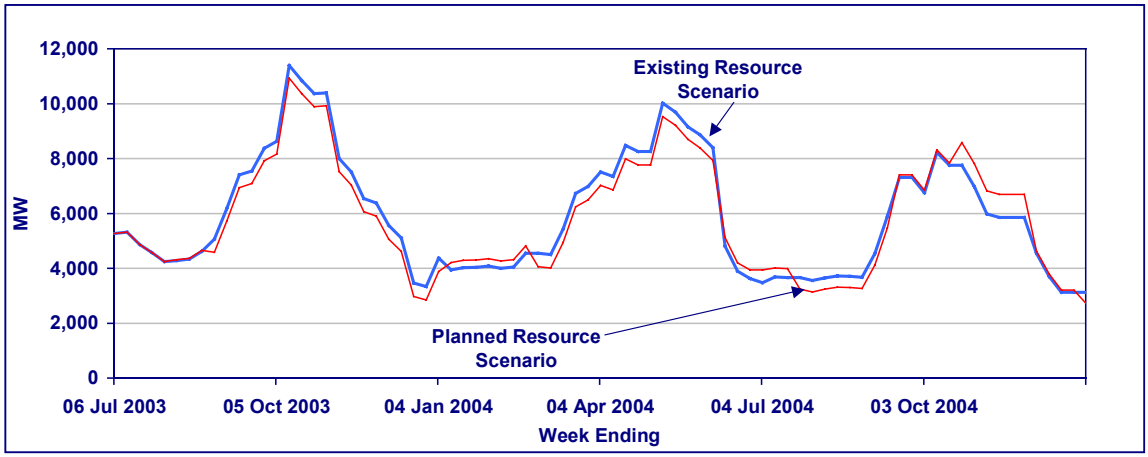


Figure 3.3 provides a comparison between Available Resources, and Required Resources for each week, for the Existing Resource Scenario. The latter quantity is based on a probabilistic calculation, which takes into account load forecast uncertainty due to weather and random generator forced outages. Figure 3.4 provides a similar comparison for the Planned Resource Scenario.

Figure 3.3 Available vs. Required Resources: Existing Resource Scenario

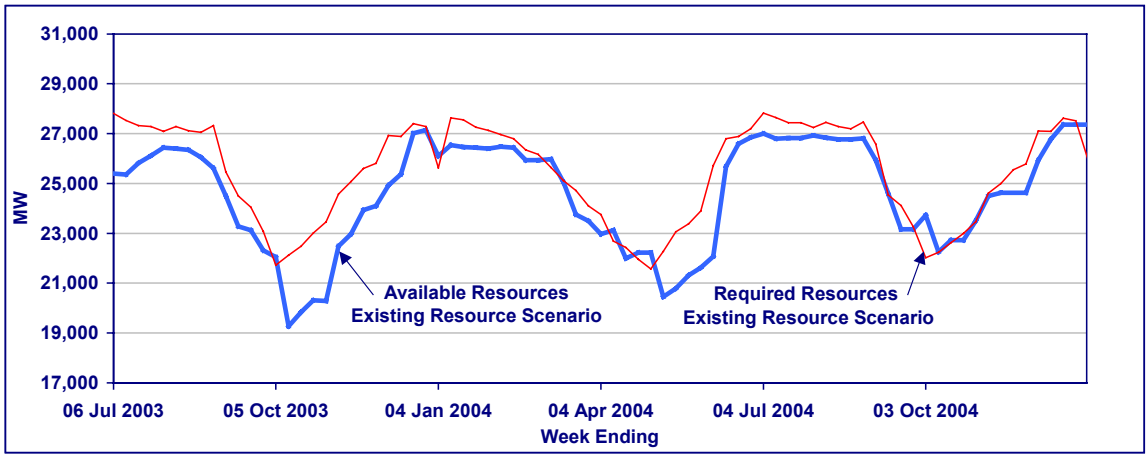
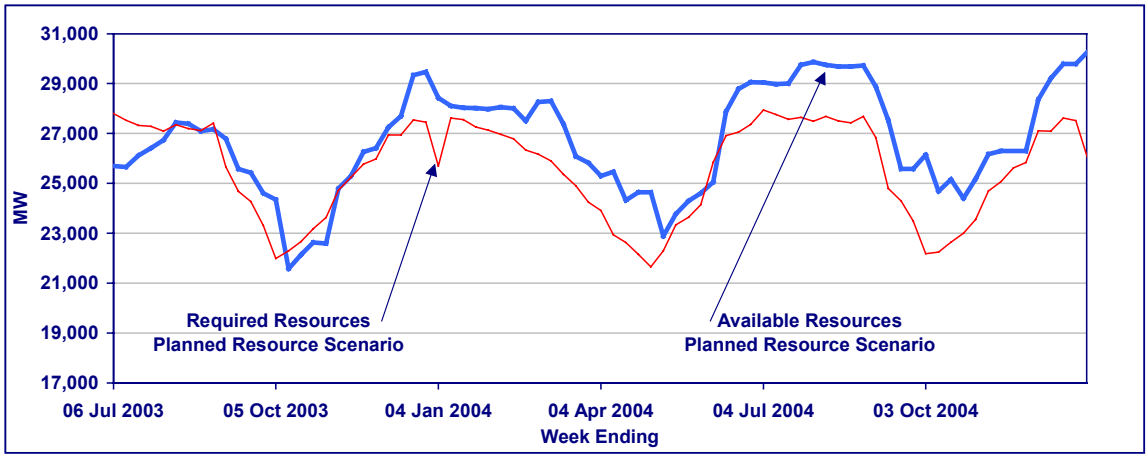
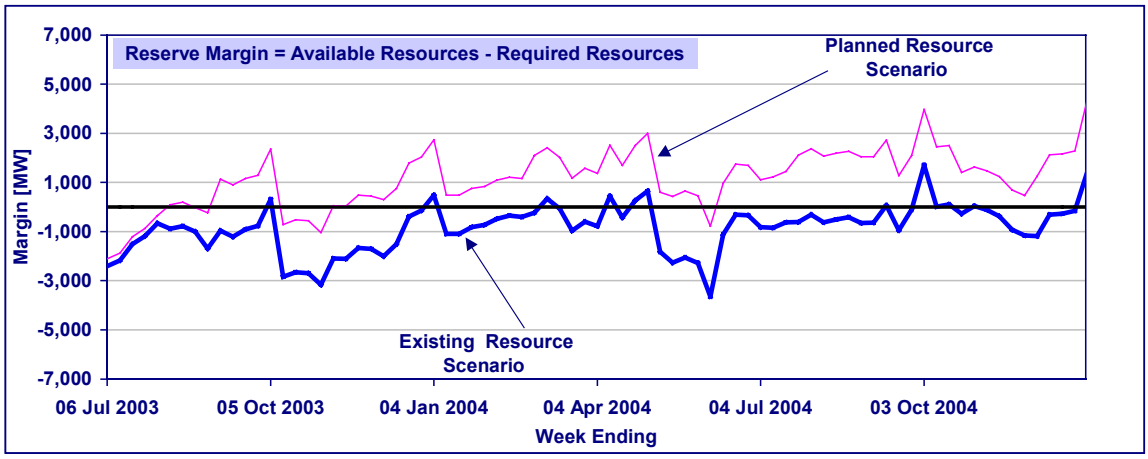


Figure 3.4 Available vs. Required Resources: Planned Resource Scenario



Reserve Margins, which represent the difference between Available Resources and Required Resources, are shown in Figure 3.5 for each resource scenario studied.

Figure 3.5 Reserve Margins: Existing Resource Scenario and Planned Resource Scenario



Under the **Existing Resource Scenario**, reserve margins are forecast to be negative for most of the study period, with few exceptions. Resource shortfalls are most significant during the summer of 2003 under peak demand conditions, and in the fall of 2003 and May and June 2004, when substantial resource reductions are identified based on submitted generator outages. For the fall 2003 period, IMO has conducted reliability studies that consider the specific set of outages which are scheduled. Those studies were completed in late April, and specific resource availability requirements were identified to affected generator participants. The IMO is currently involved in active dialogue with those participants to implement the necessary outage adjustments. Once completed, these outage adjustments will ease some weeks of shortfall in October and early November. Negative reserve margins throughout most weeks of the Outlook period indicate that forecast resource levels are below planning requirements. As such, planned generator outages during negative margin weeks are at risk of cancellation by the IMO for reliability purposes depending on their priority and the resource adequacy situation at the time

their approval is being sought. Given the large number of weeks with negative margins in this scenario, to the extent this scenario materializes, opportunities for additional planned generator maintenance would be limited and in most weeks imports would be necessary.

The above results must be assessed considering the risk factors described in Section 3.3. During most of the study period, a combination of high demand levels under extreme weather conditions and lower than forecast levels of available resources could lead to significant reliance on imports and upward pressure on the wholesale market prices. During the summer of 2002, under such conditions, import levels approached, and occasionally reached, the Ontario coincident import capability of approximately 4,000 MW.

Under the **Planned Resource Scenario**, the resource adequacy situation is significantly improved when compared to the Existing Resource Scenario described above. For the Outlook timeframe, forecast available resources exceed requirements, with the exception of the month of July, a couple of weeks in August, four weeks starting early in October 2003, and the first week of June 2004. To the extent this scenario materializes, opportunities exist for additional planned generator maintenance and exports. Again, the risk factors described in Section 3.3 must be considered.

Figures 3.6 and 3.7 provide a comparison between the forecast reserve margins in the present Outlook and the forecast reserve margins in the previous Outlook. Further details showing weekly values are provided in Appendix A. When compared to the last Outlook published on March 25, 2003, forecast reserve margins, under both resource scenarios studied, are generally lower for the Outlook period, due mainly to updates in the generator outage program.

Figure 3.6 Reserve Margin: Existing Resource Scenario vs. Previous Existing Resource Scenario

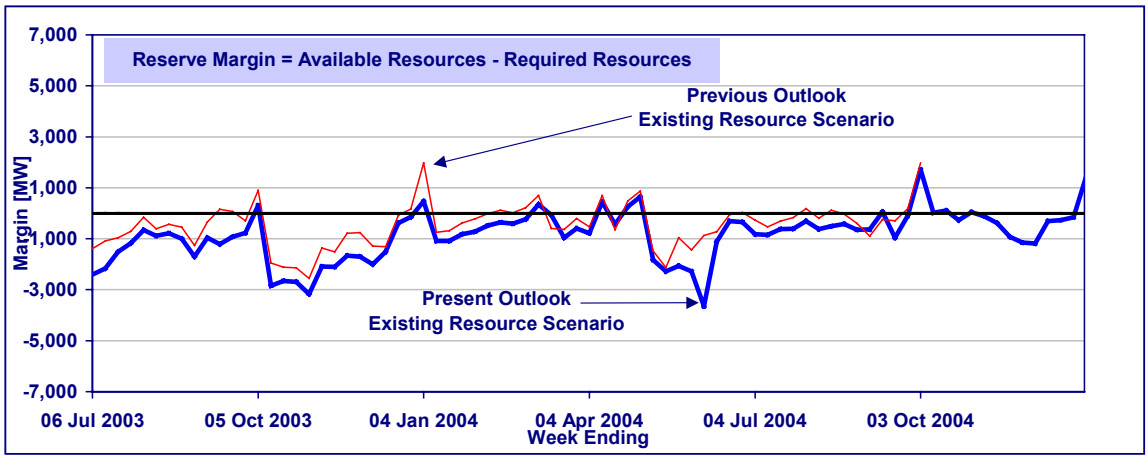
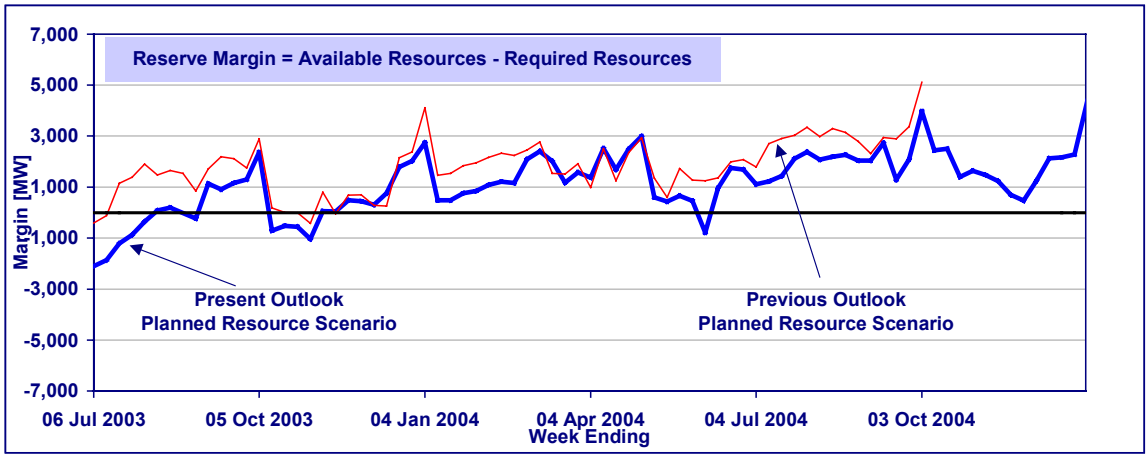


Figure 3.7 Reserve Margin: Planned Resource Scenario vs. Previous Planned Resource Scenario



The IMO will closely monitor the resource situation and implement available control actions, if required, in accordance with the Market Rules. Tight demand/supply balances during periods of negative reserve margins will have several potential market impacts. These include upward pressure on the wholesale market prices and limited opportunities for the IMO to approve the release of generators for planned maintenance. Various responses can be anticipated and would be relied upon in these circumstances, including: for Ontario generators, maximizing their availability to offer into the Ontario market; for marketers, arranging imports to help meet anticipated Ontario requirements; and for large consumers, taking measures to reduce their electricity consumption.

3.2 Loss of Load Expectation

A number of simulations were performed to calculate the Loss of Load Expectation (LOLE) during the study period. The simulations started from the two resource scenarios described in Section 2.4 and used the methodology described in Section 2.3 of the document "Methodology to Perform Long Term Assessments" (IMO_REP_0044). The calculations were performed in two steps. In the first step, the resource availability was established based on the same levels that were used in the calculations described in Section 3.1. In the second step, additional resources were made available to Ontario, with the purpose of reducing the LOLE value to the target level. The target LOLE value is equivalent to an annual LOLE of 0.1 days/year. The modeling of additional resources was carried out in accordance with the NPCC resource adequacy criterion, which allows for supplemental capacity in the form of interconnection assistance, outage rescheduling and implementation of emergency operating procedures.

Simulation results indicate that, in order to achieve the target LOLE, additional resources would be required, approximately to the level necessary to offset the margin deficiencies under each of the two resource scenarios, shown in Tables A1 and A2 in Appendix A.

3.3 Resource Adequacy Risks

The forecast reserve margins for both the Existing Resource Scenario and the Planned Resource Scenario should be assessed bearing in mind the risks discussed below. Each of these risks, whether considered alone or in combination with the others, could result in lower than forecast reserve margins and the need for high levels of imports or curtailment of planned outages.

3.3.1 Extreme Weather

The Existing 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 accounted for probabilistically in the calculation of the required resources for each week of the study period. The impact of extreme weather was demonstrated in August 2002, when Ontario established an all-time peak demand of 25,414 MW. Approximately 1,700 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 margins during the Outlook period, both the Existing 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 infinitesimally small; however the probability of an occurrence in any given week is greater (about 2.5 percent). When one looks at the summer or winter periods, the expectation of at least one occurrence of extreme weather becomes considerably higher. Results for extreme weather are shown in Figures 3.8, 3.9, and 3.10.

The magnitude of resource deficiencies, under extreme weather, clearly illustrates there are circumstances under which reliance on interconnected supply would approach and possibly reach the limits of the transmission system. Because imports cannot provide supply much above 4,000 MW, even under ideal conditions, the need for other participant impactive actions, such as outage rescheduling, emphasizes the need for new supply and demand responses within Ontario.

Figure 3.8 Available vs. Required Resources: Existing Resource Scenario Extreme Weather Demand

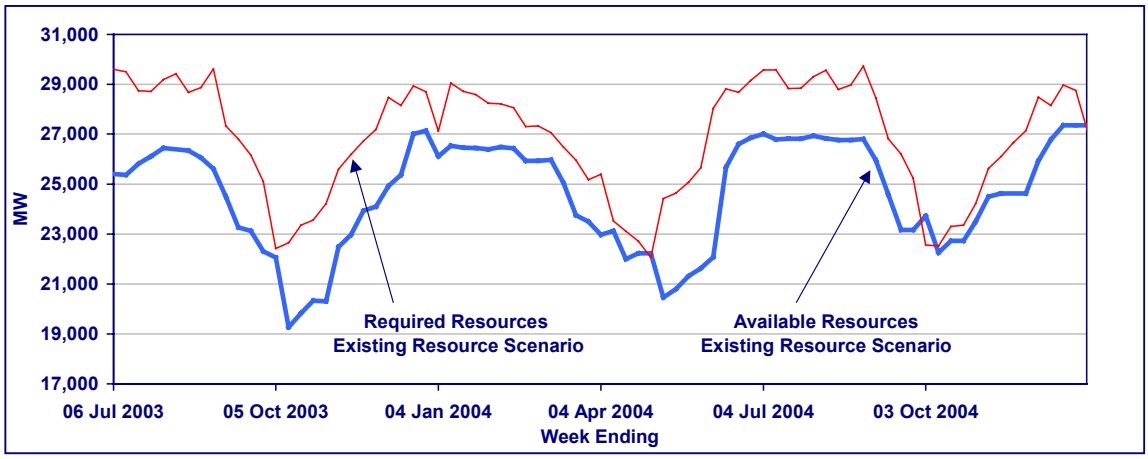


Figure 3.9 Available vs. Required Resources: Planned Resource Scenario Extreme Weather Demand

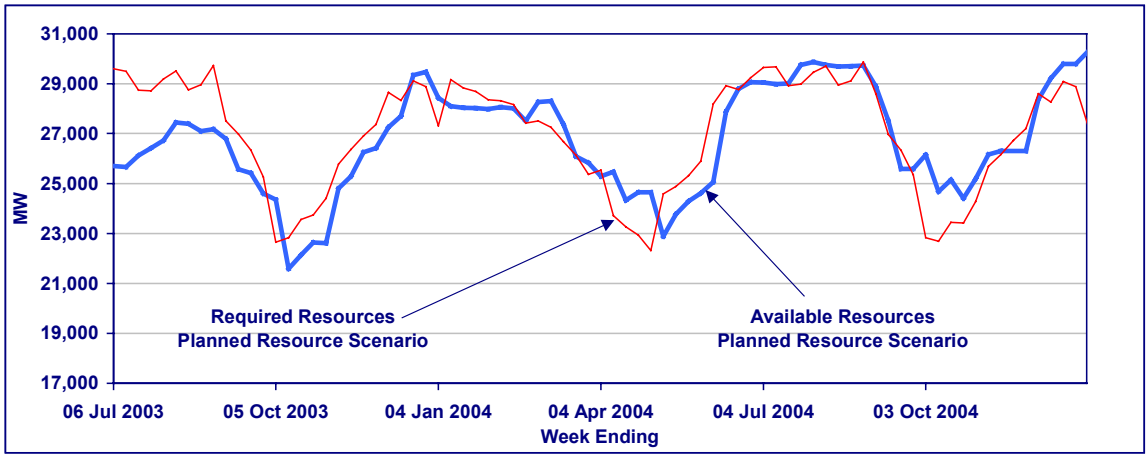
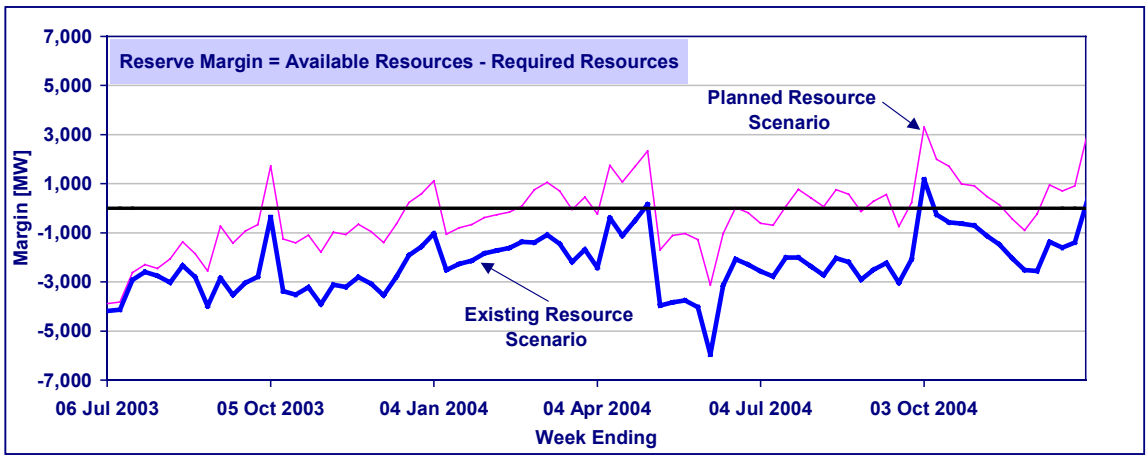


Figure 3.10 Reserve Margin: Existing Resource Scenario and Planned Resource Scenario, Extreme Weather Demand



3.3.2 Generator Return to Service Delays

The majority of additional resources forecast for the study period come from laid-up nuclear units returning to service. The improved demand/supply situation for the Planned Resource Scenario is critically dependent on these units returning to service on schedule. There remains uncertainty with the timing of the return to service of three laid up nuclear units at Bruce A and Pickering A. Until the nuclear units return to service, Ontario faces a summer supply situation similar to the one experienced last year when extreme temperatures resulted in the supply/demand balance being extremely tight at times with a heavy reliance on supply from other jurisdictions.

3.3.3 Extensions to Generator Planned Outages

A couple of large generating units are scheduled to return to service from outage at the beginning of summer 2003, with numerous others scheduled to return from planned outages just prior to winter 2003/04. Similar to the return of laid-up nuclear units, meeting these schedules is critical

to maintaining positive reserve margins. Delays in commissioning new units or returning generators to service, whether from lay-up or maintenance outages, could once again lead to extensive reliance on imports as has been the case during the summer of 2002.

3.3.4 Higher than Forecast Generator Unavailability

IMO 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. If the actual amount of generator forced outages is higher than the calculated allowance, reserve margins could be lower than the forecast values.

3.3.5 Lower than Forecast Hydroelectric Resources

IMO resource adequacy assessments include forecast amounts of hydroelectric generation provided by market participants. The amount of available hydroelectric generation is greatly influenced both by water-flow conditions on the respective river systems and the way in which water is utilized.

Water-flow conditions are primarily influenced by the amount of precipitation received. To accurately forecast precipitation amounts so far in advance is impossible. Drought conditions over some or all of the study period would lower the amount of generation available from hydroelectric resources.

Experience over the summer of 2002 has also shown that even when sufficient capacity is available, its use can be limited because of a lack of energy due to scheduling decisions. An example of this occurs when peaking hydroelectric generation is operated extensively during the early portion of a week in response to market signals and, as a result, there is insufficient water available in storage reservoirs to support required levels of operation later in the week.

3.4 External Resources

An analysis of historical power flows on Ontario's interconnections for the five years prior to 2002 shows that outside of summer peak demand periods up to 1,800 MW of external generation resources might be expected to be available to Ontario. During Ontario's summer peak demand periods of July and August opportunities for imports still exist and imports are still expected to be available despite the fact that many neighbouring systems are often experiencing their peak demand. This is mainly due to the non-coincidence of the daily peak hours between Ontario and its neighbours and the availability of spare capacity from systems that are not summer peaking. From the same analysis, up to 1,400 MW would be expected to be available based on observations during summer peak months in recent years prior to 2002.

The actual hourly import levels experienced from market opening in May 2002 up to February 11, 2003 indicates an average import level of 1,088 MW for all hours. During the 1,440 hours when Ontario demand exceeded 20,000 MW the average import level was 1,622 MW. During the 225 hours when Ontario demand exceeded 23,000 MW the average

import level was 2,371 MW, and occasionally reached the Ontario coincident import capability of approximately 4,000 MW.

Future levels of imports into Ontario will vary depending on several factors, including the availability and willingness of resources in external jurisdictions to supply the Ontario market, and the availability of required transmission capacity.

- End of Section -

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4.0 Transmission Reliability Assessment

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

4.1 Transmission Projects

Committed transmission projects summarized in Appendix B by transmission zone represent a subset of the transmission projects in the CAA queue. Only those projects that materially change a connection and/or an electrical characteristic associated with a connection to the IMO-controlled grid, and that have an estimated in-service date within the 18-month period under study are listed.

By April 30, 2004, it is expected that a new 845 MVA phase angle regulator (PAR) for 230 kV circuit L4D will be placed in-service. With the placing in-service of this PAR, all tie lines associated with the Ontario – Michigan interconnection will have phase shifting capability. Full phase shifting control of the interconnection can be utilized when the B3N, L4D and L51D PARs are not operated at their neutral tap.

4.2 Planned Transmission Outages

The 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 IMO controlled grid that could require contingency planning by market participants or by the IMO. As a result, the transmission outages are reviewed to identify transmission system reliability concerns and to highlight those outages that could be rescheduled.

The assessment of transmission outages will also identify any resources that are constrained off due to transmission outage conditions. Transmitters and generators are expected to have a mutual interest in developing an ongoing arrangement to coordinate their outage planning activities. Transmission outages that may affect generation access to the IMO-controlled grid should be coordinated with the generator operators involved, especially at times when reserve margins are negative. 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 IMO, the IMO will inform the affected market participants and request that they resolve the conflict. If the conflict remains unresolved, the IMO shall 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 as of the beginning of May 2003 were used.

The IMO'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. The

methodology used to assess the transmission outage plans is described in the IMO document titled "Methodology to Perform Long Term Assessments" (IMO_REP_0044).

In summary, only a few of the planned outages will potentially impact transmission system reliability and available resources. The outages with the highest potential impact are listed below:

East Zone

The IMO is concerned with the September 15, 2003 and September 16, 2003 to September 21, 2003 outages for the Chenaux Project involving the addition of two new 230 kV breakers and the reconnection of transformer T4. These two outages may limit the amount of 115 kV load that can be supported in the Renfrew area. The amount of load that can be supported during these two outages will vary from approximately 55 MW to 115 MW depending on the Chenaux Project outage conditions and the available hydroelectric generation from Chenaux and Quebec. It is estimated the Renfrew area demand could vary from a peak of approximately 110 MW to an off peak value of approximately of 75 MW. In addition, the Renfrew area supply/demand balance required for the duration of these outages may not be met due to energy limitations typically associated with hydroelectric supply. In the approval timeframe of these outages, the IMO may delay or cancel the outages if the hydroelectric production capability is not expected to be sufficient to meet the demand. The IMO also suggests that the transmitter review the September 16, 2003 to September 21, 2003 outage to see if the duration of the outage can be shortened.

As detailed in Table C2, Appendix C, Chenaux generation is constrained off for four of the five Chenaux Project outages.

For the scheduled St. Lawrence 230 kV B31L terminal outage (listed as D bus, 49-B31L, L31L33 and AL31 in Table C2) from November 3, 2003 to November 9, 2003, the import capability of the Ontario – Quebec South Interconnection is expected to be reduced by 400 MW. Negative reserve margins are forecast for the outage duration under the Existing Resource Scenario. In the approval timeframe, the IMO may cancel or defer the outage if imports above 400 MW are required on this interconnection to maintain supply reliability.

Northwest Zone

There are several scheduled outages in 2003 and 2004 that will reduce the transfer capability between Ontario and Manitoba by between 50 and 100 MW, and in some cases, will reduce the transfer capability between Ontario and Minnesota by between 25 and 50 MW. These outages will also reduce the East-West Transfer East (EWTE) capability by between 50 and 75 MW, further reducing dispatching flexibility in the Northwest zone and requiring more coordination in the planning of generation and other transmission outages.

For the scheduled 230 kV K24F circuit outage from October 6, 2003 to November 28, 2003, negative reserve margins are forecast for all weeks under the Existing Resource Scenario and for some weeks (October 6 to November 2) under the Planned Resource Scenario. If imports and/or the full capability of the EWTE interface are required to maintain supply reliability, the IMO may defer or cancel outages.

For scheduled 230 kV K23D, A21L, A22L and D26A circuit outages in 2004, negative reserve margins are forecasted to coincide with the outage periods under the Existing Resource Scenario.

For the A21L circuit outage, a negative reserve margin is also forecasted for one week in late May and early June under the Planned Resource Scenario. Like the K24F outage scheduled in 2003, the IMO may defer or cancel outages if there any supply reliability concerns.

Toronto Zone

The scheduled 115 kV H7L and H11L Hearn x Main 115 kV circuit outages from September 15, 2003 to January 15, 2004 may, depending on the prevailing load levels, result in the thermal overloading of other 115 kV circuits in the local operating area and high voltage problems at Main Transformer Station. The impact of these outages will be reassessed by the IMO at the time their approval is being sought. The IMO may defer or cancel the outages if thermal overloading of other 115 kV circuits is expected to occur. Given the short recall time associated with these outages, the IMO may also release the outage but recall it for those periods where thermal overloading is a concern.

West Zone

In the previous 18-Month Outlook, scheduled outages at the Scott Transformer Station from April 2003 to June 2003 were detailed. The outages are required to allow the transmitter to upgrade station facilities that would remove a 25 kA fault level restriction at the station. Most of the scheduled outages also required the removal from service of additional equipment to respect the fault level restriction. The last outage – the AL25 breaker – associated with this work is forecast to be completed in early July 2003. This outage does not require any additional equipment removed from service to respect the fault level restriction.

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 transmission outages of lesser duration associated with a major project. The IMO 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 IMO will reassess the outage for potential system impacts, taking into account all current and forecasted conditions.

4.3 System Voltage, Thermal Limits and Supply Reliability

As in previous Outlooks, low system voltage concerns in certain sub-areas of the province may limit some generation and transmission outages from being planned during summer peak demand periods. The various system voltage concerns are described below.

In the Windsor area, load growth will continue to stress the capability of the existing system under extreme-weather, summer peak conditions, such that voltages are expected to be near the low end of the acceptable range even with most static reactive sources in-service. In addition, maintaining acceptable voltage levels may require restrictions on the use of the J5D interconnection with Michigan for exports, particularly during summer peak periods. Planned outages to generating units and/or transmission circuits during peak load conditions with coincident purchases from Michigan will require special control actions to prevent post-contingency thermal overloading of transmission facilities. The special control actions could include the splitting of the Windsor 115 kV local area and arming of the Kingsville under-voltage load rejection scheme. Splitting the Windsor area will result in some Windsor 115 kV loads being served by a single supply. Avoiding planned outages in this area during peak load

conditions is desired. The addition of the Brighton Beach generation project by 2004-Q2 will improve the voltage profile in this area.

When peak demands exceeded 25,000 MW in August 2001 and July, August, and September 2002, pre-contingency voltage levels in the Toronto zone were acceptable but with little margin for contingencies. The reactive requirement to maintain voltage levels at or above the minimum required levels was very high. Most static reactive resources and transmission elements were required in-service and the Lakeview, Pickering and Darlington units had to supply higher than normal amounts of reactive power. The high demand for reactive power left significantly lower than normal reactive margin for contingencies. The performance of these units in providing reactive power to maintain acceptable voltage levels in the Toronto zone during summer peak periods is extremely important. Planned outages and restrictions on the use of the reactive capability of the Lakeview, Pickering and Darlington units should be avoided during summer peak periods. The planned addition by the transmitter of a 125 MVAr capacitor at the Hearn Switching Station prior to the start of this Outlook study period will improve the voltage profile in this area under summer peak conditions.

High transmission facility thermal loadings were also observed during the August 2001 and July and August 2002 hot weather conditions. With some local generating facilities operating at less than full output, the 500/230 kV autotransformers located at the Cherrywood Transmission Station in the Toronto zone were operated at power levels near, but below their continuous ratings. The reactivation of the first Pickering A unit will help alleviate loading levels on the Cherrywood autotransformers because the unit will be connected to the IMO-controlled grid via the 230 kV transmission network.

Under 2002 summer peak conditions, loadings on the 230/115 kV Burlington autotransformers in the Southwest zone were also high. For a contingency involving the loss of one autotransformer, the post-contingency loading on the remaining three autotransformers would have been at levels near the 10-Day Limited Time Ratings. This concern is expected to continue under 2003 summer peak conditions. The planned addition by the transmitter of 125 MVAr, 115 kV capacitor bank at Burlington TS by the second quarter of 2004 will help alleviate this concern and provide additional voltage support in the area.

In the Northwest zone at least one of the two generators, in combination with the condenser, at Thunder Bay is required to be in-service, most of the time, to maintain minimum voltages in the area, at times of peak load. Coincident planned generator outages are a concern since the condenser in service by itself may not be able to maintain minimum voltage requirements. In addition, on loss of the condenser, the Thunder Bay G2 unit is required in service in order to restore the condenser to service. Avoiding planned generator outages during peak load conditions may be required to alleviate this concern. The expected installation of an 80 MVAr shunt capacitor at Birch Transformer Station by 2003-Q4 will result in an improvement of the 115 kV voltage profile in the area and increased reliability in the local peak load supply.

There are also requirements for specific generating unit availability and specific transmission availability in the Toronto zone in order to maintain supply reliability of the Toronto zone during other time periods, in particular as a result of significant planned outages to generating stations close to Toronto. In these situations, transmission capacity on the Flow East Towards Toronto (FETT) interface needs to be maintained as high as possible. Planned outages on the transmission facilities affecting the FETT interface should be avoided. The IMO has identified the exact

periods of concern and provided specific requirements to affected transmitters and generators separate from this Outlook.

4.4 Forced Outages

Due to a forced outage, 230 kV circuit B3N is unavailable until July 11, 2003. This outage does not materially reduce the Ontario – Michigan import capability. However, the export capability may reduce by approximately 500 MW.

The 230 kV B3N phase angle regulator (PAR) in Michigan is also unavailable until August 31, 2003. Since full PAR control of the Ontario – Michigan interconnection cannot be utilized until the L4D PAR is also in-service, this outage does not affect the import and export transfer capability of this interconnection.

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5.0 Overall Observations, Findings and Conclusions

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

Resource Adequacy

- Under the Existing Resource Scenario, reserve margins are forecast to be negative for most of the study period, with few exceptions. Resource shortfalls are most significant during the summer of 2003 under peak demand conditions, and in the fall of 2003 and May and June 2004, when substantial resource reductions are identified based on submitted generator outages. A portion of the reserve shortfall in the fall of 2003 is expected to be mitigated by rescheduling certain generating unit outages to support more critical outage programs.
- Under the Planned Resource Scenario, the resource adequacy situation is significantly improved when compared to the Existing Resource Scenario. For the Outlook timeframe, forecast available resources exceed requirements, with the exception of the month of July, a couple of weeks in August, four weeks starting early in October 2003, and the first week of June 2004. Opportunities exist for additional planned generator maintenance and exports.
- 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.

	Normal Weather	Extreme Weather
Existing Resources	**- many planned outages at risk - imports required for much of the study period**	**- most planned outages at risk - imports maximized during peak periods - increased risk of insufficient supply**
Planned Resources	**- some periods with opportunities for additional outages/exports - some periods where imports may be required**	**- many planned outages at risk - imports required during peak periods - risk of insufficient supply in summer 2003**

- Tight demand/supply balances during periods of negative reserve margins will have several potential market impacts. These include upward pressure on wholesale market prices during peak demand periods and limited opportunities for the IMO to approve the release of generators for planned maintenance. Various responses can be anticipated in these circumstances, including: for Ontario generators, maximizing their availability to offer into the Ontario market; for marketers, arranging imports to help meet anticipated Ontario requirements; and for large consumers, taking measures to reduce their electricity consumption.
- The magnitude of resource deficiencies under extreme weather, clearly illustrates there are circumstances under which reliance on interconnected supply would be stretched to the limits

of the transmission system in the existing resource scenario. The risk of even short-duration inability to meet demand during such conditions emphasizes the need for additional supply and price-responsive demand within Ontario.

- The majority of additional resources forecast for the study period come from laid-up nuclear units returning to service. An improved supply/demand situation is critically dependent on these units returning to service on schedule. To date, no laid-up nuclear unit has been returned to service in Ontario. Until the nuclear units return to service, Ontario faces a summer supply situation similar to the one experienced last year when extreme temperatures resulted in the supply/demand balance being extremely tight at times with a heavy reliance on supply from other jurisdictions.
- A couple of large generating units are scheduled to return to service from outage at the beginning of summer 2003, with numerous others scheduled to return from planned outages just prior to winter 2003/04. Similar to the return of laid-up nuclear units, meeting these schedules is critical to maintaining positive reserve margins.
- High generator unavailability, whether caused by higher forced outage rates, delays in commissioning new units or returning generators to service, could once again lead to extensive reliance on imports as was the case during 2002. Under these circumstances, opportunities for planned outages, especially during the summer period, would be very limited.
- Lower than forecast amounts of hydroelectric resources, due to drought conditions over some or all of the study period, or due to scheduling decisions, would reduce the available resource levels and increase the risk of energy shortages.
- Over the 18-month period under study, accounting for the availability of imported regional supply, the Northeast Power Coordinating Council resource adequacy criterion is expected to be met.

Transmission Adequacy

- There are some planned transmission outages that may reduce transmission capacity during the study period. These outages will be reassessed by the IMO during the approval timeframe.
- Avoiding planned outages and maximizing the reactive capability of the Lakeview, Pickering and Darlington units is required to maintain voltage levels above the minimum required levels in the Toronto zone during summer peak conditions.
- Avoiding planned transmission outages affecting the Flow East Towards Toronto (FETT) interface during significant planned outages to generating stations close to Toronto in the fall of 2003 will be required to maintain supply reliability to the Toronto zone.
- Restricting planned outages to transmission facilities in the Windsor area will assist in maintaining adequate voltage levels during summer peak periods
- Rotating reactive resources in the Thunder Bay area will continue to be required to address local voltage concerns.

- End of Section -

Appendix A Resource Adequacy Assessment Details

Table A1 Assessment of Resource Adequacy: Existing Resource Scenario

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
06-Jul-03	30,681	5,282	0	25,399	27,804	7.2	1,714	17.4	4,119	-2,405
13-Jul-03	30,681	5,319	0	25,362	27,530	7.0	1,666	16.2	3,834	-2,168
20-Jul-03	30,681	4,864	0	25,817	27,325	9.2	2,179	15.6	3,687	-1,508
27-Jul-03	30,681	4,573	0	26,108	27,283	10.6	2,491	15.5	3,666	-1,175
03-Aug-03	30,681	4,249	0	26,432	27,089	13.5	3,138	16.3	3,795	-657
10-Aug-03	30,681	4,284	0	26,397	27,286	12.7	2,982	16.5	3,871	-889
17-Aug-03	30,681	4,335	0	26,346	27,123	12.6	2,941	15.9	3,718	-777
24-Aug-03	30,681	4,623	0	26,058	27,055	12.5	2,899	16.8	3,896	-997
31-Aug-03	30,681	5,066	0	25,615	27,314	9.9	2,310	17.2	4,009	-1,699
07-Sep-03	30,681	6,188	0	24,493	25,457	12.9	2,793	17.3	3,757	-964
14-Sep-03	30,681	7,402	0	23,279	24,490	10.5	2,202	16.2	3,413	-1,211
21-Sep-03	30,681	7,551	0	23,130	24,043	14.4	2,909	18.9	3,822	-913
28-Sep-03	30,681	8,374	0	22,307	23,076	14.9	2,890	18.8	3,659	-769
05-Oct-03	30,681	8,638	0	22,043	21,731	14.5	2,792	12.9	2,480	312
12-Oct-03	30,681	11,405	0	19,276	22,120	-1.6	-308	13.0	2,536	-2,844
19-Oct-03	30,681	10,846	0	19,835	22,488	-0.5	-105	12.8	2,548	-2,653
26-Oct-03	30,681	10,366	0	20,315	23,010	0.2	39	13.5	2,734	-2,695
02-Nov-03	30,681	10,393	0	20,288	23,455	-2.1	-427	13.2	2,740	-3,167
09-Nov-03	30,481	8,001	0	22,480	24,572	3.7	808	13.4	2,900	-2,092
16-Nov-03	30,481	7,507	0	22,974	25,079	3.9	858	13.4	2,963	-2,105
23-Nov-03	30,481	6,544	0	23,937	25,605	6.3	1,421	13.7	3,089	-1,668
30-Nov-03	30,481	6,380	0	24,101	25,808	6.1	1,385	13.6	3,092	-1,707
07-Dec-03	30,481	5,558	0	24,923	26,930	6.1	1,441	14.7	3,448	-2,007
14-Dec-03	30,481	5,111	0	25,370	26,888	7.8	1,825	14.2	3,343	-1,518
21-Dec-03	30,481	3,469	0	27,012	27,395	13.2	3,142	14.8	3,525	-383
28-Dec-03	30,481	3,339	0	27,142	27,285	13.5	3,234	14.1	3,377	-143
04-Jan-04	30,481	4,376	0	26,105	25,627	18.5	4,070	16.3	3,592	478
11-Jan-04	30,481	3,949	0	26,532	27,626	9.9	2,378	14.4	3,472	-1,094
18-Jan-04	30,481	4,022	0	26,459	27,553	10.4	2,492	15.0	3,586	-1,094
25-Jan-04	30,481	4,040	0	26,441	27,262	11.5	2,728	15.0	3,549	-821
01-Feb-04	30,481	4,079	0	26,402	27,130	10.6	2,536	13.7	3,264	-728
08-Feb-04	30,481	4,001	0	26,480	26,963	12.1	2,851	14.1	3,334	-483
15-Feb-04	30,481	4,048	0	26,433	26,787	12.9	3,025	14.4	3,379	-354
22-Feb-04	30,481	4,547	0	25,934	26,340	13.2	3,018	14.9	3,424	-406
29-Feb-04	30,481	4,547	0	25,934	26,167	14.0	3,175	15.0	3,408	-233
07-Mar-04	30,481	4,503	0	25,978	25,634	15.4	3,461	13.8	3,117	344
14-Mar-04	30,481	5,432	0	25,049	25,115	13.2	2,918	13.5	2,984	-66
21-Mar-04	30,481	6,730	0	23,751	24,712	9.1	1,976	13.5	2,937	-961
28-Mar-04	30,481	6,986	0	23,495	24,094	10.4	2,209	13.2	2,808	-599

Note: The reader should be aware that Security and Adequacy Assessments are published on the IMO web site on a weekly and daily basis that progressively supersede information presented in this report.

(Table A1 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
04-Apr-04	30,481	7,512	0	22,969	23,752	10.1	2,112	13.9	2,895	-783
11-Apr-04	30,481	7,348	0	23,133	22,688	15.2	3,049	13.0	2,604	445
18-Apr-04	30,481	8,484	0	21,997	22,432	10.6	2,112	12.8	2,547	-435
25-Apr-04	30,481	8,259	0	22,222	21,963	14.1	2,750	12.8	2,491	259
02-May-04	30,481	8,259	0	22,222	21,572	16.3	3,113	12.9	2,463	650
09-May-04	30,481	10,022	0	20,459	22,281	8.4	1,591	18.1	3,413	-1,822
16-May-04	30,481	9,690	0	20,791	23,062	8.4	1,604	20.2	3,875	-2,271
23-May-04	30,481	9,165	0	21,316	23,377	7.8	1,541	18.2	3,602	-2,061
30-May-04	30,481	8,858	0	21,623	23,899	6.7	1,351	17.9	3,627	-2,276
06-Jun-04	30,481	8,405	0	22,076	25,724	-0.1	-11	16.5	3,637	-3,648
13-Jun-04	30,481	4,807	0	25,674	26,788	12.0	2,754	16.9	3,868	-1,114
20-Jun-04	30,481	3,891	0	26,590	26,894	14.1	3,293	15.4	3,597	-304
27-Jun-04	30,481	3,628	0	26,853	27,192	15.5	3,594	16.9	3,933	-339
04-Jul-04	30,481	3,476	0	27,005	27,826	12.8	3,070	16.3	3,891	-821
11-Jul-04	30,481	3,685	0	26,796	27,647	11.4	2,749	15.0	3,600	-851
18-Jul-04	30,481	3,660	0	26,821	27,442	11.8	2,840	14.4	3,461	-621
25-Jul-04	30,481	3,660	0	26,821	27,435	11.9	2,861	14.5	3,475	-614
01-Aug-04	30,481	3,554	0	26,927	27,241	14.0	3,308	15.3	3,622	-314
08-Aug-04	30,481	3,649	0	26,832	27,451	13.0	3,084	15.6	3,703	-619
15-Aug-04	30,481	3,714	0	26,767	27,276	12.8	3,036	14.9	3,545	-509
22-Aug-04	30,481	3,710	0	26,771	27,190	14.0	3,287	15.8	3,706	-419
29-Aug-04	30,481	3,672	0	26,809	27,461	13.4	3,171	16.2	3,823	-652
05-Sep-04	30,481	4,539	0	25,942	26,576	15.9	3,556	18.7	4,190	-634
12-Sep-04	30,481	5,889	0	24,592	24,529	15.3	3,262	15.0	3,199	63
19-Sep-04	30,481	7,318	0	23,163	24,116	13.1	2,689	17.8	3,642	-953
26-Sep-04	30,481	7,318	0	23,163	23,264	17.8	3,500	18.3	3,601	-101
03-Oct-04	30,481	6,752	0	23,729	22,017	21.5	4,192	12.7	2,480	1,712
10-Oct-04	30,481	8,228	0	22,253	22,240	12.4	2,455	12.3	2,442	13
17-Oct-04	30,481	7,753	0	22,728	22,623	12.8	2,573	12.3	2,468	105
24-Oct-04	30,481	7,753	0	22,728	23,001	11.0	2,244	12.3	2,517	-273
31-Oct-04	30,481	6,978	0	23,503	23,461	12.1	2,543	11.9	2,501	42
07-Nov-04	30,481	5,989	0	24,492	24,608	12.0	2,621	12.5	2,737	-116
14-Nov-04	30,481	5,856	0	24,625	25,000	10.5	2,329	12.1	2,704	-375
21-Nov-04	30,481	5,856	0	24,625	25,547	8.5	1,929	12.6	2,851	-922
28-Nov-04	30,481	5,856	0	24,625	25,777	7.6	1,729	12.6	2,881	-1,152
05-Dec-04	30,481	4,552	0	25,929	27,110	9.6	2,267	14.6	3,448	-1,181
12-Dec-04	30,481	3,704	0	26,777	27,089	12.8	3,031	14.1	3,343	-312
19-Dec-04	30,481	3,128	0	27,353	27,618	13.5	3,260	14.6	3,525	-265
26-Dec-04	30,481	3,128	0	27,353	27,514	13.3	3,216	14.0	3,377	-161
02-Jan-05	30,481	3,128	0	27,353	25,926	21.3	4,804	15.0	3,377	1,427

Table A2 Assessment of Resource Adequacy: Planned Resource Scenario

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
06-Jul-03	30,681	5,282	300	25,699	27,804	8.5	2,014	17.4	4,119	-2,105
13-Jul-03	30,681	5,319	300	25,662	27,530	8.3	1,966	16.2	3,834	-1,868
20-Jul-03	30,681	4,864	300	26,117	27,325	10.5	2,479	15.6	3,687	-1,208
27-Jul-03	30,681	4,573	300	26,408	27,283	11.8	2,791	15.5	3,666	-875
03-Aug-03	30,681	4,249	300	26,732	27,089	14.8	3,438	16.3	3,795	-357
10-Aug-03	31,451	4,312	300	27,439	27,355	17.2	4,024	16.8	3,940	84
17-Aug-03	31,451	4,363	300	27,388	27,193	17.0	3,983	16.2	3,788	195
24-Aug-03	31,451	4,651	300	27,100	27,122	17.0	3,941	17.1	3,963	-22
31-Aug-03	31,451	4,579	300	27,172	27,406	16.6	3,867	17.6	4,101	-234
07-Sep-03	32,221	5,729	300	26,792	25,662	23.5	5,092	18.3	3,962	1,130
14-Sep-03	32,221	6,943	300	25,578	24,675	21.4	4,501	17.1	3,598	903
21-Sep-03	32,221	7,092	300	25,429	24,265	25.8	5,208	20.0	4,044	1,164
28-Sep-03	32,221	7,915	300	24,606	23,311	26.7	5,189	20.1	3,894	1,295
05-Oct-03	32,221	8,169	300	24,352	21,987	26.5	5,101	14.2	2,736	2,365
12-Oct-03	32,221	10,936	300	21,585	22,300	10.2	2,001	13.9	2,716	-715
19-Oct-03	32,221	10,377	300	22,144	22,667	11.1	2,204	13.7	2,727	-523
26-Oct-03	32,221	9,897	300	22,624	23,185	11.6	2,348	14.4	2,909	-561
02-Nov-03	32,221	9,924	300	22,597	23,631	9.1	1,882	14.1	2,916	-1,034
09-Nov-03	32,021	7,522	300	24,799	24,741	14.4	3,127	14.2	3,069	58
16-Nov-03	32,021	7,028	300	25,293	25,252	14.4	3,177	14.2	3,136	41
23-Nov-03	32,021	6,065	300	26,256	25,772	16.6	3,740	14.5	3,256	484
30-Nov-03	32,021	5,901	300	26,420	25,974	16.3	3,704	14.3	3,258	446
07-Dec-03	32,021	5,069	300	27,252	26,944	16.1	3,770	14.7	3,462	308
14-Dec-03	32,021	4,622	300	27,699	26,936	17.6	4,154	14.4	3,391	763
21-Dec-03	32,021	2,980	300	29,341	27,549	22.9	5,471	15.4	3,679	1,792
28-Dec-03	32,021	2,850	300	29,471	27,445	23.3	5,563	14.8	3,537	2,026
04-Jan-04	32,021	3,887	300	28,434	25,689	29.0	6,399	16.6	3,654	2,745
11-Jan-04	32,021	4,217	300	28,104	27,626	16.4	3,950	14.4	3,472	478
18-Jan-04	32,021	4,290	300	28,031	27,553	17.0	4,064	15.0	3,586	478
25-Jan-04	32,021	4,308	300	28,013	27,262	18.1	4,300	15.0	3,549	751
01-Feb-04	32,021	4,347	300	27,974	27,130	17.2	4,108	13.7	3,264	844
08-Feb-04	32,021	4,269	300	28,052	26,963	18.7	4,423	14.1	3,334	1,089
15-Feb-04	32,021	4,316	300	28,005	26,787	19.6	4,597	14.4	3,379	1,218
22-Feb-04	32,021	4,815	300	27,506	26,340	20.0	4,590	14.9	3,424	1,166
29-Feb-04	32,021	4,058	300	28,263	26,167	24.2	5,504	15.0	3,408	2,096
07-Mar-04	32,021	4,014	300	28,307	25,904	25.7	5,790	15.0	3,387	2,403
14-Mar-04	32,021	4,943	300	27,378	25,360	23.7	5,247	14.6	3,229	2,018
21-Mar-04	32,021	6,241	300	26,080	24,903	19.8	4,305	14.4	3,128	1,177
28-Mar-04	32,021	6,497	300	25,824	24,252	21.3	4,538	13.9	2,966	1,572

(Table A2 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
04-Apr-04	32,021	7,023	300	25,298	23,922	21.3	4,441	14.7	3,065	1,376
11-Apr-04	32,021	6,859	300	25,462	22,946	26.8	5,378	14.3	2,862	2,516
18-Apr-04	32,021	7,995	300	24,326	22,631	22.3	4,441	13.8	2,746	1,695
25-Apr-04	32,119	7,770	300	24,649	22,154	26.6	5,177	13.8	2,682	2,495
02-May-04	32,119	7,770	300	24,649	21,658	29.0	5,540	13.3	2,549	2,991
09-May-04	32,119	9,533	300	22,886	22,292	21.3	4,018	18.2	3,424	594
16-May-04	32,697	9,223	300	23,774	23,338	23.9	4,587	21.6	4,151	436
23-May-04	32,697	8,698	300	24,299	23,644	22.9	4,524	19.6	3,869	655
30-May-04	32,697	8,391	300	24,606	24,147	21.4	4,334	19.1	3,875	459
06-Jun-04	32,697	7,938	300	25,059	25,847	13.5	2,972	17.0	3,760	-788
13-Jun-04	32,697	5,118	300	27,879	26,916	21.6	4,959	17.4	3,996	963
20-Jun-04	32,697	4,202	300	28,795	27,051	23.6	5,498	16.1	3,754	1,744
27-Jun-04	32,697	3,939	300	29,058	27,364	24.9	5,799	17.7	4,105	1,694
04-Jul-04	32,697	3,949	300	29,048	27,941	21.4	5,113	16.7	4,006	1,107
11-Jul-04	32,697	4,015	300	28,982	27,760	20.5	4,935	15.4	3,713	1,222
18-Jul-04	32,697	3,990	300	29,007	27,564	21.0	5,026	14.9	3,583	1,443
25-Jul-04	32,697	3,243	300	29,754	27,647	24.2	5,794	15.4	3,687	2,107
01-Aug-04	32,697	3,137	300	29,860	27,486	26.4	6,241	16.4	3,867	2,374
08-Aug-04	32,697	3,242	300	29,755	27,678	25.3	6,007	16.6	3,930	2,077
15-Aug-04	32,697	3,307	300	29,690	27,503	25.1	5,959	15.9	3,772	2,187
22-Aug-04	32,697	3,303	300	29,694	27,431	26.4	6,210	16.8	3,947	2,263
29-Aug-04	32,697	3,265	300	29,732	27,691	25.8	6,094	17.2	4,053	2,041
05-Sep-04	32,697	4,118	300	28,879	26,840	29.0	6,493	19.9	4,454	2,039
12-Sep-04	32,697	5,468	300	27,529	24,803	29.1	6,199	16.3	3,473	2,726
19-Sep-04	32,697	7,412	300	25,585	24,301	25.0	5,111	18.7	3,827	1,284
26-Sep-04	32,697	7,412	300	25,585	23,489	30.1	5,922	19.5	3,826	2,096
03-Oct-04	32,697	6,846	300	26,151	22,180	33.9	6,614	13.5	2,643	3,971
10-Oct-04	32,697	8,317	300	24,680	22,240	24.7	4,882	12.3	2,442	2,440
17-Oct-04	32,697	7,842	300	25,155	22,645	24.8	5,000	12.4	2,490	2,510
24-Oct-04	32,697	8,589	300	24,408	23,001	19.2	3,924	12.3	2,517	1,407
31-Oct-04	32,697	7,814	300	25,183	23,547	20.2	4,223	12.3	2,587	1,636
07-Nov-04	32,697	6,825	300	26,172	24,694	19.7	4,301	12.9	2,823	1,478
14-Nov-04	32,697	6,692	300	26,305	25,064	18.0	4,009	12.4	2,768	1,241
21-Nov-04	32,697	6,692	300	26,305	25,610	15.9	3,609	12.8	2,914	695
28-Nov-04	32,697	6,692	300	26,305	25,839	14.9	3,409	12.9	2,943	466
05-Dec-04	32,697	4,631	300	28,366	27,110	19.9	4,704	14.6	3,448	1,256
12-Dec-04	32,697	3,783	300	29,214	27,089	23.0	5,468	14.1	3,343	2,125
19-Dec-04	32,697	3,207	300	29,790	27,618	23.7	5,697	14.6	3,525	2,172
26-Dec-04	32,697	3,207	300	29,790	27,514	23.4	5,653	14.0	3,377	2,276
02-Jan-05	32,697	2,692	300	30,305	25,932	34.4	7,756	15.0	3,383	4,373

Table A3 Demand Forecast Range For Required Resources Calculation

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
06-Jul-03	23,685	26,408
13-Jul-03	23,696	26,315
20-Jul-03	23,638	25,636
27-Jul-03	23,617	25,641
03-Aug-03	23,294	26,076
10-Aug-03	23,415	26,286
17-Aug-03	23,405	25,592
24-Aug-03	23,159	25,750
31-Aug-03	23,305	26,436
07-Sep-03	21,700	24,415
14-Sep-03	21,077	23,931
21-Sep-03	20,221	23,367
28-Sep-03	19,417	22,477
05-Oct-03	19,251	20,028
12-Oct-03	19,584	20,171
19-Oct-03	19,940	20,862
26-Oct-03	20,276	20,914
02-Nov-03	20,715	21,546
09-Nov-03	21,672	22,854
16-Nov-03	22,116	23,296
23-Nov-03	22,516	23,815
30-Nov-03	22,716	24,256
07-Dec-03	23,482	25,516
14-Dec-03	23,545	25,204
21-Dec-03	23,870	25,902
28-Dec-03	23,908	25,698
04-Jan-04	22,035	24,288
11-Jan-04	24,154	26,166
18-Jan-04	23,967	25,858
25-Jan-04	23,713	25,723
01-Feb-04	23,866	25,398
08-Feb-04	23,629	25,373
15-Feb-04	23,408	25,229
22-Feb-04	22,916	24,524
29-Feb-04	22,759	24,547
07-Mar-04	22,517	24,270
14-Mar-04	22,131	23,780
21-Mar-04	21,775	23,290
28-Mar-04	21,286	22,696

(Table A3 continued)

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
04-Apr-04	20,857	22,726
11-Apr-04	20,084	21,021
18-Apr-04	19,885	20,662
25-Apr-04	19,472	20,386
02-May-04	19,109	19,879
09-May-04	18,868	22,023
16-May-04	19,187	22,106
23-May-04	19,775	22,532
30-May-04	20,272	23,073
06-Jun-04	22,087	25,345
13-Jun-04	22,920	25,947
20-Jun-04	23,297	25,841
27-Jun-04	23,259	26,266
04-Jul-04	23,935	26,659
11-Jul-04	24,047	26,665
18-Jul-04	23,981	25,979
25-Jul-04	23,960	25,983
01-Aug-04	23,619	26,401
08-Aug-04	23,748	26,620
15-Aug-04	23,731	25,917
22-Aug-04	23,484	26,075
29-Aug-04	23,638	26,769
05-Sep-04	22,386	25,545
12-Sep-04	21,330	24,184
19-Sep-04	20,474	23,620
26-Sep-04	19,663	22,723
03-Oct-04	19,537	20,314
10-Oct-04	19,798	20,385
17-Oct-04	20,155	21,076
24-Oct-04	20,484	21,122
31-Oct-04	20,960	21,791
07-Nov-04	21,871	23,054
14-Nov-04	22,296	23,476
21-Nov-04	22,696	23,995
28-Nov-04	22,896	24,435
05-Dec-04	23,662	25,696
12-Dec-04	23,746	25,405
19-Dec-04	24,093	26,125
26-Dec-04	24,137	25,928
02-Jan-05	22,549	24,339

Table A4 Assessment of Resource Adequacy: Extreme Weather, Existing Resource Scenario

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
06-Jul-03	30,681	5,278	0	25,403	29,590	-3.8	-1,005	12.1	3,182	-4,187
13-Jul-03	30,681	5,317	0	25,364	29,491	-3.6	-951	12.1	3,176	-4,127
20-Jul-03	30,681	4,857	0	25,824	28,742	0.7	188	12.1	3,106	-2,918
27-Jul-03	30,681	4,565	0	26,116	28,711	1.9	475	12.0	3,070	-2,595
03-Aug-03	30,681	4,245	0	26,436	29,191	1.4	360	12.0	3,115	-2,755
10-Aug-03	30,681	4,280	0	26,401	29,424	0.4	115	11.9	3,138	-3,023
17-Aug-03	30,681	4,332	0	26,349	28,677	3.0	757	12.1	3,085	-2,328
24-Aug-03	30,681	4,619	0	26,062	28,867	1.2	312	12.1	3,117	-2,805
31-Aug-03	30,681	5,066	0	25,615	29,611	-3.1	-821	12.0	3,175	-3,996
07-Sep-03	30,681	6,190	0	24,491	27,338	0.3	76	12.0	2,923	-2,847
14-Sep-03	30,681	7,408	0	23,273	26,813	-2.8	-658	12.0	2,882	-3,540
21-Sep-03	30,681	7,560	0	23,121	26,168	-1.1	-246	12.0	2,801	-3,047
28-Sep-03	30,681	8,380	0	22,301	25,091	-0.8	-176	11.6	2,614	-2,790
05-Oct-03	30,681	8,627	0	22,054	22,419	10.1	2,026	11.9	2,391	-365
12-Oct-03	30,681	11,405	0	19,276	22,651	-4.4	-895	12.3	2,480	-3,375
19-Oct-03	30,681	10,846	0	19,835	23,364	-4.9	-1,027	12.0	2,502	-3,529
26-Oct-03	30,681	10,350	0	20,331	23,555	-2.8	-583	12.6	2,641	-3,224
02-Nov-03	30,681	10,376	0	20,305	24,222	-5.8	-1,241	12.4	2,676	-3,917
09-Nov-03	30,481	8,001	0	22,480	25,598	-1.6	-374	12.0	2,744	-3,118
16-Nov-03	30,481	7,507	0	22,974	26,188	-1.4	-322	12.4	2,892	-3,214
23-Nov-03	30,481	6,544	0	23,937	26,736	0.5	122	12.3	2,921	-2,799
30-Nov-03	30,481	6,380	0	24,101	27,186	-0.6	-155	12.1	2,930	-3,085
07-Dec-03	30,481	5,558	0	24,923	28,470	-2.3	-593	11.6	2,954	-3,547
14-Dec-03	30,481	5,111	0	25,370	28,157	0.7	166	11.7	2,953	-2,787
21-Dec-03	30,481	3,469	0	27,012	28,933	4.3	1,110	11.7	3,031	-1,921
28-Dec-03	30,481	3,339	0	27,142	28,705	5.6	1,444	11.7	3,007	-1,563
04-Jan-04	30,481	4,376	0	26,105	27,130	7.5	1,817	11.7	2,842	-1,025
11-Jan-04	30,481	3,949	0	26,532	29,052	1.4	366	11.0	2,886	-2,520
18-Jan-04	30,481	4,022	0	26,459	28,723	2.3	601	11.1	2,865	-2,264
25-Jan-04	30,481	4,040	0	26,441	28,577	2.8	718	11.1	2,854	-2,136
01-Feb-04	30,481	4,079	0	26,402	28,240	4.0	1,004	11.2	2,842	-1,838
08-Feb-04	30,481	4,001	0	26,480	28,207	4.4	1,107	11.2	2,834	-1,727
15-Feb-04	30,481	4,048	0	26,433	28,054	4.8	1,204	11.2	2,825	-1,621
22-Feb-04	30,481	4,547	0	25,934	27,306	5.8	1,410	11.3	2,782	-1,372
29-Feb-04	30,481	4,547	0	25,934	27,331	5.7	1,387	11.3	2,784	-1,397
07-Mar-04	30,481	4,503	0	25,978	27,068	7.0	1,708	11.5	2,798	-1,090
14-Mar-04	30,481	5,432	0	25,049	26,489	5.3	1,269	11.4	2,709	-1,440
21-Mar-04	30,481	6,730	0	23,751	25,950	2.0	461	11.4	2,660	-2,199
28-Mar-04	30,481	6,985	0	23,496	25,181	3.5	800	11.0	2,485	-1,685

(Table A4 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
04-Apr-04	30,481	7,512	0	22,969	25,393	1.1	243	11.7	2,667	-2,424
11-Apr-04	30,481	7,348	0	23,133	23,523	10.1	2,112	11.9	2,502	-390
18-Apr-04	30,481	8,484	0	21,997	23,114	6.5	1,335	11.9	2,452	-1,117
25-Apr-04	30,481	8,259	0	22,222	22,715	9.0	1,836	11.4	2,329	-493
02-May-04	30,481	8,259	0	22,222	22,065	11.8	2,343	11.0	2,186	157
09-May-04	30,481	10,022	0	20,459	24,424	-7.1	-1,564	10.9	2,401	-3,965
16-May-04	30,481	9,690	0	20,791	24,634	-6.0	-1,315	11.4	2,528	-3,843
23-May-04	30,481	9,165	0	21,316	25,079	-5.4	-1,216	11.3	2,547	-3,763
30-May-04	30,481	8,858	0	21,623	25,651	-6.3	-1,450	11.2	2,578	-4,028
06-Jun-04	30,481	8,405	0	22,076	28,031	-12.9	-3,269	10.6	2,686	-5,955
13-Jun-04	30,481	4,807	0	25,674	28,816	-1.1	-273	11.1	2,869	-3,142
20-Jun-04	30,481	3,891	0	26,590	28,672	2.9	749	11.0	2,831	-2,082
27-Jun-04	30,481	3,628	0	26,853	29,146	2.2	587	11.0	2,880	-2,293
04-Jul-04	30,481	3,476	0	27,005	29,572	1.3	346	10.9	2,913	-2,567
11-Jul-04	30,481	3,685	0	26,796	29,575	0.5	131	10.9	2,910	-2,779
18-Jul-04	30,481	3,660	0	26,821	28,827	3.2	842	11.0	2,848	-2,006
25-Jul-04	30,481	3,660	0	26,821	28,832	3.2	838	11.0	2,849	-2,011
01-Aug-04	30,481	3,549	0	26,932	29,309	2.0	531	11.0	2,908	-2,377
08-Aug-04	30,481	3,646	0	26,835	29,555	0.8	215	11.0	2,935	-2,720
15-Aug-04	30,481	3,711	0	26,770	28,799	3.3	853	11.1	2,882	-2,029
22-Aug-04	30,481	3,706	0	26,775	28,969	2.7	700	11.1	2,894	-2,194
29-Aug-04	30,481	3,672	0	26,809	29,721	0.2	40	11.0	2,952	-2,912
05-Sep-04	30,481	4,530	0	25,951	28,453	1.6	406	11.4	2,908	-2,502
12-Sep-04	30,481	5,895	0	24,586	26,816	1.7	402	10.9	2,632	-2,230
19-Sep-04	30,481	7,318	0	23,163	26,207	-1.9	-457	11.0	2,587	-3,044
26-Sep-04	30,481	7,318	0	23,163	25,232	1.9	440	11.0	2,509	-2,069
03-Oct-04	30,481	6,752	0	23,729	22,558	16.8	3,415	11.1	2,244	1,171
10-Oct-04	30,481	8,228	0	22,253	22,519	9.2	1,868	10.5	2,134	-266
17-Oct-04	30,481	7,753	0	22,728	23,303	7.8	1,652	10.6	2,227	-575
24-Oct-04	30,481	7,753	0	22,728	23,354	7.6	1,606	10.6	2,232	-626
31-Oct-04	30,481	6,978	0	23,503	24,209	7.9	1,712	11.1	2,418	-706
07-Nov-04	30,481	5,989	0	24,492	25,623	6.2	1,438	11.1	2,569	-1,131
14-Nov-04	30,481	5,856	0	24,625	26,100	4.9	1,149	11.2	2,624	-1,475
21-Nov-04	30,481	5,856	0	24,625	26,665	2.6	630	11.1	2,670	-2,040
28-Nov-04	30,481	5,856	0	24,625	27,143	0.8	190	11.1	2,708	-2,518
05-Dec-04	30,481	4,552	0	25,929	28,481	0.9	233	10.8	2,785	-2,552
12-Dec-04	30,481	3,704	0	26,777	28,146	5.4	1,372	10.8	2,741	-1,369
19-Dec-04	30,481	3,128	0	27,353	28,964	4.7	1,228	10.9	2,839	-1,611
26-Dec-04	30,481	3,128	0	27,353	28,752	5.5	1,425	10.9	2,824	-1,399
02-Jan-05	30,481	3,128	0	27,353	27,029	12.4	3,014	11.1	2,690	324

Table A5 Assessment of Resource Adequacy: Extreme Weather, Planned Resource Scenario

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
06-Jul-03	30,681	5,278	300	25,703	29,590	-2.7	-705	12.1	3,182	-3,887
13-Jul-03	30,681	5,317	300	25,664	29,491	-2.5	-651	12.1	3,176	-3,827
20-Jul-03	30,681	4,857	300	26,124	28,742	1.9	488	12.1	3,106	-2,618
27-Jul-03	30,681	4,565	300	26,416	28,711	3.0	775	12.0	3,070	-2,295
03-Aug-03	30,681	4,245	300	26,736	29,191	2.5	660	12.0	3,115	-2,455
10-Aug-03	31,451	4,308	300	27,443	29,507	4.4	1,157	12.3	3,221	-2,064
17-Aug-03	31,451	4,360	300	27,391	28,762	7.0	1,799	12.4	3,170	-1,371
24-Aug-03	31,451	4,647	300	27,104	28,953	5.3	1,354	12.4	3,203	-1,849
31-Aug-03	31,451	4,579	300	27,172	29,721	2.8	736	12.4	3,285	-2,549
07-Sep-03	32,221	5,731	300	26,790	27,514	9.7	2,375	12.7	3,099	-724
14-Sep-03	32,221	6,949	300	25,572	26,990	6.9	1,641	12.8	3,059	-1,418
21-Sep-03	32,221	7,101	300	25,420	26,346	8.8	2,053	12.8	2,979	-926
28-Sep-03	32,221	7,921	300	24,600	25,273	9.5	2,123	12.4	2,796	-673
05-Oct-03	32,221	8,158	300	24,363	22,649	21.6	4,335	13.1	2,621	1,714
12-Oct-03	32,221	10,936	300	21,585	22,839	7.0	1,414	13.2	2,668	-1,254
19-Oct-03	32,221	10,377	300	22,144	23,553	6.2	1,282	12.9	2,691	-1,409
26-Oct-03	32,221	9,881	300	22,640	23,738	8.3	1,726	13.5	2,824	-1,098
02-Nov-03	32,221	9,907	300	22,614	24,402	5.0	1,068	13.3	2,856	-1,788
09-Nov-03	32,021	7,522	300	24,799	25,779	8.5	1,945	12.8	2,925	-980
16-Nov-03	32,021	7,028	300	25,293	26,368	8.6	1,997	13.2	3,072	-1,075
23-Nov-03	32,021	6,065	300	26,256	26,914	10.3	2,441	13.0	3,099	-658
30-Nov-03	32,021	5,901	300	26,420	27,364	8.9	2,164	12.8	3,108	-944
07-Dec-03	32,021	5,069	300	27,252	28,649	6.8	1,736	12.3	3,133	-1,397
14-Dec-03	32,021	4,622	300	27,699	28,336	9.9	2,495	12.4	3,132	-637
21-Dec-03	32,021	2,980	300	29,341	29,111	13.3	3,439	12.4	3,209	230
28-Dec-03	32,021	2,850	300	29,471	28,883	14.7	3,773	12.4	3,185	588
04-Jan-04	32,021	3,887	300	28,434	27,314	17.1	4,146	12.5	3,026	1,120
11-Jan-04	32,021	4,217	300	28,104	29,159	7.4	1,938	11.4	2,993	-1,055
18-Jan-04	32,021	4,290	300	28,031	28,831	8.4	2,173	11.5	2,973	-800
25-Jan-04	32,021	4,308	300	28,013	28,687	8.9	2,290	11.5	2,964	-674
01-Feb-04	32,021	4,347	300	27,974	28,347	10.1	2,576	11.6	2,949	-373
08-Feb-04	32,021	4,269	300	28,052	28,317	10.6	2,679	11.6	2,944	-265
15-Feb-04	32,021	4,316	300	28,005	28,162	11.0	2,776	11.6	2,933	-157
22-Feb-04	32,021	4,815	300	27,506	27,415	12.2	2,982	11.8	2,891	91
29-Feb-04	32,021	4,058	300	28,263	27,516	15.1	3,716	12.1	2,969	747
07-Mar-04	32,021	4,014	300	28,307	27,253	16.6	4,037	12.3	2,983	1,054
14-Mar-04	32,021	4,943	300	27,378	26,675	15.1	3,598	12.2	2,895	703
21-Mar-04	32,021	6,241	300	26,080	26,137	12.0	2,790	12.2	2,847	-57
28-Mar-04	32,021	6,496	300	25,825	25,371	13.8	3,129	11.8	2,675	454

(Table A5 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Price-Responsive Demand MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Margin MW
04-Apr-04	32,021	7,023	300	25,298	25,537	11.3	2,572	12.4	2,811	-239
11-Apr-04	32,021	6,859	300	25,462	23,718	21.1	4,441	12.8	2,697	1,744
18-Apr-04	32,021	7,995	300	24,326	23,263	17.7	3,664	12.6	2,601	1,063
25-Apr-04	32,119	7,770	300	24,649	22,940	20.9	4,263	12.5	2,554	1,709
02-May-04	32,119	7,770	300	24,649	22,315	24.0	4,770	12.3	2,436	2,334
09-May-04	32,119	9,533	300	22,886	24,581	3.9	863	11.6	2,558	-1,695
16-May-04	32,697	9,223	300	23,774	24,877	7.6	1,668	12.5	2,771	-1,103
23-May-04	32,697	8,698	300	24,299	25,321	7.8	1,767	12.4	2,789	-1,022
30-May-04	32,697	8,391	300	24,606	25,894	6.6	1,533	12.2	2,821	-1,288
06-Jun-04	32,697	7,938	300	25,059	28,184	-1.1	-286	11.2	2,839	-3,125
13-Jun-04	32,697	5,118	300	27,879	28,913	7.5	1,932	11.4	2,966	-1,034
20-Jun-04	32,697	4,202	300	28,795	28,769	11.4	2,954	11.3	2,928	26
27-Jun-04	32,697	3,939	300	29,058	29,242	10.6	2,792	11.3	2,976	-184
04-Jul-04	32,697	3,949	300	29,048	29,658	9.0	2,389	11.3	2,999	-610
11-Jul-04	32,697	4,015	300	28,982	29,668	8.7	2,317	11.3	3,003	-686
18-Jul-04	32,697	3,990	300	29,007	28,923	11.7	3,028	11.3	2,944	84
25-Jul-04	32,697	3,243	300	29,754	28,983	14.5	3,771	11.6	3,000	771
01-Aug-04	32,697	3,132	300	29,865	29,456	13.1	3,464	11.6	3,055	409
08-Aug-04	32,697	3,239	300	29,758	29,701	11.8	3,138	11.6	3,081	57
15-Aug-04	32,697	3,304	300	29,693	28,946	14.6	3,776	11.7	3,029	747
22-Aug-04	32,697	3,299	300	29,698	29,117	13.9	3,623	11.7	3,042	581
29-Aug-04	32,697	3,265	300	29,732	29,866	11.1	2,963	11.6	3,097	-134
05-Sep-04	32,697	4,109	300	28,888	28,599	13.1	3,343	12.0	3,054	289
12-Sep-04	32,697	5,474	300	27,523	26,967	13.8	3,339	11.5	2,783	556
19-Sep-04	32,697	7,412	300	25,585	26,327	8.3	1,965	11.5	2,707	-742
26-Sep-04	32,697	7,412	300	25,585	25,354	12.6	2,862	11.6	2,631	231
03-Oct-04	32,697	6,846	300	26,151	22,835	28.7	5,837	12.4	2,521	3,316
10-Oct-04	32,697	8,317	300	24,680	22,691	21.1	4,295	11.3	2,306	1,989
17-Oct-04	32,697	7,842	300	25,155	23,448	19.4	4,079	11.3	2,372	1,707
24-Oct-04	32,697	8,589	300	24,408	23,421	15.6	3,286	10.9	2,299	987
31-Oct-04	32,697	7,814	300	25,183	24,277	15.6	3,392	11.4	2,486	906
07-Nov-04	32,697	6,825	300	26,172	25,690	13.5	3,118	11.4	2,636	482
14-Nov-04	32,697	6,692	300	26,305	26,169	12.1	2,829	11.5	2,693	136
21-Nov-04	32,697	6,692	300	26,305	26,730	9.6	2,310	11.4	2,735	-425
28-Nov-04	32,697	6,692	300	26,305	27,207	7.7	1,870	11.3	2,772	-902
05-Dec-04	32,697	4,631	300	28,366	28,605	10.4	2,670	11.3	2,909	-239
12-Dec-04	32,697	3,783	300	29,214	28,266	15.0	3,809	11.3	2,861	948
19-Dec-04	32,697	3,207	300	29,790	29,086	14.0	3,665	11.3	2,961	704
26-Dec-04	32,697	3,207	300	29,790	28,874	14.9	3,862	11.4	2,946	916
02-Jan-05	32,697	2,692	300	30,305	27,286	24.5	5,966	12.1	2,947	3,019

Table A6 Energy Production Capability Forecast

Month	Forecast Energy Production Capability Existing Resource Scenario (GWh)	Forecast Energy Production Capability Planned Resource Scenario (GWh)
Jul 2003	16,077	16,077
Aug 2003	15,877	16,432
Sep 2003	13,633	14,906
Oct 2003	12,283	13,646
Nov 2003	13,889	15,212
Dec 2003	16,378	17,745
Jan 2004	16,589	17,583
Feb 2004	15,259	16,236
Mar 2004	15,021	16,368
Apr 2004	13,269	14,626
May 2004	12,892	14,572
Jun 2004	15,606	16,927
Jul 2004	16,303	17,842
Aug 2004	16,088	17,851
Sep 2004	13,712	15,230
Oct 2004	13,710	14,683
Nov 2004	14,673	15,711
Dec 2004	16,940	18,475

- End of Section -

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Appendix B Transmission Projects

East Zone	Projected I/S Date
Sidney TS: Replace low voltage capacity bank circuit breaker SC1Q.	2003-Q3
Chenaux TS: Add two new 230 kV breakers. Reconnect T4 transformer.	2003-Q3

Essa Zone	Projected I/S Date
Owen Sound TS: Replace transformer T5 230 kV Disconnect switch.	2003-Q3
Midhurst TS: Expand existing Transformer Station.	2004-Q4

Niagara Zone	Projected I/S Date
Norfolk TS: Replace transformers with two 83.3 MVA units.	2003-Q4
Kalar TS: New 115/14.2 kV transformer station off lines A36N & A37N.	2004-Q2

Northeast Zone	Projected I/S Date
Algoma TS: Refurish 115 kV T1B line disconnect.	2003-Q3
Wawa TS: Install reactive compensation; 2x40 MVAr shunt ractors, 2x39.8 MVAr shunt capacitors.	2003-Q4
GLP Tranmission Reinforcement Stage1: Remove from service 115 kV circuits No.1 Anjigami, No.2 Anjigami and No.3 Sault	2004-Q2

Northwest Zone	Projected I/S Date
NW Ontario: New 115 kV line to supply the First Nations community.	2003-Q3
Fort William TS: Install in-line switches for circuits Q4B and Q5B	2003-Q3
Birch TS: Install 80 MVAr shunt capacitor.	2003-Q4

Ottawa Zone	Projected I/S Date
Albion TS: Replace 230 kV rod gaps with metal oxide surge arresters.	2003-Q4
Merivale TS: Replace 115 kV breakers L1LT22, L1L5, L3L12 and associated disconnect switches.	2003-Q4
Hawthorne TS: Add one 250 MVA 230/115 kV autotransformer and one new double circuit line from Hawthorne to Blackburn Jct.	2004-Q2
Hawthorne TS: Replace 115 kV shunt capacitor.	2004-Q4

Southwest Zone	Projected I/S Date
Bronte TS: Install two new feeders.	2003-Q3
Goderich TS: Replace capacitor bank circuit breaker SC1B.	2003-Q3
Kenilworth TS: Replace 115 kV transformer disconnect and grounding switches.	2003-Q3
St. Marys TS: Refurbish 115 kV station.	2003-Q4
Kenilworth TS: Replace 115 kV rod gaps with metal oxide surge arresters.	2003-Q4
Mohawk TS: Replace low voltage capacitor banks SC2 and SC3.	2003-Q4
Nanticoke TGS: Replace station service transformers.	2003-Q4
St. Marys TS: Add two new feeders.	2003-Q4
Kenilworth TS: Replace 115 kV line disconnect and grounding switches.	2003-Q4
Niagara West TS: Build new transformer station with two 50/67/83 MVA transformers.	2004-Q1
Caledonia TS: Add two new 75/125 MVA 230/115 kV autotransformers and re-supply Norfolk TS off these new autotransformers.	2004-Q2
Kitchener: Build new 230/14.2 kV transformer station.	2004-Q2
Burlington TS: Add 125 MVAr 115 kV capacitor bank.	2004-Q2
Detweiler TS: Replace 115/230 kV autotransformer T3.	2004-Q2

(Appendix B continued)

Toronto Zone	Projected I/S Date
Manby TS: Replace 115 kV and 230 kV transformer disconnect switches.	2003-Q3
Richview TS: Replace 230 kV breaker disconnect switches.	2003-Q3
Strachan TS: Replace 115 kV grounding switch and transformer disconnect switch.	2003-Q3
Glengrove TS: Replace T2 transformer.	2003-Q4
Glengrove TS: Refurbish 115 kV station.	2003-Q4
Leaside TS: Replace 115 kV line disconnect switch.	2003-Q4
Manby TS: Replace 115 kV and 230 kV rod gaps with metal oxide surge arresters.	2003-Q4
Runnymede TS: Replace low voltage capacitor banks SC3 and SC4.	2003-Q4
Strachan TS: Replace 115 kV rod gaps with metal oxide surge arresters.	2003-Q4
Leaside TS: Install series reactors on 13.8 kV capacitor banks SC1 & SC2.	2003-Q4
Cecil TS: Increase station capacity.	2004-Q2
Leaside TS: Install 125 MVAr capacitor bank.	2004-Q2
Pickering A NGS: Refurbish 230 kV switchyard - G1.	2004-Q2
Markham: New transformer station connected to 230 kV circuits C11R and C12R.	2004-Q3

West Zone	Projected I/S Date
Lambton TS: Modify low voltage supply to Terra Nitrogen.	2003-Q3
Keith TS: Install new/upgrade existing facilities for incorporation of the ATCO Project.	2003-Q3
Kent TS: Install new 125 MVA 230/115 kV autotransformer.	2003-Q4
London Highbury TS: Replace low voltage capacitor bank SC2.	2003-Q4
Windsor Area: Enhance Windsor Area Overload Protection Scheme.	2004-Q1
Belle River East DS: Build new 115/27.6 kV distribution station	2004-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 of six days or greater, and/or for those transmission outages associated with a major project.

Table C1 Bruce Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/3/03 8:00 AM	10/10/03 4:30 PM	Bruce A TS.T28L562	DWW	5 Hour	FABC NBLIP	FABC - No reduction in Limit; affects G/R arming requirements. NBLIP - 1000 or 500 MW depending on the Bruce and Longwood reactor availability

Table C2 East Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
7/7/03 7:00 AM	8/1/03 4:00 PM	X21	CNW	4 Hour		
8/5/03 7:00 AM	8/15/03 4:00 PM	X21	CNW	4 Hour		
8/18/03 7:00 AM	8/29/03 4:00 PM	X22	CNW	4 Hour		
9/2/03 7:00 AM	9/26/03 4:00 PM	X22	CNW	4 Hour		
9/15/03 7:00 AM	9/15/03 6:00 PM	Chenaux TS.A4_BUS, Chenaux TS.A1A4, Chenaux TS.4-X1P, Chenaux TS.A1-A2, Chenaux TS.A3-A4, Chenaux TS.4X6, Chenaux TS.4X1P, Chenaux TS.4X2Y	DNW	Non-Recallable	All Chenaux generation is constrained off. Limits the amount of load that can be supported in the Renfrew area from Des Joachims. Approximately 55 and 75 MW of load can be supplied without and with generation support from Quebec, respectively. Renfrew area demand estimated at a peak of 110 MW to an off peak of 75 MW.	

Table C2 East Zone (continued)

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/16/03 7:00 AM	9/21/03 6:00 PM	X1P, Chenaux TS.A3-A4, Chenaux TS.A1-A2, Chenaux TS.4X6, Chenaux TS.4X1P, Chenaux TS.4-X1P	CWW	24 Hour	Chenaux G5 to G8 generation is constrained off. Limits the amount of load that can be supported in the Renfrew area from Des Joachims. Approximately 55 and 75 MW of load can be supplied without and with generation support from Quebec, respectively. With no Quebec support, approx. 95 MW can be supplied with generation support from Chenaux G1 to G4. With Quebec and Chenaux support, approx. 115 MW can be supplied. Renfrew area demand estimated at a peak of 110 MW to an off peak of 75 MW. Hydroelectric production capability is a concern.	
9/22/03 7:00 AM	9/26/03 6:00 PM	Chenaux TS.A3-A4, Chenaux TS.A1-A2, Chenaux TS.4X2Y, Chenaux TS.A1A4	CWW	24 Hour	Chenaux G1 to G4 generation is constrained off.	
9/22/03 7:00 AM	11/7/03 11:00 AM	Chenaux TS.A1-A2	CWW	Non-Recallable	September 22-26: Covered by outage above. September 26-November 7: No impact.	
11/3/03 7:00 AM	11/9/03 3:00 PM	St.Lawrence TS.D_BUS, St.Lawrence TS.49-B31L, St.Lawrence TS.L31L33, St.Lawrence TS.AL31	CWW	4 Hour	Beauharnois delivery reduced from 800MW to 400MW.	400 MW
11/11/03 7:00 AM	11/11/03 11:00 AM	Chenaux TS.T4, Chenaux TS.A1-A2, Chenaux TS.4X6	DNW	4 Hour	Chenaux G5 to G8 generation is constrained off.	

Table C3 Essa Zone

No outages to analyze.

Table C4 Niagara Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
09/22/03 05:00 AM	10/17/03 06:00 PM	Murray TS.T13	CWW	2 Day		
11/03/03 05:00 AM	11/14/03 06:00 PM	Bunting TS.T3	CWW	8 Hour		

Table C5 Northeast Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
6/22/03 6:01 AM	8/4/03 6:01 AM	SF6	CWW	Non-Recallable		
6/28/03 6:00 AM	9/2/03 12:00 PM	Kidd Metsite CTS T1, T2	CWW	Non-Recallable		
10/27/03 5:00 AM	11/14/03 6:00 PM	A9K_KIRKLANDLAKE	CWW	4 Hour		

Table C6 Northwest Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/8/03 5:00 AM	10/3/03 6:00 PM	A6P	CWW	8 Hour		
9/17/03 7:00 AM	9/26/03 6:00 PM	K22W	CNW	8 Hour	OMTE OMTW EWTE	OMTE - 100 MW OMTW - 100 MW EWTE - 50 MW
9/15/03 8:00 AM	11/14/03 4:00 PM	T1M_TERRACE BAY	CWW	4 Hour		
10/6/03 5:00 AM	11/28/03 6:00 PM	K24F	CWW	4 Hour	OMTE OMTW EWTE MPFN	OMTE - 50MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW
12/15/03 12:01 AM	12/21/03 11:59 PM	Thunder Bay C1	CWW	Non-Recallable		
4/19/04 5:00 AM	5/2/04 6:00 PM	K24F	CWW	8 Hour	OMTE OMTW EWTE MPFN	OMTE - 50MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW
5/10/04 5:00 AM	5/23/04 6:00 PM	K23D	CWW	8 Hour	OMTE OMTW EWTE MPFN	OMTE - 50MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW
5/31/04 7:00 AM	6/13/04 6:00 PM	A21L	CWW	8 Hour	OMTE EWTE EWTW	OMTE - 70 MW EWTE - 75 MW EWTW - 50 MW
6/14/04 12:01 AM	6/27/04 11:59 PM	Thunder Bay C1	CWW	Non-Recallable		
6/21/04 5:00 AM	7/4/04 6:00 PM	A22L	CWW	8 Hour	OMTE EWTE EWTW	OMTE - 70 MW EWTE - 75 MW EWTW - 50 MW
9/13/04 5:00 AM	9/26/04 6:00 PM	D26A	CWW	8 Hour	OMTE OMTW EWTE EWTW MPFN	OMTE - 70 MW OMTW - 250 MW EWTE - 75 MW EWTW - 50 MW MPFN - 50 MW
10/4/04 5:00 AM	10/18/04 6:00 PM	F25A	CWW	8 Hour	OMTE OMTW EWTE EWTW MPFN	OMTE - 70 MW OMTW - 250 MW EWTE - 75 MW EWTW - 50 MW MPFN - 50 MW
12/13/04 12:01 AM	12/19/04 11:59 PM	Thunder Bay C1	CWW	Non-Recallable		

Table C7 Ottawa Zone

No outages to analyze.

Table C8 Southwest Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
7/7/03 6:00 AM	9/11/03 5:00 PM	St.Marys TS.A2_BUS, St.Marys TS.Y_BUS, St.Marys TS.T2	CWW	Non-Recallable		
10/6/03 5:00 AM	11/7/03 6:00 PM	Burlington TS.T6	CWW	5 Day		
10/6/03 5:00 AM	10/31/03 6:00 PM	Elgin TS.T2	CWW	2 Day		
10/20/03 5:00 AM	11/14/03 6:00 PM	Horning TS.T2	CWW	2 Day		

Table C9 Toronto Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
5/29/03 5:00 AM	7/4/03 6:00 PM	C7E, Terauley TS.H1_BUS, Terauley TS.T1, Terauley TS.T2	CWW	11 Hour		
6/23/03 8:00 AM	7/24/03 5:00 PM	Pickering A SS.T1L6, Pickering A SS.AT1_BUS	CWW	10 Day		
8/25/03 7:00 AM	8/30/03 2:30 PM	Pickering B SS.T8P	CWW	8 Hour		
9/8/03 5:00 AM	9/13/03 2:00 PM	R13K, Richview TS.H2_BUS, Richview TS.T7	CWW	8 Hour		
9/15/03 4:00 AM	9/20/03 2:00 PM	R15K, Richview TS.H1_BUS, Richview TS.T1	CWW	8 Hour		
9/15/03 5:00 AM	1/15/04 6:00 PM	H11L_HEARN	CWW	10 Hour	The Hearn H7L terminal also o/s. Depending on load levels, thermal overloading of other Hearn x Leaside 115 kV circuits and high voltage problems at Main TS could occur.	
9/15/03 5:00 AM	1/15/04 6:00 PM	H7L_HEARN	CWW	10 Hour	The Hearn H11L terminal also o/s. Depending on load levels, thermal overloading of other Hearn x Leaside 115 kV circuits and high voltage problems at Main TS could occur.	
9/22/03 4:00 AM	9/27/03 2:00 PM	R1K, Richview TS.A2_BUS, Richview TS.T8	CWW	8 Hour		
9/29/03 4:00 AM	10/4/03 2:00 PM	R2K, Richview TS.A1_BUS, Richview TS.T2	CWW	8 Hour		
9/29/03 5:00 AM	11/28/03 6:00 PM	Cecil TS.T3	CWW	35 Hour		
10/20/03 5:00 AM	11/21/03 6:00 PM	Fairchild TS.T4	CWW	5 Day		
11/3/03 5:00 AM	11/28/03 6:00 PM	Lakeview SS.T7_230, Lakeview SS.T8_230, Lakeview SS.L24CR_Terminal, Lakeview SS.RSS4_BUS	CWW	48 Hour		
11/10/03 8:00 AM	11/28/03 3:30 PM	B542C, Bowmanville SS.B542C_Terminal	CWW	4 Hour		
12/15/03 7:00 AM	12/31/03 3:00 PM	Claireville TS.D2_BUS	CWW	72 Hour		

Table C10 West Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
6/9/03 7:00 AM	7/3/03 6:00 PM	Sarnia Scott TS.AL25	CWW	Non-Recallable		
10/6/03 7:00 AM	10/17/03 3:00 PM	Lambton TS #2.L51L29	CWW	1 Day		

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