Independent Electricity Market Operator

18-MONTH OUTLOOK:

An Assessment of the Reliability of the Ontario Electricity System

From January 2004 to June 2005

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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 January 2004 to June 2005. 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.

Significant Updates since the last report

This Outlook reflects the return to service of Pickering A Unit 4 and Bruce A Unit 4 which are both now fully dispatchable. Bruce Power advises that Bruce A Unit 3 is now expected to begin producing power before the end of the year. The return to service of these nuclear units provides adequate reserve requirements for the majority of the 18-month study period and decreases Ontario's reliance on imports to help meet demand in the province. It is assumed that none of the remaining three Pickering A units will return to service during the time frame of this report.

OPG has notified the IMO that the Lakeview coal-fired generating station will stop producing power at the end of April 2005.

Resource Outlook

The two resource scenarios defined in previous Outlooks are considered again in this Outlook – an Existing Resource Scenario and a Planned Resource Scenario. Updated values are presented for both scenario definitions; these are summarized below.

Existing Resource Scenario

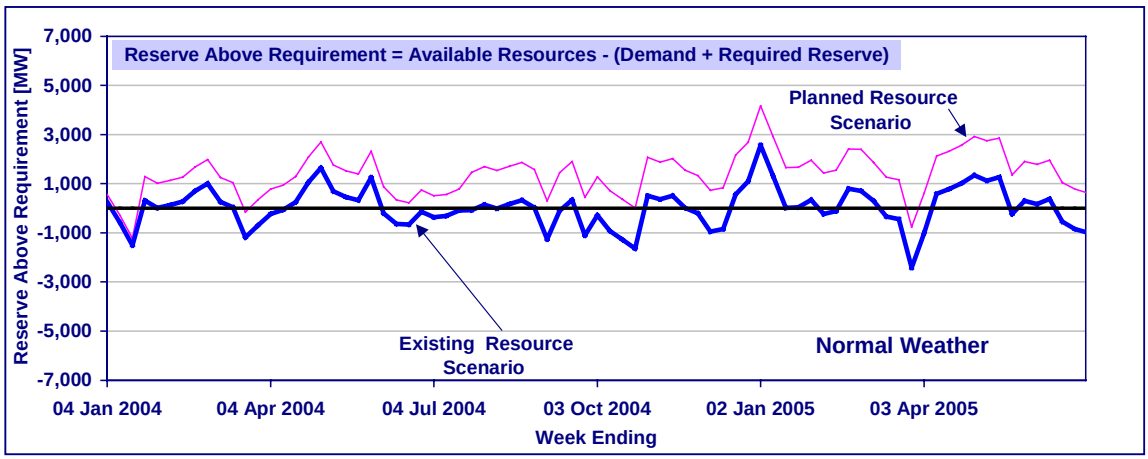
Since this time last year, TransAlta's 500 MW station at Sarnia, OPG's 500 MW Unit 4 at Pickering, and Bruce Power's 800 MW Unit 4 have all come into service. As a result, the resource outlook is substantially better heading into this winter. Some reserves are below requirement, particularly during the fall of 2004 when there are significant resource reductions due to a large block of maintenance outages.

During these weeks planned generator outages 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.

Planned Resource Scenario

The **Planned Resource Scenario** includes approximately 1,400 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 included in the Existing Resource Scenario. The additional generation resources consist of two new gas-fired facilities, Brighton Beach and Imperial Oil, currently under construction and Bruce A Unit 3 returning to service, with each facility assumed to be fully 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 all but four weeks of the Outlook timeframe, the forecast available resources exceed the planning requirements. The following figure illustrates the weekly resource adequacy situation of the Ontario electricity system for the two resource availability scenarios under normal weather conditions.



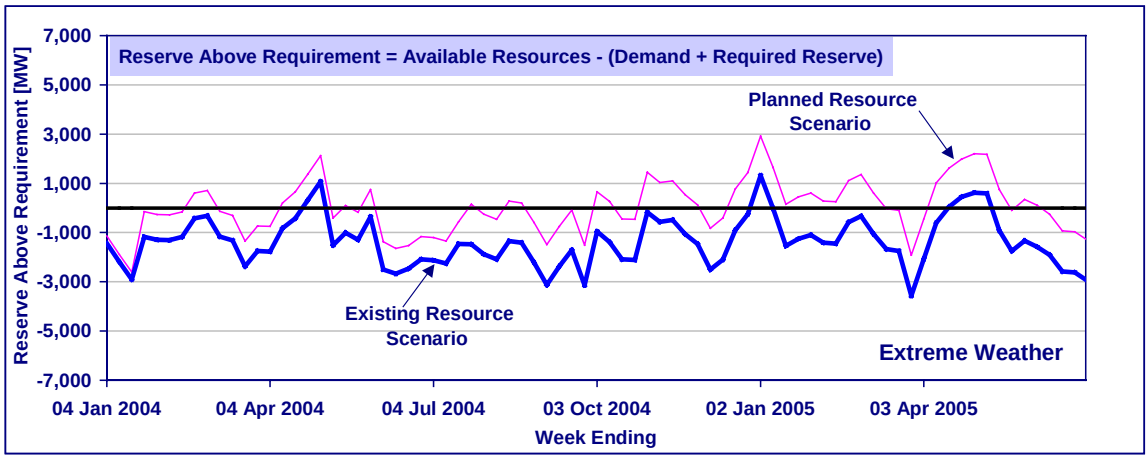
Weather impact

The potential for extremely hot and humid weather conditions, and extremely cold and windy weather conditions is covered by the Extreme weather scenario.

In order to illustrate the impact of extreme weather on forecast reserves 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.

Under the Planned Resource Scenario with extreme weather, the reserve above requirement values range from about 2,900 MW to –2,600 MW.

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 September 2003. Despite an increased growth in the U.S. economy and some strong signs on the domestic front, the economic forecast is tempered by the appreciation of the Canadian dollar. As such, the energy demand is forecast to be 154.1 TWh for 2004, a 1.6% increase over the estimated weather corrected total for 2003. 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 sometime during a 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 January 2004 to June 2005 (IMO_REP_0171).

Season	Normal Weather Peak (MW)	Expected Seasonal Peak (MW)	Extreme Weather Peak (MW)
Winter 2004	24,027	25,149	25,996
Summer 2004	23,806	25,964	26,438
Winter 2005	24,153	25,494	26,122

Transmission Outlook

For the first 15 months of the Outlook period, 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.

The retirement of Lakeview Thermal Generating Station as a coal-fired generating station on April 30, 2005 could result in overloading of the autotransformers at Claireville TS and in unacceptably low voltages in the western portion of the Greater Toronto Area during heavy load conditions. Generation and transmission solutions have been proposed to address these concerns, and their timely implementation is critical to ensuring the reliability of supply to loads in this portion of the system.

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1.0 Introduction

This Outlook covers the 18-month period from January 1, 2004 to June 30, 2005. It supersedes the report titled "An Assessment of the Reliability of the Ontario Electricity System from October 2003 to March 2005", dated September 24, 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 Above Requirement values for the Planned Resource Scenario. Similar to the full Outlooks, the Interim Updates are posted on the IMO web site. These updates provide Outlook information on a more frequent basis to allow market participants to better adjust their operational plans and outage schedules.

The reader should be aware that Security and Adequacy Assessments are published on the IMO web site on a weekly and daily basis that progressively supersede 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 January 2004 to June 2005" (IMO_REP_0171) (found on the IMO web site at www.theimo.com/imoweb/pubs/marketReports/18Month_ODF_2003dec.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_2003dec.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_2003dec.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.

Updates from Previous Outlook

Updates to Forecast Demands

The 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 U.S. economy has begun to rebound from its weakened state of the past year. However, this recovery has coincided with a significant appreciation in the Canadian dollar. The demand for Ontario's good and services has increased but exporters' cost competitiveness has been eroded at the same time. Therefore the economic outlook for Ontario remains one of modest economic growth. In comparison to the previous forecast the economic outlook calls for a slightly lower level of economic activity in 2004; however 2005 remains virtually unchanged.

The forecast of total energy demand for 2004 is 154.1 TWh, down 0.5% from the previous forecast. Peak demands are, on average, 28 MW lower than the previous forecast. They have been influenced by the changes to the economic forecast. As well, peaks have been subject to downward pressure as price sensitive demand has continued to shift from peak to off-peak periods.

Updates to Resources

Pickering A Unit 4 and Bruce A Unit 4 are now both fully dispatchable. Bruce Power advises that Bruce A Unit 3 is now expected to begin producing power by the end of the year. OPG has notified the IMO that the Lakeview coal-fired generating station will cease operation as a coal-fired generating station at the end of April 2005.

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

New terminology is introduced in this Outlook to reduce possible reader confusion. The term "reserve above requirement" replaces the previous term "reserve margin", although the calculation and significance of the value is the same. When the "reserve above requirement" value is positive the resources forecast to be available exceed the target levels required to meet demand plus required reserve.

Updates to Transmission Outlook

The return to service dates for both circuit B3N and phase angle regulator PS3 on circuit B3N have been updated from December 31, 2003 to February 29, 2004.

The return to service date for phase angle regulator PS51 on circuit L51D has been updated from October 31, 2003 to April 1, 2004.

The expected in-service date for phase angle regulator PS4 on circuit L4D has been updated from April 30, 2004 to May 31, 2004.

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 31,264 MW.

The capacity of installed generation resources in Table 2.1 includes Bruce A Unit 4, which is now fully dispatchable. Bruce Unit 3 is expected to begin producing power by the end of the year. Bruce A Unit 3, 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 are included in the list of existing installed generation resources. While Pickering A Unit 4 is fully dispatchable, the other three Pickering A units are not expected to be reactivated within the 18-month period covered by this Outlook.

The four units at Lakeview Thermal Generating Station (TGS) will stop producing power at the end of April 2005, which will then decrease the installed generation resources. This decrease was included under both resource scenarios.

Table 2.1 Existing Installed Generation Resources[1]

Fuel Type	Total Capacity (MW)	Number of Stations
Nuclear	11,606	5
Coal	7,546	5
Oil / Gas	4,364	22
Hydroelectric	7,682	61
Miscellaneous	66	2
Total	31,264	95

2.2 External Transactions

No 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 significant new generation projects in the IMO's Connection Assessment and Approval (CAA) process that are under construction and are scheduled to be

[1] In Table 2.1, the number of coal stations will decrease to four with the retirement of the Lakeview TGS.

placed in-service within the 18-month study period. 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 3	Bruce	Nuclear	770	December 2003 *
Imperial Oil	West	Gas	98	April 2004
ATCO - Brighton Beach	West	Gas	578	June 2004
Total			1,446	

* 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.

Under the **Existing Resource Scenario** Ontario generation resources identified in Table 2.1 were assumed to be in-service with the exception of three of the Pickering A nuclear units, which were assumed to be out-of-service for the duration of the study period. Also, the four coal-fired units at the Lakeview TGS were assumed to cease operation as generators on April 30, 2005. 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. As with the Existing Resource Scenario, the four coal-fired units at the Lakeview TGS were assumed to cease operation as generators on April 30, 2005. Additionally, all potential generation additions listed in Table 2.2 were included under this scenario, as well as an amount of 300 MW of price-responsive demand.

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 decreased by the size of the Lakeview TGS at the end of April 2005. Also, for the Planned Resource Scenario only, resources are incremented by

the generation additions listed in Table 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	Winter Peak 2004		Summer Peak 2004		Winter Peak 2005	
		Existing Resource Scenario	Planned Resource Scenario	Existing Resource Scenario	Planned Resource Scenario	Existing Resource Scenario	Planned Resource Scenario
1	Installed Resources (MW)	31,264	31,264	31,264	32,710	31,264	32,710
2	Imports (MW)	0	0	0	0	0	0
3	Total Resources (MW)	31,264	31,264	31,264	32,710	31,264	32,710
4	Total Reductions in Resources (MW)	4,154	4,154	3,732	4,554	3,527	3,538
5	Price-responsive Demand (MW)	0	300	0	300	0	300
6	Available Resources (MW)	27,110	27,410	27,532	28,456	27,737	29,472

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 for Bruce A Unit 3. It would also reflect minor unit re-ratings resulting from equipment upgrades, if they occurred prior to the publication of this Outlook. The four Pickering A nuclear units are included in the existing installed generation resources. While Pickering A Unit 4 is fully dispatchable, the other three Pickering A units are not expected to be reactivated within the 18-month period covered by this Outlook. 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 (line 3) 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.

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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. 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 3.5. 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. Reserve Above Requirement levels 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

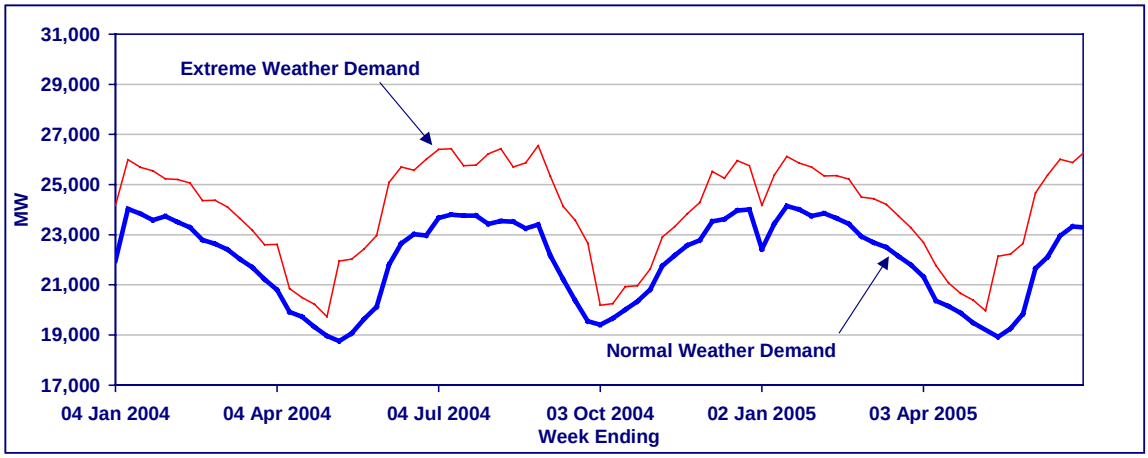


Figure 3.2 shows the Total Reductions in Resources used in the calculation of the Available Resources (as described in Section 2.4).

Figure 3.2 Total Reductions in Resources

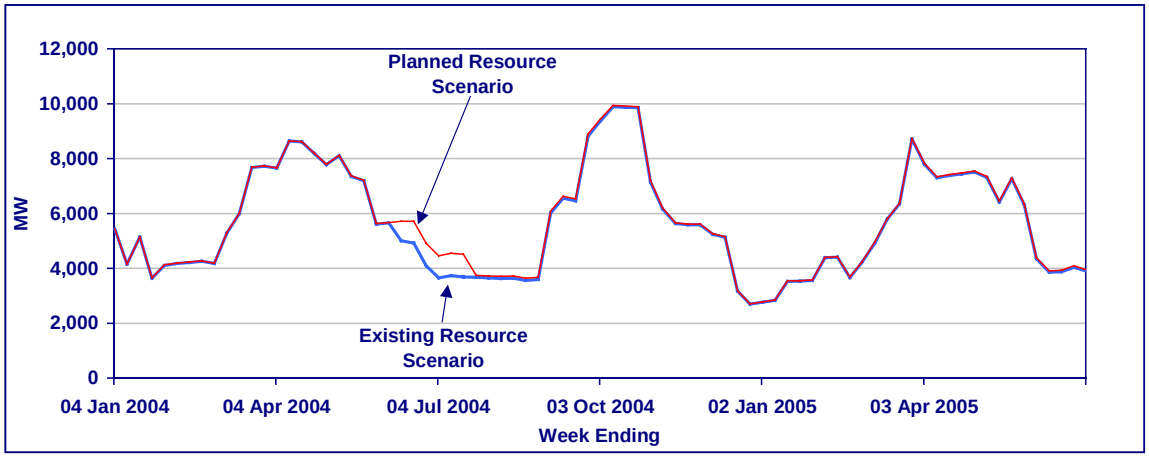


Figure 3.3 provides a comparison between Available Resources, and Required Resources for each week, for the Existing Resource Scenario. The latter quantity is the sum of Demand and Required Reserve, and is based on a probabilistic calculation, which takes into account load forecast uncertainty due to 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

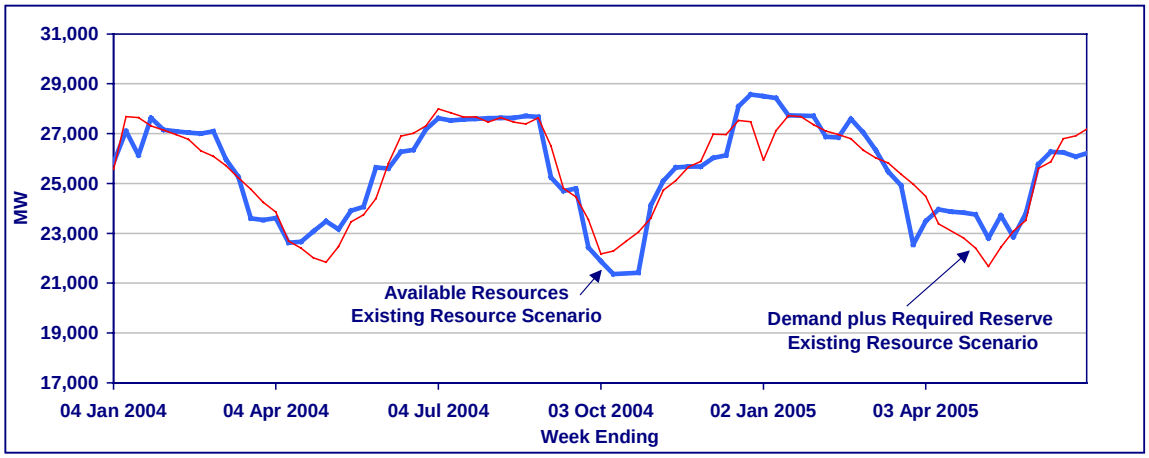
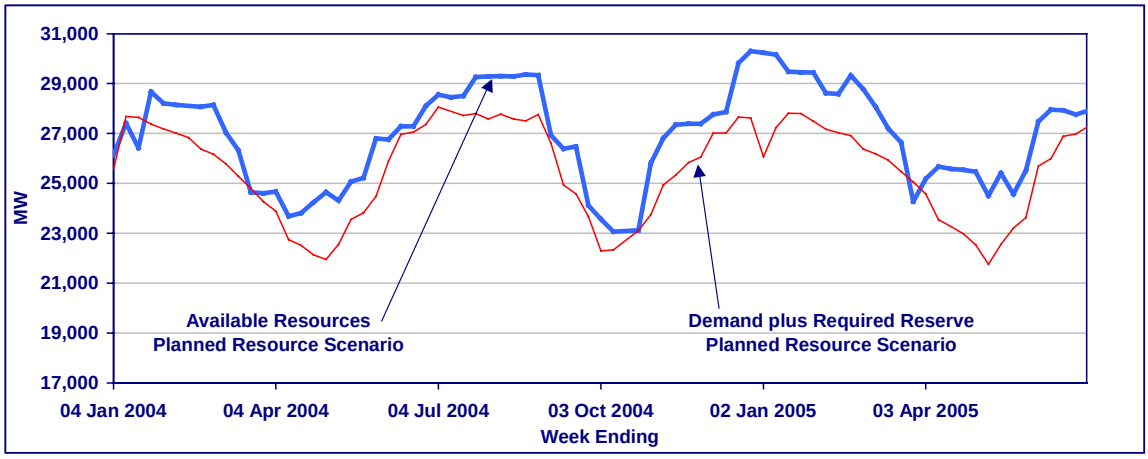
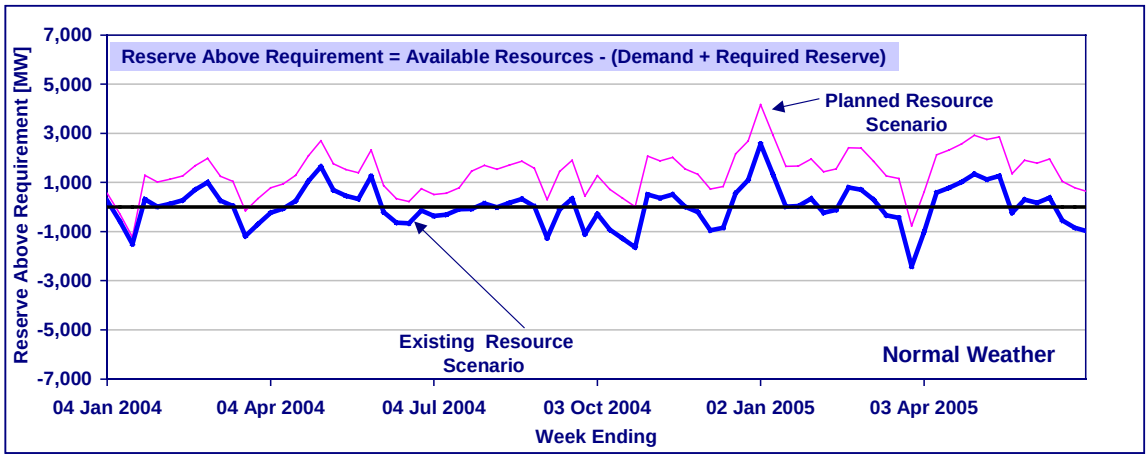


Figure 3.4 Available vs. Required Resources: Planned Resource Scenario



Reserve Above Requirement levels, 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 Above Requirement: Existing Resource Scenario and Planned Resource Scenario



Under the **Existing Resource Scenario**, since this time last year, TransAlta's 500 MW station at Sarnia, OPG's 500 MW Unit 4 at Pickering A, and Bruce Power's 800 MW Unit 4 have all come into service. As a result, the resource outlook is substantially better heading into this winter. Some reserves are below requirements, particularly during the fall of 2004 when there are significant resource reductions due to a large block of maintenance outages. During these weeks planned generator outages 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.

The results above 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.

Under the **Planned Resource Scenario**, the resource adequacy situation is significantly improved when compared to the Existing Resource Scenario. For all but four weeks of the Outlook timeframe, the forecast available resources exceed the planning requirements. 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 above requirement values in the present Outlook and the forecast reserve above requirement values in the previous Outlook published on September 24, 2003. Under the Existing Resource Scenario, the return to service of Bruce A Unit 4 yields a generally higher supply availability outlook when compared to the previous 18-Month Outlook. Under the Planned Resource Scenario, forecast reserve above requirement levels are, on average, slightly lower in this Outlook than the previous one, due mainly to updates in the generator outage program.

Figure 3.6 Reserve Above Requirement: Existing Resource Scenario vs. Previous Existing Resource Scenario

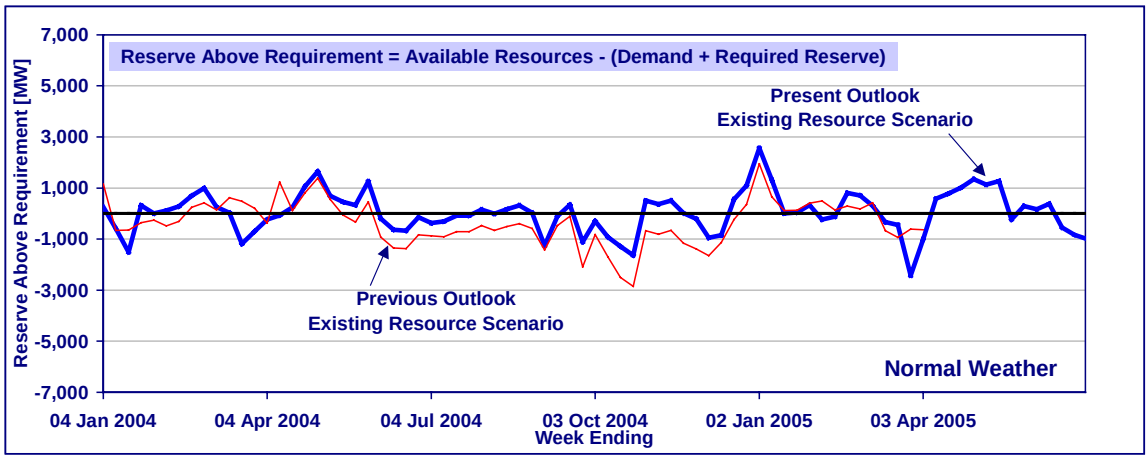
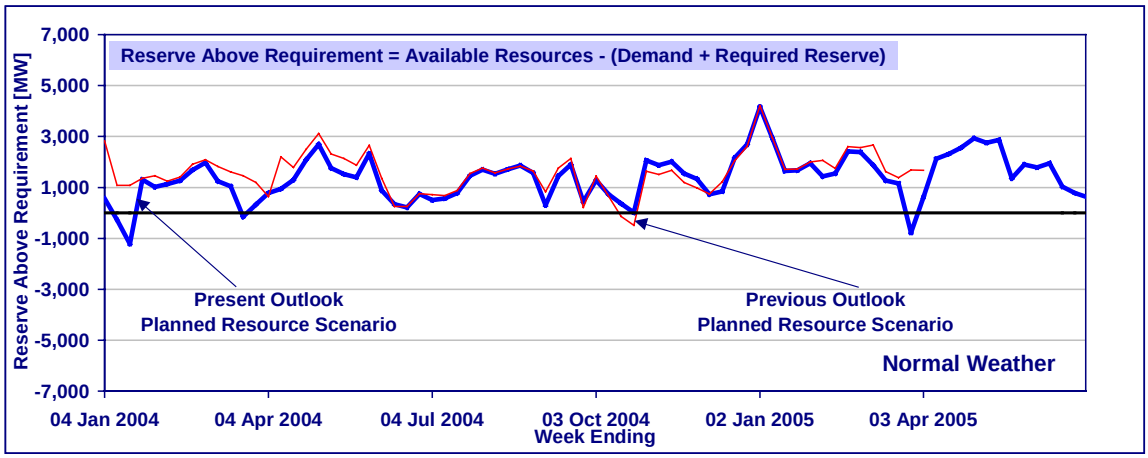


Figure 3.7 Reserve Above Requirement: Planned Resource Scenario vs. Previous Planned Resource Scenario



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 where reserves are below the requirement 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 of 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 reserve 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 levels 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 levels and the need for higher 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 modeled 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 levels 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 become significant. This emphasizes the need for additional supply and demand responses within Ontario.

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

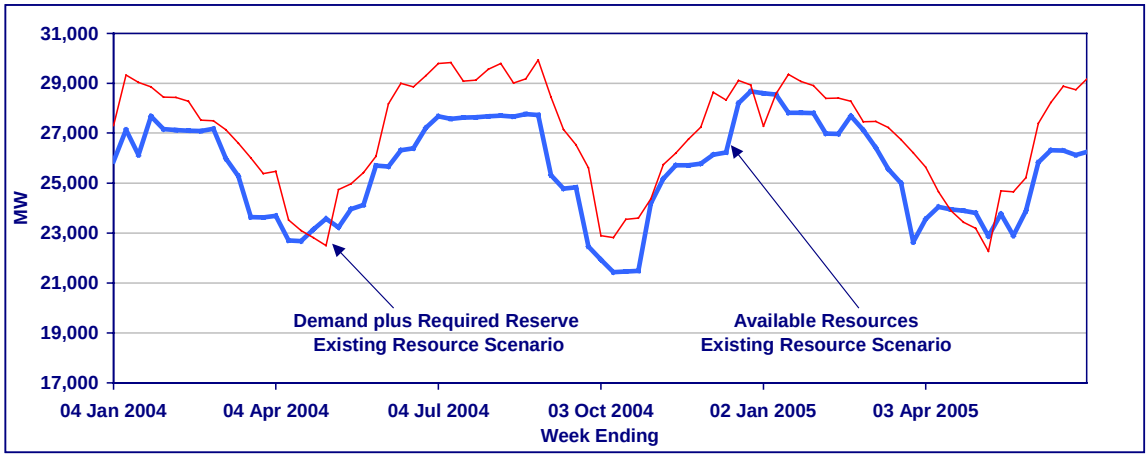


Figure 3.9 Available vs. Required Resources: Planned Resource Scenario Extreme Weather Demand

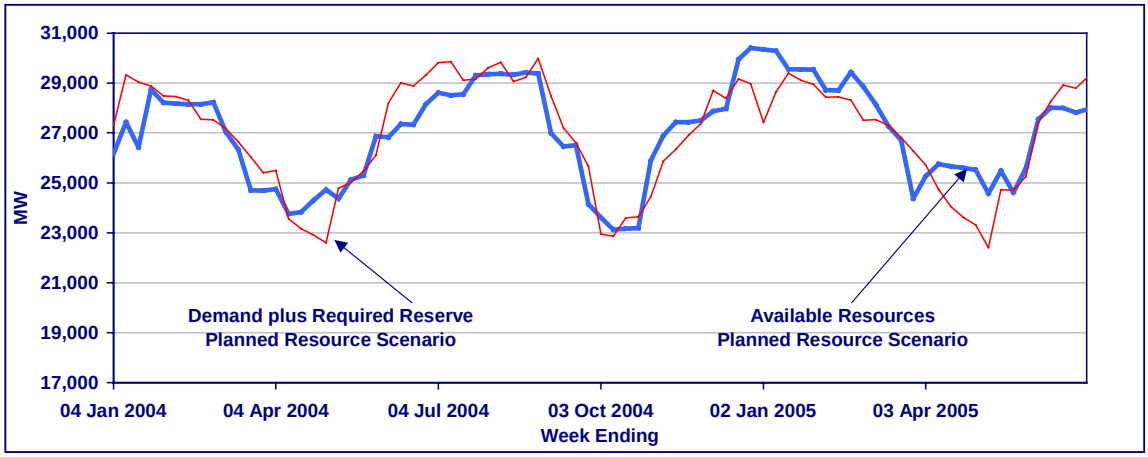
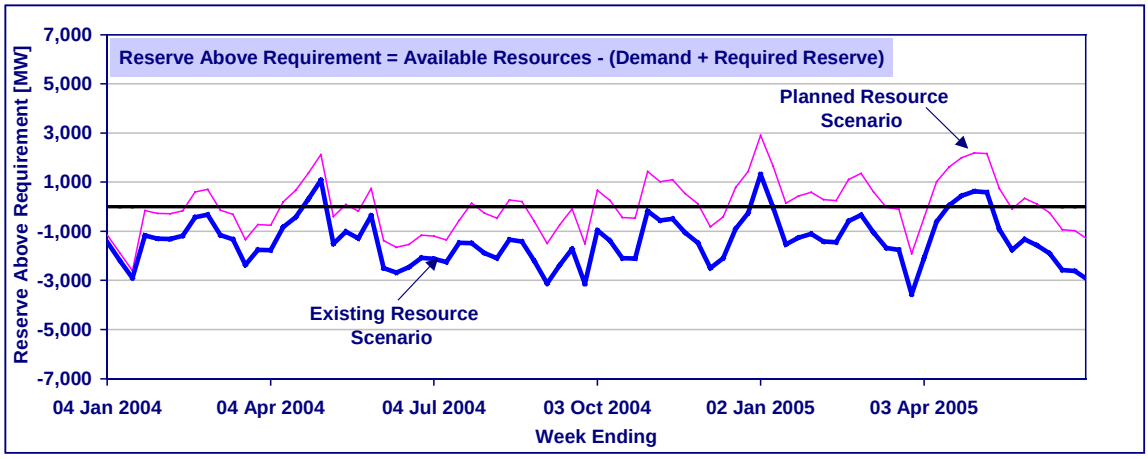


Figure 3.10 Reserve Above Requirement: Existing Resource Scenario and Planned Resource Scenario, Extreme Weather Demand



3.3.2 Generator Return to Service Delays

The return to service of Pickering A Unit 4 and Bruce A Unit 4 is a significant development. However, more new generating capacity is needed, as well as price-responsive demand. For the 18-month period under study, the improved demand-supply situation for the Planned Resource Scenario is critically dependent on the Bruce A Unit 3 and new generation projects coming into service on schedule.

3.3.3 Extensions to Generator Planned Outages

A number of large generating units are scheduled to return to service from outage at the beginning of winter 2003/04, with numerous others scheduled to return from future planned outages prior to summer 2004. Meeting these schedules is critical to maintaining adequate reserve levels. Delays in commissioning new units or returning generators to service, whether from lay-up or maintenance outages, could lead to extensive reliance on imports.

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.

It should be noted that the reduced flexibility in scheduling maintenance outages, which could happen under the Existing Resource Scenario, would have a negative impact on the long-term reliability of affected generating units, and could increase the number of forced outage occurrences. If the actual amount of generator forced outages is higher than the calculated allowance, reserve above requirement levels 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 by the way in which water is utilized.

Water-flow conditions are primarily influenced by the amount of precipitation received. To accurately forecast precipitation amounts 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 August 31, 2003 indicates an average import level of 1,120 MW for all hours. During the 2,171 hours when Ontario demand exceeded 20,000 MW the average import level was 1,579 MW. During the 265 hours when Ontario demand exceeded 23,000 MW the average import level was 2,436 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.

3.5 Energy Conservation and Peak Reduction through Price-Responsive Demands

A viable and less expensive alternative to building new generation capacity in Ontario is the development of price-responsive demands. Price-responsive demands would improve the supply-demand outlook in two main ways:

- Energy conservation through reduction of electricity consumption would have beneficial effects on the environment.

- Shifting some of the consumption from peak to off-peak periods by dispatchable and/or non-dispatchable loads would reduce the peak demand with downward effects on electricity prices.

Both types of behavior would offset, or at least significantly delay, the need for additional generation capacity in Ontario.

- 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 Connection Assessments and Approval queue. Only those projects that have an estimated in-service date within the 18-month period under study are listed.

By May 31, 2004, it is expected that a new 845 MVA phase angle regulator (PAR), PS4, on 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 should be rescheduled or changed. As an example, a change in an outage may include reducing the scheduled duration or recall time.

The assessment of transmission outages will also identify any resources that are constrained off due to transmission outage conditions. The identification of a constrained off resource is generally not reflected in the assessment of weekly resource adequacy, which is detailed in Section 3.1. 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 the forecast of reserve is deficient. Under the Market Rules, where the scheduling of planned outages by different market participant's 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 November 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).

Generally, 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:

Northeast Zone

The 115 kV L5H circuit outage from January 12, 2004 to February 27, 2004 and the 230 kV H24S circuit outages from February 2, 2004 to February 12, 2004 and from May 3, 2004 to July 9, 2004 affect the flow limit associated with the Ontario – Quebec North Interconnection. Reserves are forecast to be below requirements for the first week of the outage period in January for both the Existing and Planned Resource Scenarios, and for most weeks in June and July under the Existing Resource Scenario. In the approval timeframe, if the IMO determines that imports are required on this interconnection to maintain supply reliability and that an outage limits this requirement, the IMO may cancel or defer the outage.

Both circuits L5H and H24S will be out of service from February 2, 2004 to February 12, 2004. Although these outages are manageable, the loss of 230 kV circuit H23S during these outage conditions would leave the northeast transmission network with no direct link between Martindale and Otto Holden. If possible, the IMO recommends that the transmitter reschedule the L5H and H24S outages so they do not overlap.

Northwest Zone

There are several scheduled 115 kV and 230 kV circuit outages in the Outlook period that will reduce the flow limit between Ontario and Manitoba by between 50 MW and 250 MW, and in some cases, will reduce the flow limit between Ontario and Minnesota by between 25 MW and 50 MW. These outages will also in some cases reduce the East-West Transfer East (EWTE) and East-West Transfer West (EWTW) capabilities by between 50 MW and 75 MW and by 50 MW, respectively. The lower EWTE/EWTW capabilities may reduce generator dispatching flexibility and require more coordination in the planning of generation and other transmission outages in the Northeast and Northeast zones.

Reserves are forecast to be below requirements for some weeks in June, July, September and October of 2004 under the Existing Resource Scenario. If imports and/or the full capabilities of the EWTE/EWTW interface are required to maintain supply reliability, the IMO may defer or cancel the outages. However, since all of the scheduled outages have a relatively short recall time of eight hours or less, the IMO may release the outages but recall an outage if a concern materializes.

Toronto Zone

The Hearn x Leaside 115 kV outages from March 1, 2004 to May 28, 2004 and the Cecil x Esplanade 115 kV outage from October 4, 2004 to December 10, 2004 may, depending

on the prevailing load levels, result in the thermal overloading of other 115 kV circuits in the local operating area. 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 outages, but recall them for those periods where thermal overloading is a concern.

The assessment of transmission outages for this Outlook has been limited to those outages with a scheduled duration of greater than five days or to those outages associated with a project where at least one outage has a scheduled duration of greater than five days. 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 ATCO – 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 recent addition of a 125 Mvar, 115 kV capacitor at the Hearn Switching Station and the planned addition of a 125 Mvar, 115 kV capacitor at the Leaside

Transformer Station by 2004-Q2 will improve the voltage profile in this area under summer peak conditions.

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. The planned addition by the transmitter of 125 Mvar, 115 kV capacitor bank at Burlington TS by 2004-Q2 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 at winter peak load, to maintain minimum voltages in the area. 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 2004-Q1 will result in an improvement of the 115 kV voltage profile in the area and increased reliability in the local peak load supply.

4.3.1 Impact of Lakeview Thermal Generating Station Shutdown

The IMO has been notified by Ontario Power Generation that the Lakeview Thermal Generation Station will stop producing power at the end of April 2005. The Lakeview facility currently has four 300 MW units in service.

A number of generation and transmission proposals have been identified to address potential reliability impacts associated with the shutdown of Lakeview.

These impacts include potential loss of load associated with overloading of transformers at the Claireville Transformer Station, and lower than acceptable voltages in the western portion of the Greater Toronto Area during heavy load conditions with all transmission elements in service. These load levels could occur as early as June 2005. The risk to supply reliability increases significantly for contingency conditions or when transmission elements are out of service.

Hydro One has made application to the OEB for expedited approval for required transmission facilities. Assuming timely approval, Hydro One anticipates that its facilities will be in-service prior to June 2005. In conjunction with transmission, other options are being explored for additional voltage support. The timely implementation of proposed solutions is necessary to address the Lakeview impacts and ensure reliability of supply in this area.

4.4 Forced Outages

Due to a forced outage, 230 kV circuit B3N (Scott Transformer Station x Bunce Creek, Michigan) is unavailable until February 29, 2004. This outage increases the upper limit of the Ontario – Michigan import limit by 200 MW in the summer and by 300 MW in the winter. The Ontario – Michigan export limit decreases by approximately 500 MW in the summer and in the winter. The 230 kV PS3 phase angle regulator (PAR) on circuit B3N in Michigan is also unavailable until February 29, 2004.

The 230 kV PS51 PAR on circuit L51D is unavailable until April 1, 2004 but does not affect the import and export limits of the Ontario – Michigan 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**, since this time last year, TransAlta's 500 MW station at Sarnia, OPG's 500 MW Unit 4 at Pickering A, and Bruce Power's 800 MW Unit 4 have all come into service. As a result, the resource outlook is substantially better heading into this winter. Some reserves are below requirements, particularly during the fall of 2004 when there are significant resource reductions due to a large block of maintenance outages. During these weeks planned generator outages 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.
- Under the **Planned Resource Scenario**, the resource adequacy situation is significantly improved when compared to the Existing Resource Scenario. For all but four weeks of the Outlook timeframe, the forecast available resources exceed the planning requirements. To the extent this scenario materializes, 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 Scenario	Extreme Weather Scenario
Existing Resource Scenario	**- some planned outages at risk** **- imports required during many peak periods**	**- most planned outages at risk** **- significant imports required during many peak periods**
Planned Resource Scenario	**- opportunities for additional outages/exports exist in most weeks** **- four weeks when reserves are lower than required**	**- many planned outages at risk** **- imports required during some weekly peak periods**

- Tight demand/supply balances during periods when reserves are below required levels could 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, emphasizes the need for additional supply and price-responsive demand within Ontario.

- The return to service of Pickering A Unit 4 and Bruce A Unit 4 is a significant development. However, more new generating capacity is needed, as well as price-responsive demand. For the next 18-month period, an improved demand-supply situation is critically dependent on the Bruce A Unit 3 and new generation projects coming to service on schedule.
- A number of large generating units are scheduled to return to service from outage at the beginning of winter 2003/04, with numerous others scheduled to return from planned outages prior to summer 2004. Meeting these schedules is critical to maintaining adequate reserve levels.
- High generator unavailability, whether caused by higher forced outage rates, delays in commissioning new units or returning generators to service, could lead to extensive reliance on imports. 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

- Some transmission outages will be difficult to schedule without reliability impacts or may be recalled on short notice.
- 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.
- 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.
- The retirement of Lakeview Thermal Generating Station as a coal-fired generating station on April 30, 2005 could result in the thermal overloading of some existing transmission facilities and in unacceptable voltage profiles in the western portion of the Greater Toronto Area during system peak conditions if needed transmission and generation reinforcements are not available. System peak conditions could occur in June 2005.

- 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 Above Requirement MW
04-Jan-04	31,264	5,432	0	25,832	25,569	17.6	3,870	16.4	3,607	263
11-Jan-04	31,264	4,154	0	27,110	27,691	12.8	3,083	15.3	3,664	-581
18-Jan-04	31,264	5,143	0	26,121	27,638	9.6	2,278	15.9	3,795	-1,517
25-Jan-04	31,264	3,640	0	27,624	27,309	17.1	4,037	15.8	3,722	315
01-Feb-04	31,264	4,113	0	27,151	27,147	14.4	3,412	14.4	3,408	4
08-Feb-04	31,264	4,176	0	27,088	26,962	15.2	3,581	14.7	3,455	126
15-Feb-04	31,264	4,219	0	27,045	26,769	16.1	3,757	15.0	3,481	276
22-Feb-04	31,264	4,256	0	27,008	26,308	18.5	4,212	15.4	3,512	700
29-Feb-04	31,264	4,172	0	27,092	26,095	19.7	4,454	15.3	3,457	997
07-Mar-04	31,264	5,283	0	25,981	25,722	16.0	3,574	14.8	3,315	259
14-Mar-04	31,264	5,994	0	25,270	25,234	14.7	3,235	14.5	3,199	36
21-Mar-04	31,264	7,671	0	23,593	24,773	8.8	1,898	14.2	3,078	-1,180
28-Mar-04	31,264	7,722	0	23,542	24,238	10.9	2,322	14.2	3,018	-696
04-Apr-04	31,264	7,649	0	23,615	23,846	13.5	2,811	14.6	3,042	-231
11-Apr-04	31,264	8,640	0	22,624	22,687	13.5	2,697	13.9	2,760	-63
18-Apr-04	31,264	8,609	0	22,655	22,411	14.9	2,929	13.6	2,685	244
25-Apr-04	31,264	8,188	0	23,076	22,015	19.4	3,753	13.9	2,692	1,061
02-May-04	31,264	7,778	0	23,486	21,843	23.8	4,517	15.2	2,874	1,643
09-May-04	31,264	8,106	0	23,158	22,468	23.5	4,406	19.8	3,716	690
16-May-04	31,264	7,353	0	23,911	23,457	25.4	4,847	23.0	4,393	454
23-May-04	31,264	7,200	0	24,064	23,739	22.5	4,423	20.9	4,098	325
30-May-04	31,264	5,617	0	25,647	24,389	27.4	5,519	21.2	4,261	1,258
06-Jun-04	31,264	5,660	0	25,604	25,807	17.4	3,792	18.3	3,995	-203
13-Jun-04	31,264	5,004	0	26,260	26,900	15.9	3,605	18.7	4,245	-640
20-Jun-04	31,264	4,917	0	26,347	27,014	14.4	3,321	17.3	3,988	-667
27-Jun-04	31,264	4,096	0	27,168	27,310	18.3	4,192	18.9	4,334	-142
04-Jul-04	31,264	3,644	0	27,620	27,992	16.7	3,949	18.3	4,321	-372
11-Jul-04	31,264	3,732	0	27,532	27,835	15.7	3,726	16.9	4,029	-303
18-Jul-04	31,264	3,689	0	27,575	27,662	16.1	3,815	16.4	3,902	-87
25-Jul-04	31,264	3,672	0	27,592	27,674	16.1	3,832	16.5	3,914	-82
01-Aug-04	31,264	3,647	0	27,617	27,464	17.9	4,192	17.2	4,039	153
08-Aug-04	31,264	3,627	0	27,637	27,649	17.4	4,090	17.4	4,102	-12
15-Aug-04	31,264	3,640	0	27,624	27,461	17.5	4,107	16.8	3,944	163
22-Aug-04	31,264	3,561	0	27,703	27,382	19.1	4,446	17.7	4,125	321
29-Aug-04	31,264	3,597	0	27,667	27,636	18.2	4,261	18.1	4,230	31
05-Sep-04	31,264	6,024	0	25,240	26,507	13.9	3,079	19.6	4,346	-1,267
12-Sep-04	31,264	6,556	0	24,708	24,812	16.4	3,483	16.9	3,587	-104
19-Sep-04	31,264	6,470	0	24,794	24,454	21.7	4,427	20.1	4,087	340
26-Sep-04	31,264	8,828	0	22,436	23,546	14.7	2,879	20.4	3,989	-1,110

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 Above Requirement MW
03-Oct-04	31,264	9,377	0	21,887	22,178	12.7	2,471	14.2	2,762	-291
10-Oct-04	31,264	9,897	0	21,367	22,283	8.6	1,694	13.3	2,610	-916
17-Oct-04	31,264	9,871	0	21,393	22,673	6.9	1,373	13.3	2,653	-1,280
24-Oct-04	31,264	9,850	0	21,414	23,048	5.3	1,073	13.3	2,707	-1,634
31-Oct-04	31,264	7,147	0	24,117	23,606	15.9	3,310	13.5	2,799	511
07-Nov-04	31,264	6,166	0	25,098	24,730	15.4	3,342	13.7	2,974	368
14-Nov-04	31,264	5,630	0	25,634	25,121	15.6	3,456	13.3	2,943	513
21-Nov-04	31,264	5,591	0	25,673	25,657	13.7	3,095	13.6	3,079	16
28-Nov-04	31,264	5,590	0	25,674	25,882	12.7	2,894	13.6	3,102	-208
05-Dec-04	31,264	5,243	0	26,021	26,972	10.6	2,484	14.6	3,435	-951
12-Dec-04	31,264	5,140	0	26,124	26,964	10.6	2,499	14.1	3,339	-840
19-Dec-04	31,264	3,176	0	28,088	27,523	17.2	4,120	14.8	3,555	565
26-Dec-04	31,264	2,693	0	28,571	27,480	19.0	4,562	14.5	3,471	1,091
02-Jan-05	31,264	2,763	0	28,501	25,941	27.1	6,080	15.7	3,520	2,560
09-Jan-05	31,264	2,836	0	28,428	27,112	21.3	4,984	15.7	3,668	1,316
16-Jan-05	31,264	3,527	0	27,737	27,723	14.8	3,584	14.8	3,570	14
23-Jan-05	31,264	3,536	0	27,728	27,686	15.5	3,717	15.3	3,675	42
30-Jan-05	31,264	3,562	0	27,702	27,366	16.6	3,952	15.2	3,616	336
06-Feb-05	31,264	4,386	0	26,878	27,105	12.7	3,021	13.6	3,248	-227
13-Feb-05	31,264	4,410	0	26,854	26,971	13.5	3,198	14.0	3,315	-117
20-Feb-05	31,264	3,669	0	27,595	26,794	17.8	4,161	14.3	3,360	801
27-Feb-05	31,264	4,224	0	27,040	26,337	17.9	4,106	14.8	3,403	703
06-Mar-05	31,264	4,930	0	26,334	26,029	16.0	3,636	14.7	3,331	305
13-Mar-05	31,264	5,790	0	25,474	25,812	13.2	2,974	14.7	3,312	-338
20-Mar-05	31,264	6,344	0	24,920	25,370	12.6	2,780	14.6	3,230	-450
27-Mar-05	31,264	8,713	0	22,551	24,972	3.4	751	14.6	3,172	-2,421
03-Apr-05	31,264	7,789	0	23,475	24,485	10.1	2,150	14.8	3,160	-1,010
10-Apr-05	31,264	7,303	0	23,961	23,374	17.6	3,592	14.8	3,005	587
17-Apr-05	31,264	7,389	0	23,875	23,096	18.5	3,718	14.6	2,939	779
24-Apr-05	31,264	7,436	0	23,828	22,812	19.8	3,938	14.7	2,922	1,016
01-May-05	31,264	7,518	0	23,746	22,399	21.8	4,256	14.9	2,909	1,347
08-May-05	30,116	7,322	0	22,794	21,667	18.7	3,585	12.8	2,458	1,127
15-May-05	30,116	6,410	0	23,706	22,439	25.2	4,772	18.5	3,505	1,267
22-May-05	30,116	7,266	0	22,850	23,083	18.6	3,584	19.8	3,817	-233
29-May-05	30,116	6,304	0	23,812	23,513	20.0	3,963	18.5	3,664	299
05-Jun-05	30,116	4,347	0	25,769	25,596	19.0	4,115	18.2	3,942	173
12-Jun-05	30,116	3,856	0	26,260	25,878	18.8	4,149	17.0	3,767	382
19-Jun-05	30,116	3,876	0	26,240	26,788	14.3	3,283	16.7	3,831	-548
26-Jun-05	30,116	4,040	0	26,076	26,914	11.8	2,748	15.4	3,586	-838
03-Jul-05	30,116	3,894	0	26,222	27,215	12.6	2,926	16.8	3,919	-993

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 Above Requirement MW
04-Jan-04	31,264	5,432	300	26,132	25,569	19.0	4,170	16.4	3,607	563
11-Jan-04	31,264	4,154	300	27,410	27,691	14.1	3,383	15.3	3,664	-281
18-Jan-04	31,264	5,143	300	26,421	27,638	10.8	2,578	15.9	3,795	-1,217
25-Jan-04	32,034	3,653	300	28,681	27,381	21.6	5,094	16.1	3,794	1,300
01-Feb-04	32,034	4,126	300	28,208	27,185	18.8	4,469	14.5	3,446	1,023
08-Feb-04	32,034	4,189	300	28,145	27,013	19.7	4,638	14.9	3,506	1,132
15-Feb-04	32,034	4,232	300	28,102	26,835	20.7	4,814	15.2	3,547	1,267
22-Feb-04	32,034	4,269	300	28,065	26,382	23.1	5,269	15.7	3,586	1,683
29-Feb-04	32,034	4,185	300	28,149	26,169	24.3	5,511	15.6	3,531	1,980
07-Mar-04	32,034	5,296	300	27,038	25,785	20.7	4,631	15.1	3,378	1,253
14-Mar-04	32,034	6,007	300	26,327	25,280	19.5	4,292	14.7	3,245	1,047
21-Mar-04	32,034	7,684	300	24,650	24,801	13.6	2,955	14.3	3,106	-151
28-Mar-04	32,034	7,735	300	24,599	24,265	15.9	3,379	14.4	3,045	334
04-Apr-04	32,034	7,662	300	24,672	23,888	18.6	3,868	14.8	3,084	784
11-Apr-04	32,034	8,653	300	23,681	22,741	18.8	3,754	14.1	2,814	940
18-Apr-04	32,132	8,622	300	23,810	22,517	20.7	4,084	14.2	2,791	1,293
25-Apr-04	32,132	8,201	300	24,231	22,139	25.4	4,908	14.6	2,816	2,092
02-May-04	32,132	7,791	300	24,641	21,947	29.9	5,672	15.7	2,978	2,694
09-May-04	32,132	8,119	300	24,313	22,557	29.7	5,561	20.3	3,805	1,756
16-May-04	32,132	7,366	300	25,066	23,545	31.5	6,002	23.5	4,481	1,521
23-May-04	32,132	7,213	300	25,219	23,824	28.4	5,578	21.3	4,183	1,395
30-May-04	32,132	5,630	300	26,802	24,475	33.2	6,674	21.6	4,347	2,327
06-Jun-04	32,132	5,673	300	26,759	25,881	22.7	4,947	18.7	4,069	878
13-Jun-04	32,710	5,714	300	27,296	26,957	20.5	4,641	19.0	4,302	339
20-Jun-04	32,710	5,725	300	27,285	27,062	18.5	4,259	17.5	4,036	223
27-Jun-04	32,710	4,904	300	28,106	27,367	22.3	5,130	19.1	4,391	739
04-Jul-04	32,710	4,452	300	28,558	28,051	20.7	4,887	18.5	4,380	507
11-Jul-04	32,710	4,554	300	28,456	27,892	19.5	4,650	17.2	4,086	564
18-Jul-04	32,710	4,511	300	28,499	27,720	20.0	4,739	16.7	3,960	779
25-Jul-04	32,710	3,747	300	29,263	27,803	23.2	5,503	17.0	4,043	1,460
01-Aug-04	32,710	3,722	300	29,288	27,589	25.0	5,863	17.8	4,164	1,699
08-Aug-04	32,710	3,707	300	29,303	27,773	24.4	5,756	18.0	4,226	1,530
15-Aug-04	32,710	3,720	300	29,290	27,587	24.6	5,773	17.3	4,070	1,703
22-Aug-04	32,710	3,641	300	29,369	27,505	26.3	6,112	18.3	4,248	1,864
29-Aug-04	32,710	3,677	300	29,333	27,759	25.3	5,927	18.6	4,353	1,574
05-Sep-04	32,710	6,090	300	26,920	26,615	21.5	4,759	20.1	4,454	305
12-Sep-04	32,710	6,622	300	26,388	24,940	24.3	5,163	17.5	3,715	1,448
19-Sep-04	32,710	6,536	300	26,474	24,576	30.0	6,107	20.7	4,209	1,898
26-Sep-04	32,710	8,894	300	24,116	23,669	23.3	4,559	21.0	4,112	447

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 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 Above Requirement MW
03-Oct-04	32,710	9,443	300	23,567	22,290	21.4	4,151	14.8	2,874	1,277
10-Oct-04	32,710	9,942	300	23,068	22,343	17.3	3,395	13.6	2,670	725
17-Oct-04	32,710	9,916	300	23,094	22,723	15.4	3,074	13.5	2,703	371
24-Oct-04	32,710	9,895	300	23,115	23,097	13.6	2,774	13.6	2,756	18
31-Oct-04	32,710	7,192	300	25,818	23,749	24.1	5,011	14.1	2,942	2,069
07-Nov-04	32,710	6,194	300	26,816	24,940	23.3	5,060	14.6	3,184	1,876
14-Nov-04	32,710	5,658	300	27,352	25,334	23.3	5,174	14.2	3,156	2,018
21-Nov-04	32,710	5,619	300	27,391	25,835	21.3	4,813	14.4	3,257	1,556
28-Nov-04	32,710	5,618	300	27,392	26,055	20.3	4,612	14.4	3,275	1,337
05-Dec-04	32,710	5,254	300	27,756	27,025	17.9	4,219	14.8	3,488	731
12-Dec-04	32,710	5,151	300	27,859	27,017	17.9	4,234	14.4	3,392	842
19-Dec-04	32,710	3,187	300	29,823	27,658	24.4	5,855	15.4	3,690	2,165
26-Dec-04	32,710	2,704	300	30,306	27,618	26.2	6,297	15.0	3,609	2,688
02-Jan-05	32,710	2,774	300	30,236	26,069	34.9	7,815	16.3	3,648	4,167
09-Jan-05	32,710	2,847	300	30,163	27,238	28.7	6,719	16.2	3,794	2,925
16-Jan-05	32,710	3,538	300	29,472	27,821	22.0	5,319	15.2	3,668	1,651
23-Jan-05	32,710	3,547	300	29,463	27,794	22.7	5,452	15.8	3,783	1,669
30-Jan-05	32,710	3,573	300	29,437	27,492	24.0	5,687	15.8	3,742	1,945
06-Feb-05	32,710	4,397	300	28,613	27,175	19.9	4,756	13.9	3,318	1,438
13-Feb-05	32,710	4,421	300	28,589	27,033	20.9	4,933	14.3	3,377	1,556
20-Feb-05	32,710	3,680	300	29,330	26,915	25.2	5,896	14.9	3,481	2,415
27-Feb-05	32,710	4,235	300	28,775	26,382	25.5	5,841	15.0	3,448	2,393
06-Mar-05	32,710	4,953	300	28,057	26,185	23.6	5,359	15.4	3,487	1,872
13-Mar-05	32,710	5,813	300	27,197	25,931	20.9	4,697	15.3	3,431	1,266
20-Mar-05	32,710	6,367	300	26,643	25,484	20.3	4,503	15.1	3,344	1,159
27-Mar-05	32,710	8,736	300	24,274	25,045	11.4	2,474	14.9	3,245	-771
03-Apr-05	32,710	7,824	300	25,186	24,573	18.1	3,861	15.2	3,248	613
10-Apr-05	32,710	7,338	300	25,672	23,542	26.0	5,303	15.6	3,173	2,130
17-Apr-05	32,710	7,424	300	25,586	23,265	26.9	5,429	15.4	3,108	2,321
24-Apr-05	32,710	7,471	300	25,539	22,981	28.4	5,649	15.5	3,091	2,558
01-May-05	32,710	7,553	300	25,457	22,532	30.6	5,967	15.6	3,042	2,925
08-May-05	31,562	7,357	300	24,505	21,754	27.6	5,296	13.3	2,545	2,751
15-May-05	31,562	6,445	300	25,417	22,555	34.2	6,483	19.1	3,621	2,862
22-May-05	31,562	7,301	300	24,561	23,206	27.5	5,295	20.5	3,940	1,355
29-May-05	31,562	6,339	300	25,523	23,624	28.6	5,674	19.0	3,775	1,899
05-Jun-05	31,562	4,382	300	27,480	25,693	26.9	5,826	18.7	4,039	1,787
12-Jun-05	31,562	3,912	300	27,950	25,994	26.4	5,839	17.6	3,883	1,956
19-Jun-05	31,562	3,932	300	27,930	26,890	21.7	4,973	17.1	3,933	1,040
26-Jun-05	31,562	4,096	300	27,766	26,982	19.0	4,438	15.7	3,654	784
03-Jul-05	31,562	3,950	300	27,912	27,292	19.8	4,616	17.2	3,996	620

Table A3 Demand Forecast Range For Required Resources Calculation

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
04-Jan-04	21,962	24,165
11-Jan-04	24,027	25,996
18-Jan-04	23,843	25,690
25-Jan-04	23,587	25,545
01-Feb-04	23,739	25,226
08-Feb-04	23,507	25,206
15-Feb-04	23,288	25,069
22-Feb-04	22,796	24,364
29-Feb-04	22,638	24,384
07-Mar-04	22,407	24,113
14-Mar-04	22,035	23,644
21-Mar-04	21,695	23,174
28-Mar-04	21,220	22,593
04-Apr-04	20,804	22,619
11-Apr-04	19,927	20,854
18-Apr-04	19,726	20,495
25-Apr-04	19,323	20,227
02-May-04	18,969	19,730
09-May-04	18,752	21,958
16-May-04	19,064	22,030
23-May-04	19,641	22,442
30-May-04	20,128	22,973
06-Jun-04	21,812	25,089
13-Jun-04	22,655	25,700
20-Jun-04	23,026	25,577
27-Jun-04	22,976	26,003
04-Jul-04	23,671	26,407
11-Jul-04	23,806	26,438
18-Jul-04	23,760	25,760
25-Jul-04	23,760	25,783
01-Aug-04	23,425	26,219
08-Aug-04	23,547	26,429
15-Aug-04	23,517	25,708
22-Aug-04	23,257	25,863
29-Aug-04	23,406	26,560
05-Sep-04	22,161	25,334
12-Sep-04	21,225	24,125
19-Sep-04	20,367	23,563
26-Sep-04	19,557	22,667

(Table A3 continued)

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
03-Oct-04	19,416	20,185
10-Oct-04	19,673	20,254
17-Oct-04	20,020	20,932
24-Oct-04	20,341	20,972
31-Oct-04	20,807	21,628
07-Nov-04	21,756	22,904
14-Nov-04	22,178	23,325
21-Nov-04	22,578	23,845
28-Nov-04	22,780	24,284
05-Dec-04	23,537	25,530
12-Dec-04	23,625	25,247
19-Dec-04	23,968	25,958
26-Dec-04	24,009	25,760
02-Jan-05	22,421	24,172
09-Jan-05	23,444	25,385
16-Jan-05	24,153	26,122
23-Jan-05	24,011	25,858
30-Jan-05	23,750	25,707
06-Feb-05	23,857	25,344
13-Feb-05	23,656	25,356
20-Feb-05	23,434	25,215
27-Feb-05	22,934	24,502
06-Mar-05	22,698	24,444
13-Mar-05	22,500	24,206
20-Mar-05	22,140	23,750
27-Mar-05	21,800	23,279
03-Apr-05	21,325	22,699
10-Apr-05	20,369	21,774
17-Apr-05	20,157	21,083
24-Apr-05	19,890	20,659
01-May-05	19,490	20,394
08-May-05	19,209	19,970
15-May-05	18,934	22,140
22-May-05	19,266	22,233
29-May-05	19,849	22,650
05-Jun-05	21,654	24,671
12-Jun-05	22,111	25,388
19-Jun-05	22,957	26,002
26-Jun-05	23,328	25,880
03-Jul-05	23,296	26,322

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 Above Requirement MW
04-Jan-04	31,264	5,395	0	25,869	27,301	7.1	1,704	13.0	3,136	-1,432
11-Jan-04	31,264	4,132	0	27,132	29,326	4.4	1,136	12.8	3,330	-2,194
18-Jan-04	31,264	5,143	0	26,121	29,026	1.7	431	13.0	3,336	-2,905
25-Jan-04	31,264	3,586	0	27,678	28,848	8.4	2,133	12.9	3,303	-1,170
01-Feb-04	31,264	4,108	0	27,156	28,446	7.7	1,930	12.8	3,220	-1,290
08-Feb-04	31,264	4,141	0	27,123	28,429	7.6	1,917	12.8	3,223	-1,306
15-Feb-04	31,264	4,167	0	27,097	28,280	8.1	2,028	12.8	3,211	-1,183
22-Feb-04	31,264	4,174	0	27,090	27,520	11.2	2,726	13.0	3,156	-430
29-Feb-04	31,264	4,091	0	27,173	27,491	11.4	2,789	12.7	3,107	-318
07-Mar-04	31,264	5,283	0	25,981	27,143	7.8	1,868	12.6	3,030	-1,162
14-Mar-04	31,264	5,987	0	25,277	26,601	6.9	1,633	12.5	2,957	-1,324
21-Mar-04	31,264	7,625	0	23,639	26,009	2.0	465	12.2	2,835	-2,370
28-Mar-04	31,264	7,640	0	23,624	25,379	4.6	1,031	12.3	2,786	-1,755
04-Apr-04	31,264	7,570	0	23,694	25,464	4.8	1,075	12.6	2,845	-1,770
11-Apr-04	31,264	8,565	0	22,699	23,526	8.9	1,845	12.8	2,672	-827
18-Apr-04	31,264	8,591	0	22,673	23,098	10.6	2,178	12.7	2,603	-425
25-Apr-04	31,264	8,126	0	23,138	22,821	14.4	2,911	12.8	2,594	317
02-May-04	31,264	7,688	0	23,576	22,494	19.5	3,846	14.0	2,764	1,082
09-May-04	31,264	8,042	0	23,222	24,736	5.8	1,264	12.7	2,778	-1,514
16-May-04	31,264	7,297	0	23,967	24,974	8.8	1,937	13.4	2,944	-1,007
23-May-04	31,264	7,133	0	24,131	25,420	7.5	1,689	13.3	2,978	-1,289
30-May-04	31,264	5,556	0	25,708	26,065	11.9	2,735	13.5	3,092	-357
06-Jun-04	31,264	5,597	0	25,667	28,169	2.3	578	12.3	3,080	-2,502
13-Jun-04	31,264	4,940	0	26,324	28,997	2.4	624	12.8	3,297	-2,673
20-Jun-04	31,264	4,864	0	26,400	28,855	3.2	823	12.8	3,278	-2,455
27-Jun-04	31,264	4,046	0	27,218	29,298	4.7	1,215	12.7	3,295	-2,080
04-Jul-04	31,264	3,589	0	27,675	29,796	4.8	1,268	12.8	3,389	-2,121
11-Jul-04	31,264	3,687	0	27,577	29,828	4.3	1,139	12.8	3,390	-2,251
18-Jul-04	31,264	3,636	0	27,628	29,093	7.3	1,868	12.9	3,333	-1,465
25-Jul-04	31,264	3,625	0	27,639	29,118	7.2	1,856	12.9	3,335	-1,479
01-Aug-04	31,264	3,585	0	27,679	29,558	5.6	1,460	12.7	3,339	-1,879
08-Aug-04	31,264	3,566	0	27,698	29,785	4.8	1,269	12.7	3,356	-2,087
15-Aug-04	31,264	3,596	0	27,668	29,010	7.6	1,960	12.8	3,302	-1,342
22-Aug-04	31,264	3,506	0	27,758	29,173	7.3	1,895	12.8	3,310	-1,415
29-Aug-04	31,264	3,545	0	27,719	29,931	4.4	1,159	12.7	3,371	-2,212
05-Sep-04	31,264	5,948	0	25,316	28,442	-0.1	-18	12.3	3,108	-3,126
12-Sep-04	31,264	6,487	0	24,777	27,152	2.7	652	12.6	3,027	-2,375
19-Sep-04	31,264	6,433	0	24,831	26,541	5.4	1,268	12.6	2,978	-1,710
26-Sep-04	31,264	8,796	0	22,468	25,610	-0.9	-199	13.0	2,943	-3,142

(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 Above Requirement MW
03-Oct-04	31,264	9,334	0	21,930	22,893	8.7	1,745	13.4	2,708	-963
10-Oct-04	31,264	9,833	0	21,431	22,814	5.8	1,177	12.6	2,560	-1,383
17-Oct-04	31,264	9,806	0	21,458	23,548	2.5	526	12.5	2,616	-2,090
24-Oct-04	31,264	9,777	0	21,487	23,592	2.5	515	12.5	2,620	-2,105
31-Oct-04	31,264	7,074	0	24,190	24,365	11.9	2,562	12.7	2,737	-175
07-Nov-04	31,264	6,085	0	25,179	25,738	9.9	2,275	12.4	2,834	-559
14-Nov-04	31,264	5,546	0	25,718	26,208	10.3	2,393	12.4	2,883	-490
21-Nov-04	31,264	5,546	0	25,718	26,769	7.9	1,873	12.3	2,924	-1,051
28-Nov-04	31,264	5,484	0	25,780	27,243	6.2	1,496	12.2	2,959	-1,463
05-Dec-04	31,264	5,130	0	26,134	28,641	2.4	604	12.2	3,111	-2,507
12-Dec-04	31,264	5,032	0	26,232	28,329	3.9	985	12.2	3,082	-2,097
19-Dec-04	31,264	3,060	0	28,204	29,106	8.7	2,246	12.1	3,148	-902
26-Dec-04	31,264	2,592	0	28,672	28,925	11.3	2,912	12.3	3,165	-253
02-Jan-05	31,264	2,661	0	28,603	27,285	18.3	4,431	12.9	3,113	1,318
09-Jan-05	31,264	2,712	0	28,552	28,574	12.5	3,167	12.6	3,189	-22
16-Jan-05	31,264	3,451	0	27,813	29,353	6.5	1,691	12.4	3,231	-1,540
23-Jan-05	31,264	3,451	0	27,813	29,069	7.6	1,955	12.4	3,211	-1,256
30-Jan-05	31,264	3,457	0	27,807	28,905	8.2	2,100	12.4	3,198	-1,098
06-Feb-05	31,264	4,279	0	26,985	28,398	6.5	1,641	12.1	3,054	-1,413
13-Feb-05	31,264	4,301	0	26,963	28,408	6.3	1,607	12.0	3,052	-1,445
20-Feb-05	31,264	3,569	0	27,695	28,275	9.8	2,480	12.1	3,060	-580
27-Feb-05	31,264	4,139	0	27,125	27,462	10.7	2,623	12.1	2,960	-337
06-Mar-05	31,264	4,849	0	26,415	27,466	8.1	1,971	12.4	3,022	-1,051
13-Mar-05	31,264	5,708	0	25,556	27,231	5.6	1,350	12.5	3,025	-1,675
20-Mar-05	31,264	6,266	0	24,998	26,744	5.3	1,248	12.6	2,994	-1,746
27-Mar-05	31,264	8,618	0	22,646	26,213	-2.7	-633	12.6	2,934	-3,567
03-Apr-05	31,264	7,707	0	23,557	25,634	3.8	858	12.9	2,935	-2,077
10-Apr-05	31,264	7,218	0	24,046	24,648	10.4	2,272	13.2	2,874	-602
17-Apr-05	31,264	7,314	0	23,950	23,897	13.6	2,867	13.4	2,814	53
24-Apr-05	31,264	7,372	0	23,892	23,440	15.7	3,233	13.5	2,781	452
01-May-05	31,264	7,456	0	23,808	23,181	16.7	3,414	13.7	2,787	627
08-May-05	30,116	7,251	0	22,865	22,272	14.5	2,895	11.5	2,302	593
15-May-05	30,116	6,346	0	23,770	24,689	7.4	1,630	11.5	2,549	-919
22-May-05	30,116	7,216	0	22,900	24,655	3.0	667	10.9	2,422	-1,755
29-May-05	30,116	6,238	0	23,878	25,206	5.4	1,228	11.3	2,556	-1,328
05-Jun-05	30,116	4,286	0	25,830	27,401	4.7	1,159	11.1	2,730	-1,571
12-Jun-05	30,116	3,794	0	26,322	28,224	3.7	934	11.2	2,836	-1,902
19-Jun-05	30,116	3,812	0	26,304	28,880	1.2	302	11.1	2,878	-2,576
26-Jun-05	30,116	3,988	0	26,128	28,742	1.0	248	11.1	2,862	-2,614
03-Jul-05	30,116	3,845	0	26,271	29,225	-0.2	-51	11.0	2,903	-2,954

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 Above Requirement MW
04-Jan-04	31,264	5,395	300	26,169	27,301	8.3	2,004	13.0	3,136	-1,132
11-Jan-04	31,264	4,132	300	27,432	29,326	5.5	1,436	12.8	3,330	-1,894
18-Jan-04	31,264	5,143	300	26,421	29,026	2.9	731	13.0	3,336	-2,605
25-Jan-04	32,034	3,599	300	28,735	28,880	12.5	3,190	13.1	3,335	-145
01-Feb-04	32,034	4,121	300	28,213	28,476	11.8	2,987	12.9	3,250	-263
08-Feb-04	32,034	4,154	300	28,180	28,459	11.8	2,974	12.9	3,253	-279
15-Feb-04	32,034	4,180	300	28,154	28,313	12.3	3,085	12.9	3,244	-159
22-Feb-04	32,034	4,187	300	28,147	27,549	15.5	3,783	13.1	3,185	598
29-Feb-04	32,034	4,104	300	28,230	27,522	15.8	3,846	12.9	3,138	708
07-Mar-04	32,034	5,296	300	27,038	27,176	12.1	2,925	12.7	3,063	-138
14-Mar-04	32,034	6,000	300	26,334	26,633	11.4	2,690	12.6	2,989	-299
21-Mar-04	32,034	7,638	300	24,696	26,039	6.6	1,522	12.4	2,865	-1,343
28-Mar-04	32,034	7,653	300	24,681	25,412	9.2	2,088	12.5	2,819	-731
04-Apr-04	32,034	7,583	300	24,751	25,499	9.4	2,132	12.7	2,880	-748
11-Apr-04	32,034	8,578	300	23,756	23,558	13.9	2,902	13.0	2,704	198
18-Apr-04	32,132	8,604	300	23,828	23,166	16.3	3,333	13.0	2,671	662
25-Apr-04	32,132	8,139	300	24,293	22,920	20.1	4,066	13.3	2,693	1,373
02-May-04	32,132	7,701	300	24,731	22,601	25.4	5,001	14.6	2,871	2,130
09-May-04	32,132	8,055	300	24,377	24,783	11.0	2,419	12.9	2,825	-406
16-May-04	32,132	7,310	300	25,122	25,021	14.0	3,092	13.6	2,991	101
23-May-04	32,132	7,146	300	25,286	25,466	12.7	2,844	13.5	3,024	-180
30-May-04	32,132	5,569	300	26,863	26,113	16.9	3,890	13.7	3,140	750
06-Jun-04	32,132	5,610	300	26,822	28,201	6.9	1,733	12.4	3,112	-1,379
13-Jun-04	32,710	5,650	300	27,360	29,006	6.5	1,660	12.9	3,306	-1,646
20-Jun-04	32,710	5,672	300	27,338	28,874	6.9	1,761	12.9	3,297	-1,536
27-Jun-04	32,710	4,854	300	28,156	29,315	8.3	2,153	12.7	3,312	-1,159
04-Jul-04	32,710	4,397	300	28,613	29,813	8.4	2,206	12.9	3,406	-1,200
11-Jul-04	32,710	4,509	300	28,501	29,848	7.8	2,063	12.9	3,410	-1,347
18-Jul-04	32,710	4,458	300	28,552	29,112	10.8	2,792	13.0	3,352	-560
25-Jul-04	32,710	3,700	300	29,310	29,167	13.7	3,527	13.1	3,384	143
01-Aug-04	32,710	3,660	300	29,350	29,605	11.9	3,131	12.9	3,386	-255
08-Aug-04	32,710	3,646	300	29,364	29,834	11.1	2,935	12.9	3,405	-470
15-Aug-04	32,710	3,676	300	29,334	29,056	14.1	3,626	13.0	3,348	278
22-Aug-04	32,710	3,586	300	29,424	29,219	13.8	3,561	13.0	3,356	205
29-Aug-04	32,710	3,625	300	29,385	29,978	10.6	2,825	12.9	3,418	-593
05-Sep-04	32,710	6,014	300	26,996	28,488	6.6	1,662	12.5	3,154	-1,492
12-Sep-04	32,710	6,553	300	26,457	27,200	9.7	2,332	12.8	3,075	-743
19-Sep-04	32,710	6,499	300	26,511	26,590	12.5	2,948	12.9	3,027	-79
26-Sep-04	32,710	8,862	300	24,148	25,660	6.5	1,481	13.2	2,993	-1,512

(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 Above Requirement MW
03-Oct-04	32,710	9,400	300	23,610	22,944	17.0	3,425	13.7	2,759	666
10-Oct-04	32,710	9,878	300	23,132	22,865	14.2	2,878	12.9	2,611	267
17-Oct-04	32,710	9,851	300	23,159	23,600	10.6	2,227	12.8	2,668	-441
24-Oct-04	32,710	9,822	300	23,188	23,644	10.6	2,216	12.7	2,672	-456
31-Oct-04	32,710	7,119	300	25,891	24,445	19.7	4,263	13.0	2,817	1,446
07-Nov-04	32,710	6,113	300	26,897	25,869	17.4	3,993	13.0	2,965	1,028
14-Nov-04	32,710	5,574	300	27,436	26,338	17.6	4,111	12.9	3,013	1,098
21-Nov-04	32,710	5,574	300	27,436	26,900	15.1	3,591	12.8	3,055	536
28-Nov-04	32,710	5,512	300	27,498	27,373	13.2	3,214	12.7	3,089	125
05-Dec-04	32,710	5,141	300	27,869	28,693	9.2	2,339	12.4	3,163	-824
12-Dec-04	32,710	5,043	300	27,967	28,381	10.8	2,720	12.4	3,134	-414
19-Dec-04	32,710	3,071	300	29,939	29,158	15.3	3,981	12.3	3,200	781
26-Dec-04	32,710	2,603	300	30,407	28,976	18.0	4,647	12.5	3,216	1,431
02-Jan-05	32,710	2,672	300	30,338	27,422	25.5	6,166	13.5	3,250	2,916
09-Jan-05	32,710	2,723	300	30,287	28,634	19.3	4,902	12.8	3,249	1,653
16-Jan-05	32,710	3,462	300	29,548	29,393	13.1	3,426	12.5	3,271	155
23-Jan-05	32,710	3,462	300	29,548	29,108	14.3	3,690	12.6	3,250	440
30-Jan-05	32,710	3,468	300	29,542	28,945	14.9	3,835	12.6	3,238	597
06-Feb-05	32,710	4,290	300	28,720	28,437	13.3	3,376	12.2	3,093	283
13-Feb-05	32,710	4,312	300	28,698	28,447	13.2	3,342	12.2	3,091	251
20-Feb-05	32,710	3,580	300	29,430	28,314	16.7	4,215	12.3	3,099	1,116
27-Feb-05	32,710	4,150	300	28,860	27,502	17.8	4,358	12.2	3,000	1,358
06-Mar-05	32,710	4,872	300	28,138	27,540	15.1	3,694	12.7	3,096	598
13-Mar-05	32,710	5,731	300	27,279	27,305	12.7	3,073	12.8	3,099	-26
20-Mar-05	32,710	6,289	300	26,721	26,818	12.5	2,971	12.9	3,068	-97
27-Mar-05	32,710	8,641	300	24,369	26,286	4.7	1,090	12.9	3,007	-1,917
03-Apr-05	32,710	7,742	300	25,268	25,710	11.3	2,569	13.3	3,011	-442
10-Apr-05	32,710	7,253	300	25,757	24,735	18.3	3,983	13.6	2,961	1,022
17-Apr-05	32,710	7,349	300	25,661	24,039	21.7	4,578	14.0	2,956	1,622
24-Apr-05	32,710	7,407	300	25,603	23,614	23.9	4,944	14.3	2,955	1,989
01-May-05	32,710	7,491	300	25,519	23,319	25.1	5,125	14.3	2,925	2,200
08-May-05	31,562	7,286	300	24,576	22,402	23.1	4,606	12.2	2,432	2,174
15-May-05	31,562	6,381	300	25,481	24,731	15.1	3,341	11.7	2,591	750
22-May-05	31,562	7,251	300	24,611	24,703	10.7	2,378	11.1	2,470	-92
29-May-05	31,562	6,273	300	25,589	25,248	13.0	2,939	11.5	2,598	341
05-Jun-05	31,562	4,321	300	27,541	27,434	11.6	2,870	11.2	2,763	107
12-Jun-05	31,562	3,850	300	28,012	28,260	10.3	2,624	11.3	2,872	-248
19-Jun-05	31,562	3,868	300	27,994	28,924	7.7	1,992	11.2	2,922	-930
26-Jun-05	31,562	4,044	300	27,818	28,787	7.5	1,938	11.2	2,907	-969
03-Jul-05	31,562	3,901	300	27,961	29,269	6.2	1,639	11.2	2,947	-1,308

Table A6 Energy Production Capability Forecast

Month	Forecast Energy Production Capability Existing Resource Scenario (GWh)	Forecast Energy Production Capability Planned Resource Scenario (GWh)
Jan 2004	16,832	17,361
Feb 2004	15,744	16,241
Mar 2004	14,988	15,536
Apr 2004	13,687	14,259
May 2004	15,478	16,189
Jun 2004	16,091	16,678
Jul 2004	16,894	17,562
Aug 2004	16,673	17,613
Sep 2004	13,617	14,539
Oct 2004	13,395	14,382
Nov 2004	15,252	16,168
Dec 2004	17,016	18,023
Jan 2005	17,183	18,184
Feb 2005	15,086	15,990
Mar 2005	14,776	15,729
Apr 2005	14,241	15,145
May 2005	15,148	15,603
Jun 2005	15,923	16,527

- End of Section -

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Appendix B Transmission Projects

East Zone	Projected I/S Date
Chenaux TS: Add two new 230 kV breakers. Reconnect T4 transformer.	2004-Q1
Mountain Chute - Chenaux SPS: Modify the SPS to include the new breakers.	2004-Q1
Sidney TS: Replace low voltage capacitor bank circuit breaker SC1Q.	2004-Q1
Kingston-Gardiner TS: Add 2nd transformer station.	2005-Q1

Essa Zone	Projected I/S Date
Owen Sound TS: Replace transformer T5 230 kV disconnect switch.	2004-Q1
Midhurst TS: Expand existing transformer station.	2004-Q4
Stayner TS: Replace 44 kV, 10 MX, SC3 shunt capacitor.	2004-Q4

Niagara Zone	Projected I/S Date
Norfolk TS: Replace transformers with two 83.3 MVA units.	2004-Q1
Bloomsburg TS: New 115/27.6 kV transformer station connected to A1N.	2004-Q2
Kalar TS: New 115/14.2 kV transformer station off lines A36N and A37N.	2004-Q2

Northeast Zone	Projected I/S Date
Trout Lake TS: Install new 230 kV surge arresters.	2004-Q1
GLP Transmission Reinforcement Stage1: Remove from service 115 kV circuit No.3 Sault.	2004-Q2
Dymond TS: Replace 44 kV, 10 Mvar, SC3 shunt capacitor.	2004-Q4
Upgrade 115 kV circuit Gartshore #2.	2004-Q4

Northwest Zone	Projected I/S Date
Birch TS: Install 80 Mvar shunt capacitor.	2004-Q1
Fort William TS: Install in-line switches for circuits Q4B and Q5B.	2004-Q1
Red Lake: Install new 115 kV surge arresters.	2004-Q1
North Caribou Lake: Add new supply point.	2005-Q2

Ottawa Zone	Projected I/S Date
Albion TS: Replace 230 kV rod gaps with metal oxide surge arresters.	2004-Q1
Hawthorne TS: Add one 250 MVA 230/115 kV autotransformer and one new double circuit line from Hawthorne to Blackburn Jct.	2004-Q2
Ottawa Area: Add 115 kV breaker to W6MC and motorize existing disconnect on C7MB.	2004-Q2
Hawthorne TS: Replace SC11 capacitor bank.	2004-Q4
Upgrade 115 kV circuit H9A.	2004-Q4

Southwest Zone	Projected I/S Date
Bronte TS: Install two new feeders.	2004-Q1
Goderich TS: Replace capacitor bank circuit breaker SC1B.	2004-Q1
Kenilworth TS: Replace 115 kV line disconnect and grounding switches.	2004-Q1
Kenilworth TS: Replace 115 kV rod gaps with metal oxide surge arresters.	2004-Q1
Kenilworth TS: Replace 115 kV transformer disconnect and grounding switches.	2004-Q1
London Clarke TS: Increase transformer ampacity.	2004-Q1
Mohawk TS: Replace low voltage capacitor banks SC2 and SC3.	2004-Q1
Nanticoke TGS: Replace station service transformers.	2004-Q1
St. Marys TS: Add two new feeders.	2004-Q1
Niagara West TS: Build new transformer station with two 50/67/83 MVA transformers.	2004-Q1
North Westover: Replace 115 kV circuit switcher and station protection.	2004-Q1
Burlington TS: Add 125 Mvar 115 kV capacitor bank.	2004-Q2
Caledonia TS: Add two new 75/125 MVA 230/115 kV autotransformers and re-supply Norfolk TS off these new autotransformers.	2004-Q2

(Appendix B continued)

Halton TS: Install two additional 27.6 kV breakers.	2004-Q2
Detweiler TS: Replace 115/230 kV autotransformer T3.	2004-Q2
Kitchener: Build new 230/14.2 kV transformer station.	2004-Q3
Beach TS: Install surge arresters on T4 and T7.	2004-Q4
Upgrade 115 kV circuits D5/9G.	2005-Q2

Toronto Zone	Projected I/S Date
Glengrove TS: Refurbish 115 kV station.	2004-Q1
Glengrove TS: Replace T2 transformer.	2004-Q1
Lakeview SS: Replace 230 kV circuit breakers L24T7 and L24T8.	2004-Q1
Leaside TS: Install series reactors on 13.8 kV capacitor banks SC1 and SC2.	2004-Q1
Richview TS: Replace 230 kV breaker disconnect switches.	2004-Q1
Runnymede TS: Replace low voltage capacitor banks SC3 and SC4.	2004-Q1
Strachan TS: Replace 115 kV grounding switch and transformer disconnect switch.	2004-Q1
Thorton TS: Install new 230 kV surge arresters.	2004-Q1
Cherrywood TS: Reterminate 500/230 kV autotransformers.	2004-Q2
Kleinburg TS: Install two additional 27.6 kV breakers.	2004-Q2
Leaside TS: Install 125 Mvar shunt capacitor.	2004-Q2
Strachan TS: Replace 115 kV rod gaps with metal oxide surge arresters.	2004-Q2
Markham: New transformer station connected to 230 kV circuits C11R and C12R.	2004-Q3
Pickering A NGS: Refurbish 230 kV switchyard - G1.	2004-Q3
Wiltshire TS: Replacement of transformer T6.	2004-Q3
Hearn SS: Install 125 Mvar shunt capacitor.	2004-Q4
Manby West TS: Install surge arresters on T3 and T4.	2004-Q4
Manby West TS: Replace T4 with like unit.	2004-Q4
Richview TS: Replace 230 kV rod gaps with surge arresters.	2004-Q4
Leaside TS: Install second 125 Mvar shunt capacitor.	2005-Q2
John TS, Burlington TS, Richview TS: Install shunt capacitor banks totalling approximately 875 Mvar.	2005-Q2
Mississauga TS: Build new transformer station.	2005-Q2
Parkway TS - Build new transformer station with one 750 MVA, 500/230 kV autotransformer.	2005-Q2
Vaughan MTS #1: Add new 3rd transformer.	2005-Q2

West Zone	Projected I/S Date
Lambton TS: Modify low voltage supply to Terra Nitrogen.	2004-Q1
London Highbury TS: Replace low voltage capacitor bank SC2.	2004-Q1
London Highbury TS: Install New 115 kV surge arresters.	2004-Q1
Kent TS: Install new 230 kV surge arresters.	2004-Q1
Windsor Area: Enhance Windsor Area Overload Protection Scheme.	2004-Q1
Belle River East DS: Build new 115/27.6 kV distribution station.	2004-Q2
Kent TS: Install new 125 MVA 230/115 kV autotransformer.	2004-Q4
Tilsonburg TS: Replace three transformers with like units.	2004-Q4

- End of Section -

Appendix C Planned Transmission Outages

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

Table C1 Bruce Zone

No outages to analyze.

Table C2 East Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
1/6/04 7:00 AM	2/13/04 3:00 PM	B1S_ARDOCH	CNW	4 hour	Some Madawaska 115 kV generation may be bottled.	

Table C3 Essa Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
11/10/03 7:00 AM	11/15/04 2:30 PM	Essa TS.SS3-X	CWW	12 Hour		
2/16/04 7:00 AM	2/27/04 3:00 PM	Des Joachims JCT.87D6-40, Deep River DS.40D6-5, Pembroke TS.6X6-D6 -I/S	CNW	4 Hour		

Table C4 Niagara Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
5/10/04 5:00 AM	5/21/04 11:00 AM	Q30M (Including All Terminals)	DWW	1 Hour	QFW	Approximately 450-550 MW

Table C5 Northeast Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
2/20/03 3:00 PM	2/19/04 6:00 PM	Falconbridge JCT.57S6F-MSO, Falconbridge JCT.57S6F-903	CWW	0 Non-Recallable		
6/16/03 12:35 PM	6/16/04 11:59 PM	Agimak T1, Agimak T2	CNW	0 Non-Recallable		
1/12/04 6:00 AM	2/27/04 5:00 PM	Crystal Falls GS.7-L5H, Commanda JCT.62L5H-7	CWW	24 Hour	Ontario-Quebec North Interconnection	Jan 12-Feb 2 & Feb 12-Feb 27: Mode 2 H4Z - 5 MW Mode 3 D4Z - 15 MW
2/2/04 7:00 AM	2/12/04 6:00 PM	H24S_MARTINDALE	CWW	4 Hour	Ontario-Quebec North Interconnection	Feb 2-Feb 12 with L5H out of service: Mode 2 H4Z - 30 MW Mode 3 D4Z - 15 MW
4/5/04 7:00 AM	4/29/04 1:00 PM	Dymond TS.SC3	CWW	0 Non-Recallable		

Table C5 Northeast Zone (continued)

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
5/3/04 7:00 AM	7/9/04 6:00 PM	H24S_MARTINDALE	CWW	4 Hour	Ontario-Quebec North Interconnection	Mode 2 H4Z - 30 MW Mode 3 D4Z - 15 MW
5/10/04 10:00 AM	6/4/04 2:00 PM	Pinard TS.PL20	CWW	0 Non-Recallable		
6/7/04 10:00 AM	7/2/04 2:00 PM	Pinard TS.PL22	CWW	0 Non-Recallable		
9/6/04 7:00 AM	10/28/04 6:00 PM	S22A	CWW	8 Hour	OMTW EWTE EWTW	OMTW - 0 MW EWTE - 50 MW EWTW - 0 MW

Table C6 Northwest Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
1/12/04 8:00 AM	3/19/04 3:00 PM	M2D_DRYDEN	CWW	2 Hour	OMTE OMTW EWTW	OMTE - O MW OMTW - O MW EWTW - O MW
3/22/04 8:00 AM	4/2/04 5:00 PM	A6P	CWW	1 Hour		
4/19/04 5:00 AM	5/2/04 6:00 PM	K24F	CWW	8 Hour	OMTE OMTW EWTE MPFN	OMTE - 50 MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW
4/19/04 8:00 AM	5/7/04 5:00 PM	K24F	DWW	7 Hour	OMTE OMTW EWTE MPFN	April 19-May3: OMTE - 50 MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW May 3-May 7 with A3M also out of service (o/s): OMTE - 100 MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW
5/3/04 7:00 AM	5/28/04 5:00 PM	A3M	DWW	4 Hour	OMTE OMTW EWTE EWTW	May 3-May 7 with K24F also o/s: Covered by outage above. May 10-May 23 with K23D also o/s: Covered by outage below. May 7-May 10 & May 23-May 28: OMTE - O MW OMTW - O MW EWTE - 50 MW EWTW - O MW
5/10/04 5:00 AM	5/23/04 6:00 PM	K23D	CWW	8 Hour	OMTE OMTW EWTE MPFN	With A3M also o/s: OMTE - 100 MW 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	0 Non-Recallable		

Table C6 Northwest Zone (continued)

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
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
8/30/04 8:00 AM	10/1/04 5:00 PM	K24F	DWW	7 Hour	OMTE OMTW EWTE MPFN	Aug 30-Sept 13 & Sept 26-Oct 1: OMTE - 50MW OMTW - 250 MW EWTE - 75 MW MPFN - 25 MW Sept 13-Sept 26 with D26A also o/s: Covered by outage below.
9/13/04 5:00 AM	9/26/04 6:00 PM	D26A	CWW	8 Hour	OMTE OMTW EWTE EWTW MPFN	With K24F also o/s: OMTE - 150 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
10/4/04 8:00 AM	11/12/04 5:00 PM	F25A	DWW	4 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	0 Non-Recallable		
5/15/05 12:01 AM	7/24/05 11:59 PM	Thunder Bay C1	CWW	0 Non-Recallable		

Table C7 Ottawa Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
2/25/04 4:00 PM	3/26/04 4:00 PM	Mississippi JCT.58W6MC-MSO, Marchwood JCT.59W6MC-58	CNW	4 Hour	Some Madawaska 115 kV generation may be bottled.	
5/3/04 6:00 AM	5/21/04 4:00 PM	A4K_HAWTHORNE	CNW	4 Hour		
11/15/04 6:00 AM	11/26/04 4:00 PM	B5D_STISIDORE	CNW	4 Hour	Ontario-Quebec South Interconnection	400 MW

Table C8 Southwest Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
12/31/03 7:30 AM	1/10/04 4:00 PM	Nanticoke TS.L5F	CWW	24 Hour		
4/19/04 7:00 AM	5/6/04 6:00 PM	Stayner TS.SC2, Stayner TS.SC2B	CWW	12 Day		

Table C9 Toronto Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/15/03 4:00 AM	1/15/04 6:00 PM	H11L_HEARN	CWW	72 Hour	The Hearn H11L terminal also out of service (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 4:31 AM	1/15/04 6:00 PM	H7L_HEARN	CWW	72 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.	
12/25/03 7:30 AM	1/31/04 6:00 PM	Wilson TS.T4	CWW	36 Hour		
1/12/04 5:00 AM	4/2/04 6:00 PM	K6J_MANBYW	CWW	12 Hour		
1/18/04 7:00 AM	1/23/04 6:00 PM	K6J_MANBYW, Strachan TS.T13, Strachan TS.T14, Strachan TS.K6_BUS	CWW	9 Hour		
3/1/04 5:00 AM	4/16/04 6:00 PM	H1L_GERRARD, H3L_GERRARD	CWW	4 Hour	Depending on load levels, thermal overloading of other Hearn x Leaside 115 kV circuits could occur.	
4/4/04 6:00 PM	4/10/04 6:00 PM	Manby East TS.T5, Manby East TS.T5Q	CWW	8 Hour		
4/19/04 5:00 AM	5/28/04 6:00 PM	H7L_LEASIDE, H11L_LEASIDE	CWW	4 Hour	Depending on load levels, thermal overloading of other Hearn x Leaside 115 kV circuits could occur.	
10/4/04 5:00 AM	11/26/04 6:00 PM	Manby West TS.T4, Manby West TS.T4Y	CWW	3 Week		
10/4/04 5:00 AM	12/10/04 6:00 PM	C5E_ESPLANADE, C7E_ESPLANADE	CWW	4 Hour	Depending on load levels, thermal overloading of the Hearn x Leaside 115 kV circuits could occur.	

Table C10 West Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
2/16/04 7:00 AM	3/5/04 4:00 PM	Talbot TS.T4, Talbot TS.26-W37	CWW	4 Hour		
4/5/04 5:00 AM	4/29/04 5:00 PM	Longwood TS.R4	CWW	3 Hour	FABC	FABC - 60 MW voltage; 40 MW stability

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