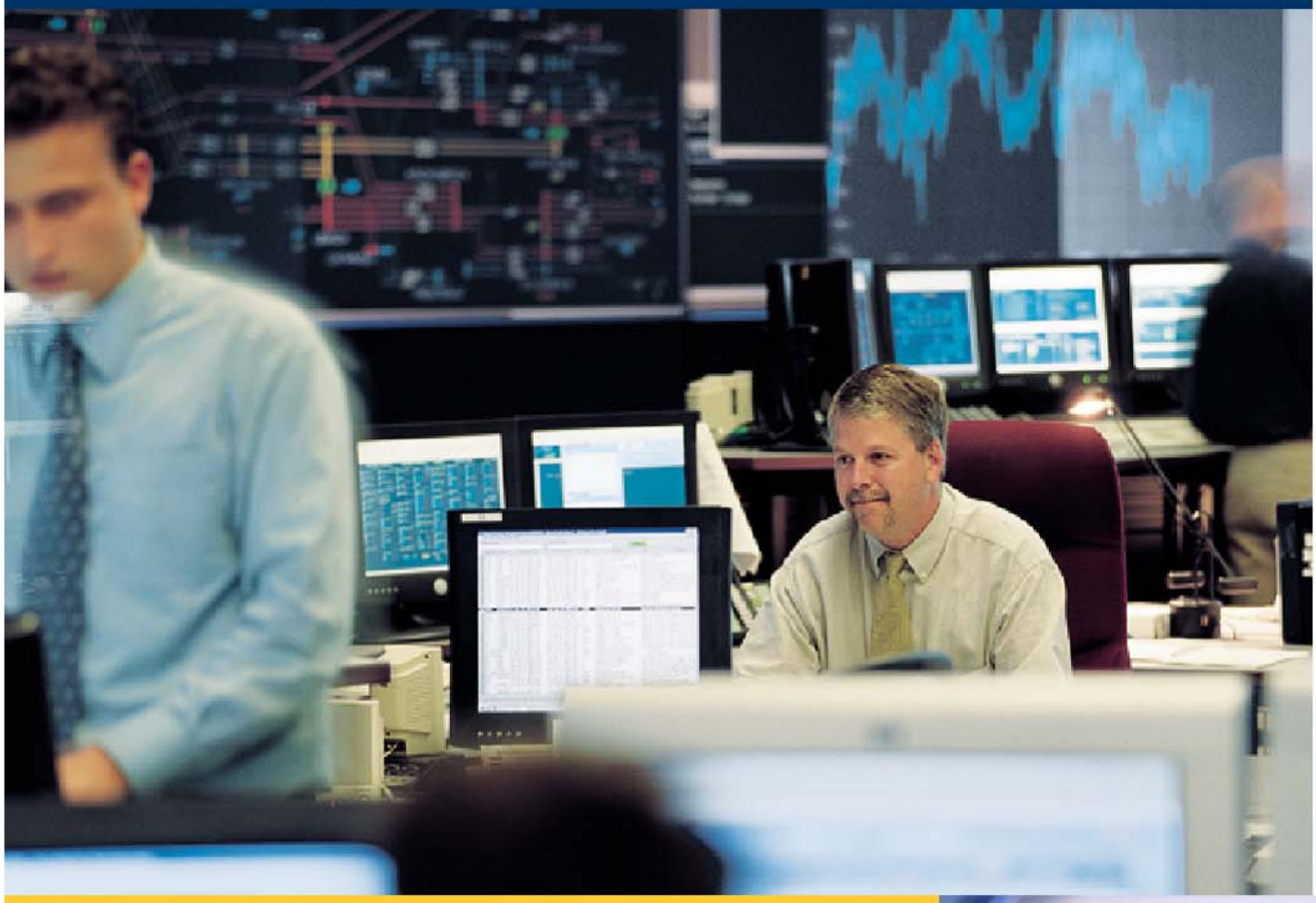
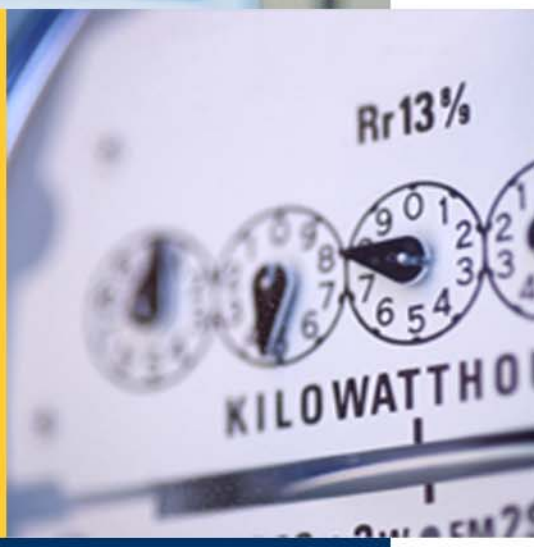
Independent Electricity Market Operator



18-MONTH OUTLOOK:

An Assessment of the Reliability of the Ontario Electricity System

From October 2004 to March 2006



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Executive Summary

The outlook for the reliability of Ontario's electricity system over the next 18-months continues to be positive. Resource additions in 2004 have come in service on schedule, significantly improving the overall supply situation.

As 2005 draws nearer, the impending shutdown of 1,150 MW of coal-fired generation at Lakeview Thermal Generating Station (TGS) in Mississauga on April 30, 2005 continues to focus attention on the importance of completing transmission improvements in the greater Toronto area in a timely manner.

The Ontario government continues its process to address future electricity supply through Requests for Proposals for 300 MW of renewable energy supply and for 2,500 MW of new clean generation and demand-side projects. New electricity demand, supply and transmission projects that may arise from these processes are not reflected in this Outlook. Future reports will reflect these new projects after contractual arrangements are completed.

The Independent Electricity Market Operator (IMO) publishes quarterly assessments of the reliability of the Ontario electricity system over the next 18 months. These assessments advise market participants of the resource and transmission reliability of the Ontario electricity system and identify potentially adverse conditions that might be avoided through adjustment or coordination of maintenance plans for generation and transmission equipment.

This report presents the IMO assessment of the 18-month period from October 2004 to March 2006. It 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.

Resource Outlook

Since the last quarterly Outlook, the Brighton Beach (580 MW) and Kirkland Lake (32 MW) projects have completed commissioning. Recently announced plans to return Pickering Unit 1 to service result in a projected capacity increase of 515 MW in the fall of 2005. This is the only major generating capacity addition considered over the timeframe of this 18-Month Outlook.

The resource outlook continues to look positive with the forecast available resources exceeding the planning requirements in all but four weeks of the next 18 months, under the planned resource scenario. Where planning requirements are not met, the deficiencies are small enough to present little concern.

Both resource scenarios include an increase in the quantity of forecast demand response since the previous Outlook. By the end of the 18 month study timeframe, demand response is forecast to exceed 500 MW, due to the introduction of more dispatchable load into the IMO-administered markets.

Under extreme weather conditions, imports may be required into the IMO-administered markets and the IMO may need to cancel generation maintenance to ensure that Ontario demand is met during peak periods.

Transmission Outlook

The forecast 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. Nanticoke, Pickering and Darlington units, as well as additional shunt capacitors to replace Lakeview reactive supply, are required to provide reactive capability to maintain adequate voltage levels, especially during summer 2005 peak demand periods.

Lakeview TGS will cease operations as a coal-fired generating station by April 30, 2005 in accordance with Ontario Regulation 396/01. Plans have been put in place to address the immediate reliability impacts associated with the shutdown of Lakeview TGS. Hydro One is progressing with development of Parkway Transformer Station to address transformer overload concerns, with this facility expected to be in service by the spring of 2005. The remaining voltage support requirements are expected to be addressed by the installation of additional shunt capacitors and related transformer controls by Hydro One.

Ontario Demand Forecast

The IMO demand forecast has been updated to reflect actual economic, demand and weather data through to the end of June 2004. The updated economic forecast has a slightly lower growth rate in 2004 and a similar growth profile in 2005 compared to the previous economic outlook. The economic outlook remains mixed. On the positive side, corporate profits and exports are up, but so are oil prices and interest rates which have a negative impact. As well, the situation in Iraq, Afghanistan and the war on terrorism generates a great deal of economic uncertainty. In addition to the economic outlook, actual energy and peak demand has been tracking lower than expected, even after factoring in the mild summer weather. The combined impact of the lower economic forecast and lower actual energy demand means that the demand forecast is reduced slightly from the previous forecast.

Normal weather peak demand for 2005 is forecasted to be 23,905 MW for the winter and 23,798 MW for the summer. Weather corrected energy demand is expected to be 152.9 TWh for 2004. Energy demand for 2005 is forecast to reach 154.9 TWh.

Season	Normal Weather Peak (MW)	Expected Seasonal Peak (MW)	Extreme Weather Peak (MW)
Winter 2005	23,905	24,740	25,616
Summer 2005	23,798	25,541	26,724
Winter 2006	24,014	24,762	25,641

- End of Section -

Caution and Disclaimer

The contents of these materials are for discussion and information purposes and are provided "as is" without representation or warranty of any kind, including without limitation, accuracy, completeness or fitness for any particular purpose. The Independent Electricity Market Operator (IMO) assumes no responsibility to you or any third party for the consequences of any errors or omissions. The IMO may revise these materials at any time in its sole discretion without notice to you. Although every effort will be made by the IMO to update these materials to incorporate any such revisions it is up to you to ensure you are using the most recent version

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1.0 Introduction

This Outlook covers the 18-month period from October 1, 2004 to March 31, 2006. It supersedes the report titled "An Assessment of the Reliability of the Ontario Electricity System from July 2004 to December 2005", dated June 23, 2004. 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 Independent Electricity Market Operator (IMO) web site in MS Excel format.

In addition to the comprehensive Outlook, the IMO generally 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 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 October 2004 to March 2006" (IMO_REP_0171) (found on the IMO web site at http://www.theimo.com/imoweb/pubs/marketReports/18Month_ODF_2004sep.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 http://www.theimo.com/imoweb/pubs/marketReports/Methodology_RTAA_2004sep.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_2004mar.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 updated to reflect the most recent economic and demand information. The methodology used to generate the forecast has not changed since the previous outlook.

As part of the regular updating process, the forecasting models' equations are re-estimated based on recent economic, weather and demand data. Both peak and energy demand were lower than expected over the course of the summer and this experience has been incorporated into the model coefficients. The economic outlook has also been updated to reflect the current consensus. The expectations for the remainder of 2004 are slightly lower than previously forecasted while the economic forecast for 2005 has improved marginally.

The overall impact of the inclusion of recent actuals and the updated economic outlook are a decline in peak and energy demand compared to the previous forecast.

Updates to Resources

ATCO's Brighton Beach generation project and Northland Power's Kirkland Lake generation project have completed commissioning and both became fully dispatchable in July, 2004. The capacity of these generators is now included in the Existing Installed Generation Resources Table (Table 2.1).

One of the three shutdown Pickering A nuclear units is scheduled to return to service on September 1, 2005. These units are not considered to be part of the Existing Installed Generation Resources shown in Table 2.1.

Both resource scenarios include an increase in the quantity of forecast demand response since the previous Outlook. By the end of the 18 month study timeframe, demand response is forecast to exceed 500 MW in the Planned Resource Scenario, due to the introduction of more dispatchable load into the IMO-administered markets. This capability to reduce demand, based on signals sent from the IMO, represents an additional resource that may be deployed to maintain the balance between supply and demand. In the Existing Resource Scenario, there is about 200 MW of demand response included in the forecast.

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

Updates to Transmission Outlook

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

- End of Section -

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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 31,132 MW.

The capacity of installed generation resources in Table 2.1 does not include Pickering A Units 1 to 3.

In accordance with Ontario Regulation 396/01, the four units at Lakeview Thermal Generating Station (TGS) will stop producing power by the end of April 2005, resulting in a decrease in the installed generation resources by 1,148 MW.

Table 2.1 Existing Installed Generation Resources[1]

Fuel Type	Total Capacity (MW)	Number of Stations
Nuclear	10,850	5
Coal	7,564	5
Oil / Gas	4,976	23
Hydroelectric	7,676	61
Miscellaneous	66	2
Total	31,132	

2.2 Potential Generation Resource Additions

Table 2.2 summarizes the significant new generation facilities that are scheduled to come into service within the 18-month study period, and this includes projects in the IMO's Connection Assessment and Approval (CAA) process that are under construction and are scheduled to be placed in-service within the 18-month study period. Generator owners or operators have provided the information regarding the status of their projects and the in-service dates listed in Table 2.2.

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

Table 2.2 Potential Generation Resource Additions in Ontario

Proponent/Project Name	Zone	Fuel Type	Capacity MW	Connection Applicant's Estimated I/S Date
Pickering Unit 1	Toronto	Nuc	515	September 2005
Total			515	

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

2.3 Summary of Resource Scenarios

In assessing future resource adequacy, it is necessary to make a number of assumptions regarding the magnitude of resources expected to be available for operation. Two 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 for the duration of the study period with the exception of the four coal-fired units (1,148 MW) at the Lakeview TGS which were assumed to cease operation by April 30, 2005 in accordance with Ontario Regulation 396/01. 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. The existing resource scenario includes about 200 MW of demand response capability. This value is based on the existing capability to decrease demand below the demand forecast levels.

Under the **Planned Resource Scenario** existing Ontario generation resources were assumed to be in-service for the duration of the study period with the exception of the four coal-fired units (1,148 MW) at the Lakeview TGS which were assumed to cease operation by April 30, 2005. Additionally, all potential generation additions listed in Table 2.2 were included in this scenario. Demand response capability is forecast to be higher under the Planned Resource Scenario, compared to the Existing Resource Scenario. By the end of the 18 month study timeframe, demand response is forecast to exceed 500 MW, due to the introduction of more dispatchable load into the IMO-administered markets. This scenario is considered more likely to occur than the Existing Resource Scenario.

Forecasts of available resources were derived for each of the two resource scenarios described above, using information regarding generator output capabilities, planned outages, allowances for hydroelectric generation production below rated capacity, assumptions for the amount of demand response, 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 Lakeview TGS at the end of April 2005. The installed resources in Table 2.3 increase over the study timeframe, due to some increases in the forecast net installed capacity of existing generation facilities. For the Planned Resource Scenario only, resources are also increased 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 demand response was added to the total resources, to obtain the available resources. In this Outlook, demand response ranges from about 200 MW to a maximum of about 550 MW under the Planned Resource Scenario, as shown in Table 2.3.

Table 2.3 Summary of Available Resources

Notes	Description \ Year	Winter Peak 2005		Summer Peak 2005		Winter Peak 2006	
		Existing Resource Scenario	Planned Resource Scenario	Existing Resource Scenario	Planned Resource Scenario	Existing Resource Scenario	Planned Resource Scenario
1	Installed Resources (MW)	31,176	31,176	30,053	30,053	30,078	30,593
2	Imports (MW)	0	0	0	0	0	0
3	Total Resources (MW)	31,176	31,176	30,053	30,053	30,078	30,593
4	Total Reductions in Resources (MW)	2,501	2,501	2,982	2,982	1,915	1,915
5	Demand Response (MW)	199	383	199	544	199	544
6	Available Resources (MW)	28,874	29,058	27,270	27,615	28,362	29,222

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. It also reflects minor unit re-ratings resulting from equipment upgrades that occurred prior to the publication of this Outlook. Only one of the four Pickering A nuclear units is included in the existing installed generation resources. 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. Demand Response: This is the amount of demand which is assumed to respond to changes in the market clearing price by reducing consumption, under each resource scenario.

6. Available Resources (MW): This equals Total Resources (line 3) minus Total Reductions in Resources (line 4) plus Demand Response (line 5).

2.4 Energy Production Capability Forecast

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

- End of Section -

3.0 Resource Adequacy Assessment

This section provides an assessment of the adequacy of the resources described in Section 2 to meet the forecast demand. The purpose of the two resource scenarios described in Section 2.3 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 a base amount of demand response, represents the lower boundary of the range, considering the potential for delays to the in-service dates of additional generation capacity, and additional price responsive demand capability. The Planned Resource Scenario assumes additional quantities of demand response and generation capacity additions based on project status and in-service date estimates. This scenario 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

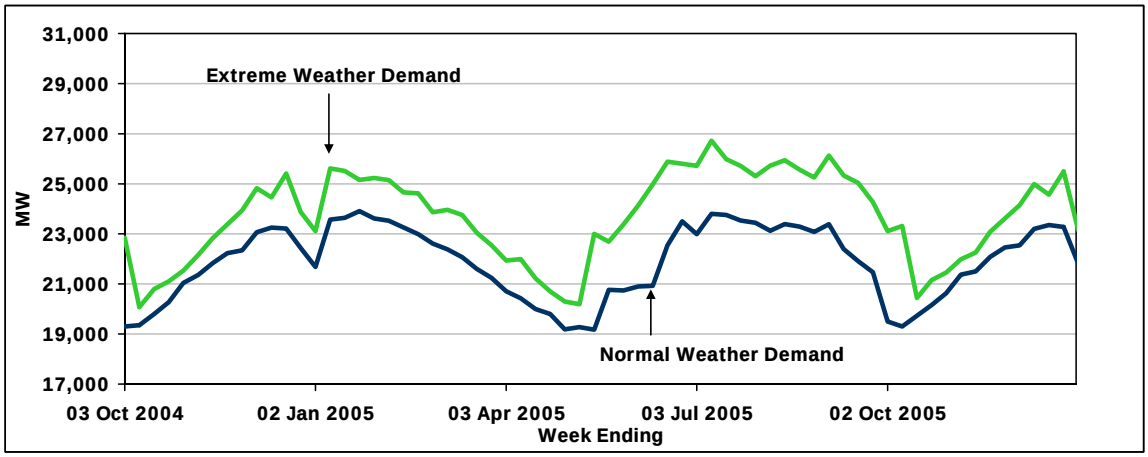


Figure 3.2 shows the Total Reductions in Resources used in the calculation of the Available Resources (as described in Section 2.3).

Figure 3.2 Total Reductions in Resources

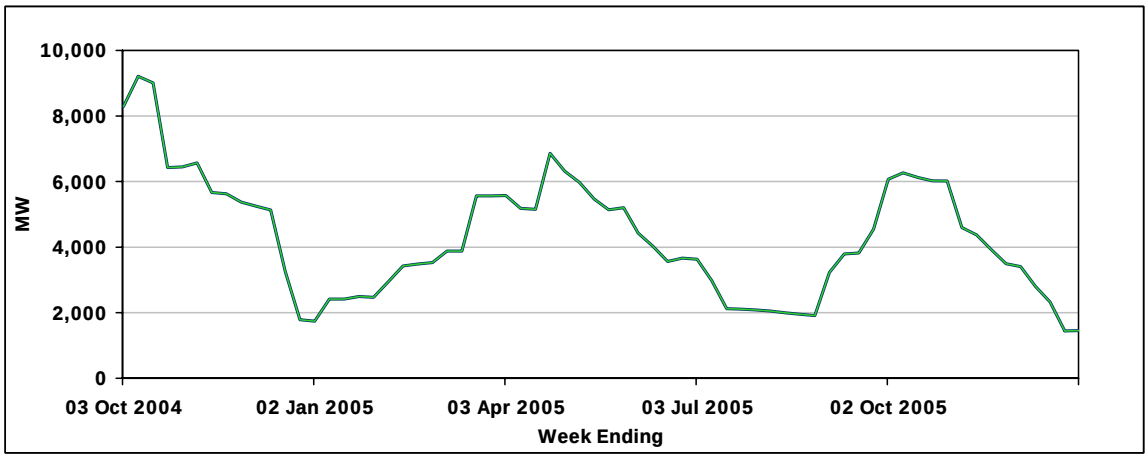


Figure 3.3 provides a comparison between Available Resources, and Required Resources for each week, for the Existing Resource Scenario. The latter quantity is the sum of Demand and Required Reserve, and is based on a probabilistic calculation, which takes into account load forecast uncertainty due to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

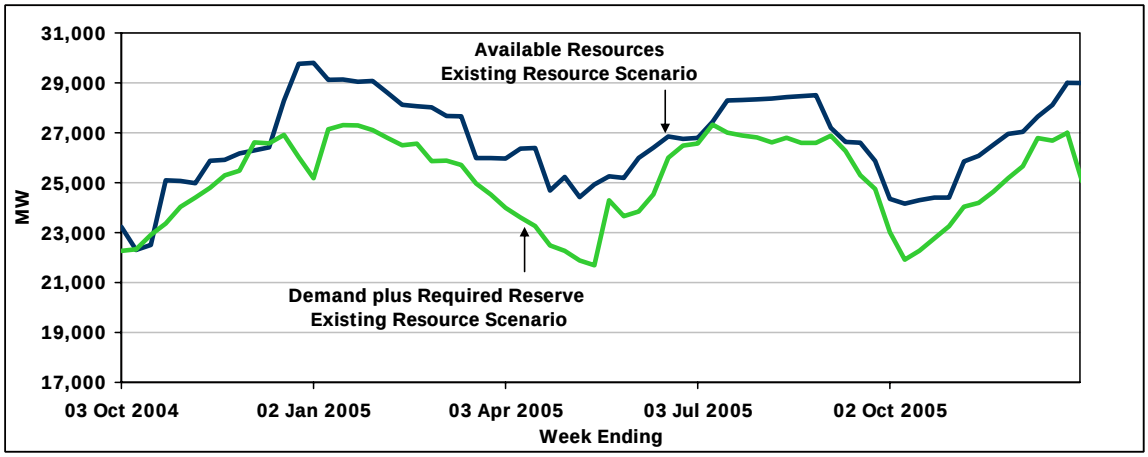
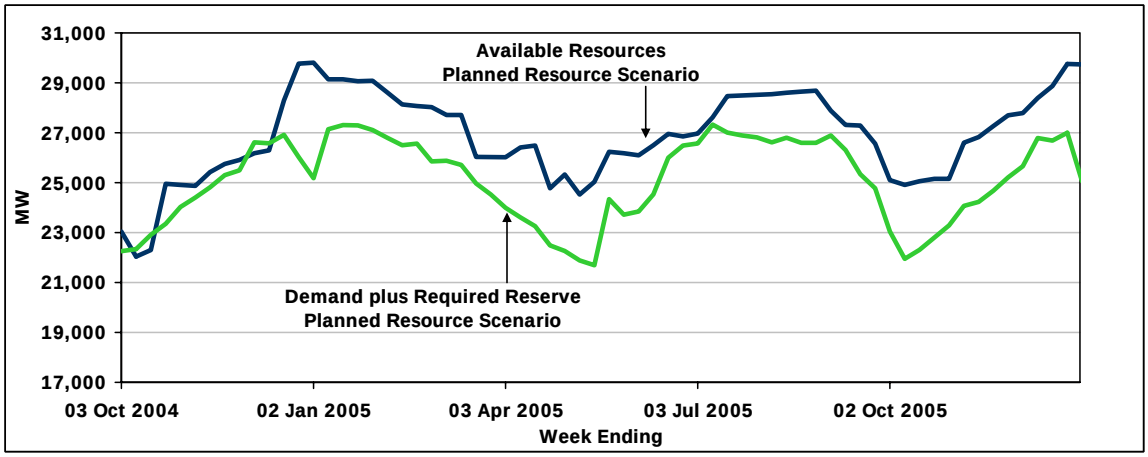
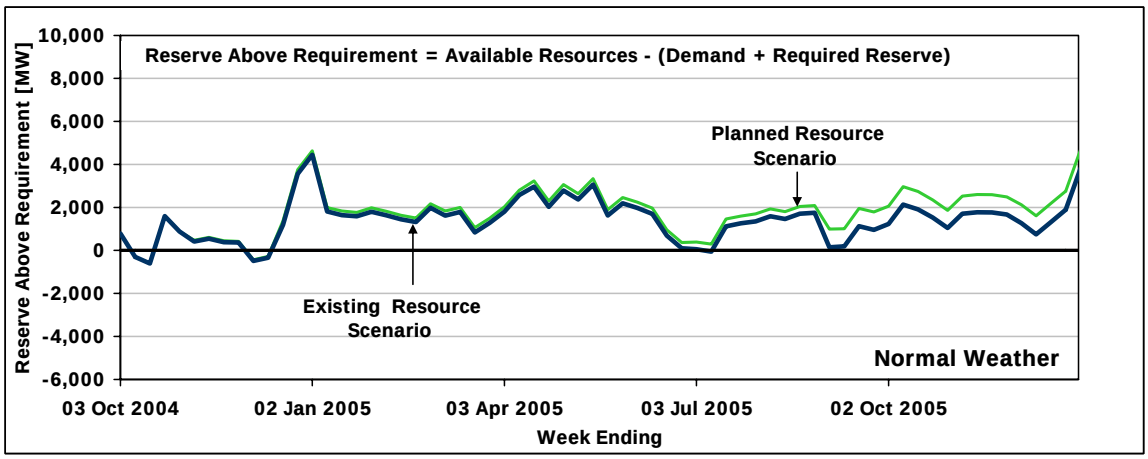


Figure 3.4 Available vs. Required Resources: Planned Resource Scenario



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**, the forecast reserves are generally adequate for the study period. Some reserves are forecast to be below requirements, particularly during the fall of 2004 when there are significant resource reductions due to generator maintenance outages. During these weeks some 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 and the probability of this scenario occurring. 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 reliance on imports and upward pressure on the wholesale market prices.

Under the more likely **Planned Resource Scenario**, the resource adequacy situation is improved 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 will 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 June 23, 2004. Under both the Existing Resource Scenario and the Planned Resource Scenario, the combined changes in forecast demands, demand response and generator planned outages yield a generally better resource outlook when compared to the previous 18-Month Outlook.

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

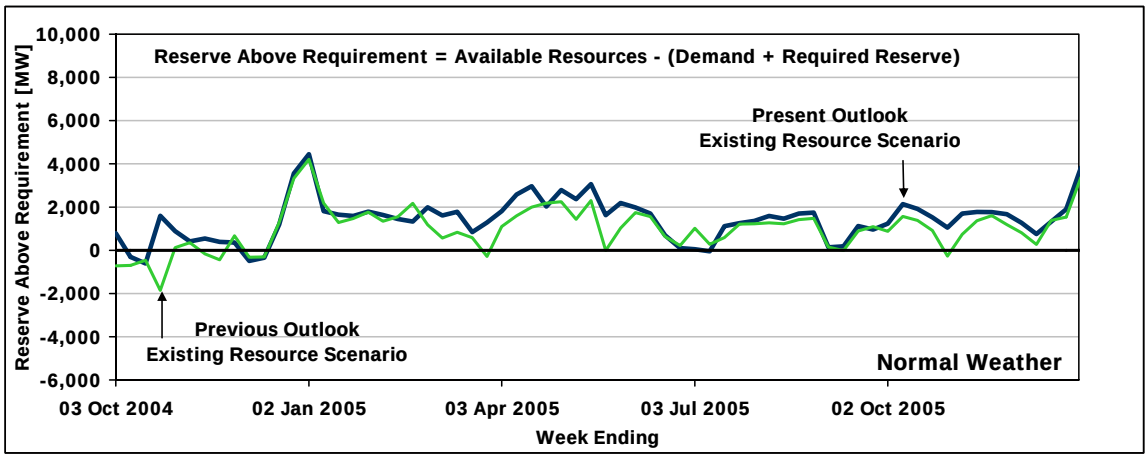
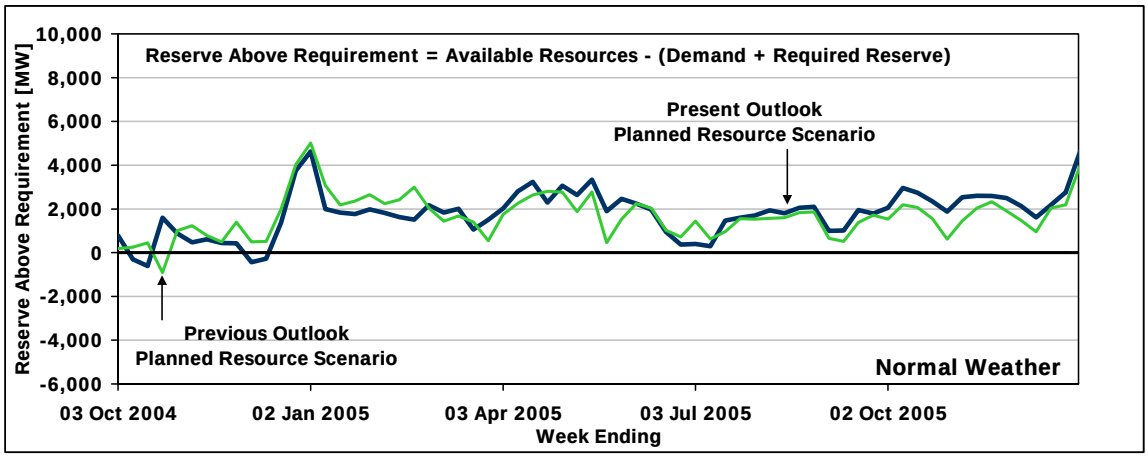


Figure 3.7 Reserve Above Requirement: Planned Resource Scenario vs. Previous Planned Resource Scenario



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 2.3 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 consistent with 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, only a minimal level of 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 could occur. This emphasizes the continued need for reliable supply and demand response within Ontario.

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

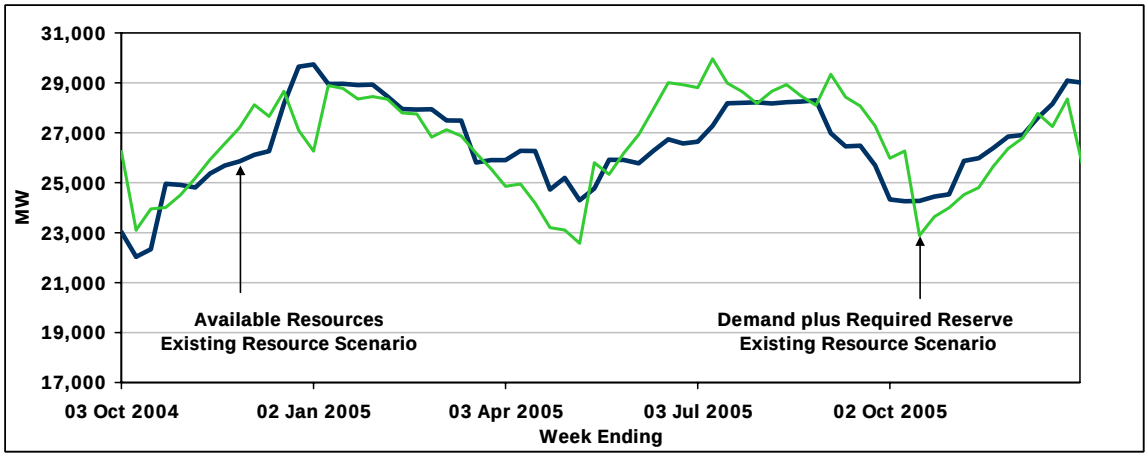


Figure 3.9 Available vs. Required Resources: Planned Resource Scenario Extreme Weather Demand

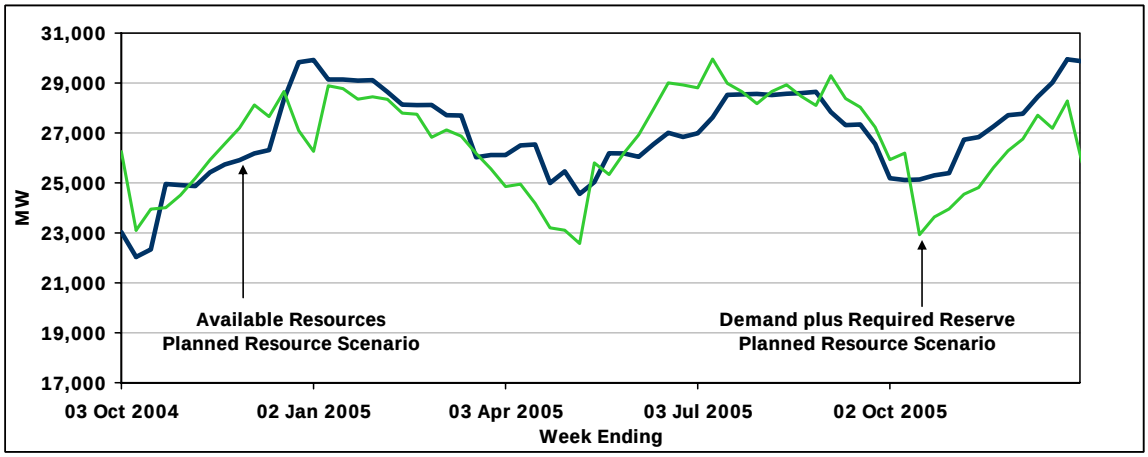
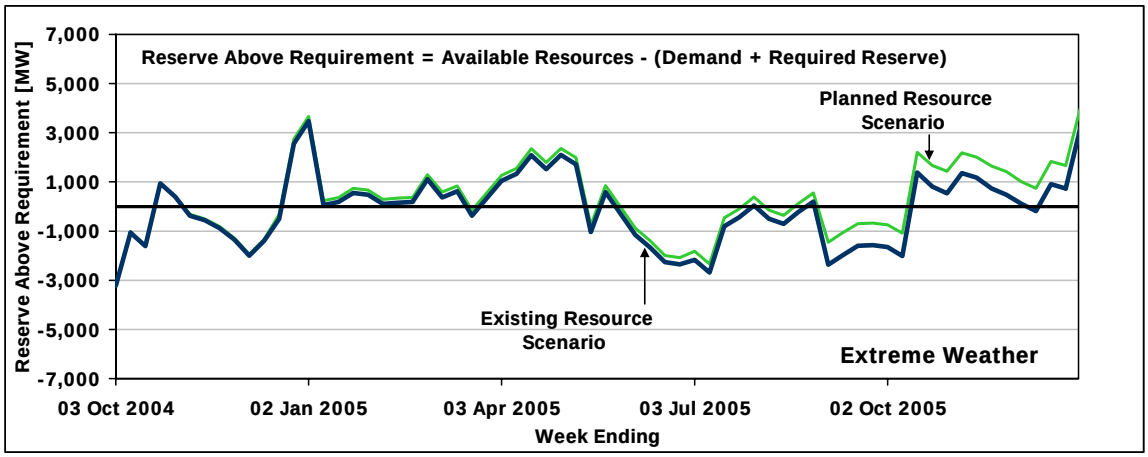


Figure 3.10 Reserve Above Requirement: Existing Resource Scenario and Planned Resource Scenario, Extreme Weather Demand



3.3.2 New Resource Risks

For the 18-month period under study, the improved demand-supply situation for the Planned Resource Scenario is dependent on the additional generation and demand response coming into service as forecast. Toward the end of the study period, some potential exists for additional resources to be available as a consequence of the provincial government's RFPs. It is too early to estimate the magnitude of this potential outcome.

3.3.3 Extensions to Generator Planned Outages

A number of large generating units are scheduled to return to service from outage prior to winter 2004/05 and summer 2005. Meeting these schedules is critical to maintaining adequate reserve levels. Delays in returning generators to service from maintenance outages could lead to reliance on imports.

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.

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 demands 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 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 indicates an average import level of about 1,100 MW for all hours. During the hours when Ontario demand exceeded 20,000 MW the average import level was about 1,500 MW. During the hours when Ontario demand exceeded 23,000 MW the average import level was around 2,300 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 either within or outside of Ontario.

3.5 Energy Conservation and Peak Reduction through Demand Response

The IMO has been identifying the suitability of demand-side initiatives as part of the supply picture for several years and believes demand reductions and demand shifting should be vigorously pursued in Ontario, as clean and potentially less expensive ways to reduce future supply requirements. The application of such conservation measures is virtually unrestricted in location.

Programs would improve the supply-demand balance in two main ways:

- Demand reduction through technological or process efficiency improvements would have beneficial effects on the environment and reduce the need for generation capacity additions through years.
- Shifting the time of use from peak to off-peak periods through demand-response programs would achieve peak demand reductions, influencing electricity prices downward and improving utilization rates of generation resources.

- End of Section -

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 a significant impact and that have an estimated in-service date within the 18-month period under study are listed.

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 forecast to be constrained due to transmission outage conditions. The identification of a constrained resource is generally not reflected in the assessment of weekly resource adequacy, which is detailed in Section 3.1, since there is typically sufficient outage scheduling flexibility to avoid constraining off resources when such resources are needed for reliability. Transmitters and generators are expected to have a mutual interest in developing an ongoing arrangement to coordinate their outage planning activities. Transmission outages that may affect generation access to the 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 August 2004 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:

East Zone

Several outages on transmission lines impact the transfer capability between Ontario and Quebec during the period from September, 2004, through November, 2004. The impacts range up to a 400 MW reduction in import capability.

Northeast Zone

There are several outages related to work on the Anjigami line that may reduce the limit on the east-west tie by up to 75 MW. This work is in progress and continues until November, 2004.

Ottawa Zone

Transfers from Masson on D5A are limited to 0 MW as a result of outages extending to the end of 2004 Work on Hawthorne SC11 in late September through October, 2004 limits Flow into Ottawa (FIO) by 50 MW.

Toronto Zone

Outages at Claireville and Cherrywood, associated with connecting the new Parkway TS, will impose limit reductions on FABC of up to 100 MW and on FETT of up to 400 MW, over a one week period in early November.

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. 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 arming of the Windsor overload protection scheme to split 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 reactive power supply

provided by the addition of the ATCO-Brighton Beach generators improves 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 Pickering and Darlington units should be avoided during the summer of 2005. With Lakeview shutdown in April 2005, reactive support from Nanticoke units will become more important as described in Section 4.3.1. The recent addition of 125 Mvar, 115 kV shunt capacitors at the Hearn Switching Station and at the Leaside Transformer Station 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 addition by Hydro One of a 125 Mvar, 115 kV capacitor bank at Burlington TS in 2004-Q2 helps alleviate this concern and will provide additional voltage support in the area.

4.3.1 Impact of Lakeview Thermal Generating Station (TGS) Shutdown

The IMO has been notified by Ontario Power Generation that, in accordance with Ontario Regulation 396/01, the Lakeview TGS will stop producing power by the end of April 2005. The 1,148 MW Lakeview facility currently has four 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 reliability 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 (GTA) 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 received all necessary approvals to construct a new Parkway Transformer Station (TS) to address some of the initial reliability impacts associated with the shutdown of Lakeview. To address the overloading of transformers at Claireville, Hydro One plans to install an initial 500/230 kV autotransformer at Parkway TS by May 1, 2005. However, this autotransformer will not address the reactive power support required to maintain an acceptable voltage profile throughout the western portion of the GTA.

To help address the voltage support concerns, Hydro One plans to install shunt capacitors with a reactive power capability of approximately 800 Mvar at Burlington, Richview and John TS's

before 2005. In addition a 300 Mvar shunt capacitor bank is to be installed on the 230 kV system at Trafalgar TS by May 2005. These capacitors will address reactive power needs under extreme weather loads with up to four generating units unavailable at Nanticoke TGS, Pickering Nuclear Generating Station (NGS) and Darlington NGS.

It is critical that all of the work above be completed by April 30, 2005, to improve the reliability of the GTA during the summer of 2005. As the summer progresses, the probability of experiencing higher temperatures and higher demands increases, along with the likelihood of requiring all available reactive resources.

In the event that all reactive resources are not available, due to delays or outages, it is considered prudent to have possible control actions ready to be taken, to help maintain the required voltage profile on the high voltage transmission network. Therefore, procedures that would avoid automatic low voltage control are being examined for possible implementation during times when all reactive resources are not available, and peak demands are forecast.

4.4 Forced Outages

Due to a forced outage, 230 kV circuit B3N (Scott Transformer Station x Bunce Creek, Michigan) is presently identified to be unavailable until December 31, 2004. This is considered to be the earliest possible date, with a high likelihood that this date will be extended. The B3N 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 identified as being unavailable until December 31, 2006.

The PS4 PAR on circuit L4D is unavailable until December 16, 2004 but does not affect the import and export limits of the Ontario – Michigan interconnection. A similar situation exists with the PS51 PAR on circuit L51D, which is forced out of service until December 31, 2004.

- End of Section -

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**, forecast reserves are generally adequate for the study period. Reserves are forecast to be above requirements for all but five weeks of the Outlook timeframe, with these occurrences primarily during the fall of 2004 when there are significant resource reductions due to generator maintenance outages. During these weeks some 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 more likely **Planned Resource Scenario**, the resource adequacy situation is further improved over the Existing Resource Scenario, mainly in the last six months of the Outlook period. For all but four weeks of the Outlook timeframe, the forecast available resources exceed the planning requirements. To the extent this scenario materializes, opportunities will 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	**- opportunities for additional outages/exports exist in many weeks** **- five weeks when reserves are lower than required (planned outages at risk or imports potentially required)**	**- many planned outages at risk** **- imports required during some peak periods**
Planned Resource Scenario	**- opportunities for additional outages/exports exist in most weeks** **- four weeks when reserves are lower than required (planned outages at risk or imports potentially required)**	**- some planned outages at risk** **- imports required during some peak periods**

- The magnitude of resource deficiencies under extreme weather emphasizes the continued need for reliable supply and demand response within Ontario.
- For the 18-month period under study, the improved demand-supply situation for the Planned Resource Scenario is dependent on the additional generation and demand response coming into the market as forecast.

- A number of large generating units are scheduled to return to service from outage prior to the winter of 2004/2005. Meeting these planned outage schedules is critical to maintaining adequate reserve levels.
- High generator unavailability, whether caused by higher forced outage rates, delays in returning generators to service, could lead to reliance on imports. Under these circumstances, opportunities for planned outages, especially during the peak summer period, would be limited.
- Over the 18-month period under study, the Northeast Power Coordinating Council resource adequacy criterion is expected to be met.

Transmission Adequacy

- Avoiding planned outages and maximizing the reactive capability of the Nanticoke, Pickering and Darlington units, in conjunction with new shunt capacitor banks 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
- Lakeview TGS will cease operations as a coal-fired generating station by April 30, 2005 in accordance with Ontario Regulation 396/01. Plans are being implemented to address the immediate reliability impacts associated with the shutdown of Lakeview TGS. Hydro One is progressing with development of Parkway Transformer Station to address transformer overload concerns, with this facility expected to be in service by the spring of 2005. The remaining voltage support requirements are expected to be addressed by the installation of additional shunt capacitors and related transformer controls by Hydro One.

- 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	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Oct-04	31,151	8,314	199	23,036	22,253	19.4	3,737	15.3	2,954	783
10-Oct-04	31,151	9,311	199	22,039	22,341	13.9	2,686	15.4	2,988	-302
17-Oct-04	31,151	9,049	199	22,301	22,910	12.6	2,503	15.7	3,112	-609
24-Oct-04	31,151	6,395	199	24,955	23,357	23.1	4,683	15.2	3,085	1,598
31-Oct-04	31,151	6,441	199	24,909	24,026	18.4	3,866	14.2	2,983	883
07-Nov-04	31,176	6,564	199	24,811	24,399	16.2	3,450	14.2	3,038	412
14-Nov-04	31,176	6,010	199	25,365	24,816	16.2	3,534	13.7	2,985	549
21-Nov-04	31,176	5,689	199	25,686	25,299	15.5	3,455	13.8	3,068	387
28-Nov-04	31,176	5,522	199	25,853	25,489	15.7	3,512	14.1	3,148	364
05-Dec-04	31,176	5,254	199	26,121	26,614	13.3	3,056	15.4	3,549	-493
12-Dec-04	31,176	5,138	199	26,237	26,576	12.9	2,992	14.3	3,331	-339
19-Dec-04	31,176	3,268	199	28,107	26,916	21.1	4,895	16.0	3,704	1,191
26-Dec-04	31,176	1,790	199	29,585	26,022	31.9	7,146	16.0	3,583	3,563
02-Jan-05	31,176	1,752	199	29,623	25,176	36.7	7,946	16.1	3,499	4,447
09-Jan-05	31,176	2,424	199	28,951	27,140	22.8	5,378	15.1	3,567	1,811
16-Jan-05	31,176	2,422	199	28,953	27,307	22.5	5,313	15.5	3,667	1,646
23-Jan-05	31,176	2,501	199	28,874	27,289	20.8	4,969	14.2	3,384	1,585
30-Jan-05	31,176	2,476	199	28,899	27,104	22.4	5,284	14.8	3,489	1,795
06-Feb-05	31,176	2,949	199	28,426	26,793	20.8	4,902	13.9	3,269	1,633
13-Feb-05	31,176	3,430	199	27,945	26,499	20.2	4,691	14.0	3,245	1,446
20-Feb-05	31,176	3,491	199	27,884	26,559	21.3	4,899	15.6	3,574	1,325
27-Feb-05	31,176	3,536	199	27,839	25,856	23.1	5,229	14.4	3,246	1,983
06-Mar-05	31,176	3,884	199	27,491	25,879	22.8	5,111	15.6	3,499	1,612
13-Mar-05	31,176	3,889	199	27,486	25,704	24.6	5,419	16.5	3,637	1,782
20-Mar-05	31,176	5,566	199	25,809	24,969	19.5	4,206	15.6	3,366	840
27-Mar-05	31,176	5,568	199	25,807	24,522	21.5	4,560	15.4	3,275	1,285
03-Apr-05	31,176	5,577	199	25,798	23,993	24.6	5,090	15.9	3,285	1,805
10-Apr-05	31,176	5,188	199	26,187	23,605	28.2	5,762	15.6	3,180	2,582
17-Apr-05	31,176	5,158	199	26,217	23,257	31.1	6,222	16.3	3,262	2,960
24-Apr-05	31,176	6,865	199	24,510	22,485	23.8	4,714	13.6	2,689	2,025
01-May-05	31,176	6,320	199	25,055	22,265	30.6	5,872	16.1	3,082	2,790
08-May-05	30,028	5,971	199	24,256	21,887	25.8	4,979	13.5	2,610	2,369
15-May-05	30,028	5,467	199	24,760	21,694	29.1	5,581	13.1	2,515	3,066
22-May-05	30,028	4,261	199	25,966	24,340	25.1	5,203	17.2	3,577	1,626
29-May-05	30,028	4,322	199	25,905	23,717	24.9	5,166	14.4	2,978	2,188
05-Jun-05	30,053	4,428	199	25,824	23,850	23.5	4,918	14.1	2,944	1,974
12-Jun-05	30,053	4,023	199	26,229	24,531	25.3	5,303	17.2	3,605	1,698
19-Jun-05	30,053	3,566	199	26,686	26,000	18.4	4,142	15.3	3,456	686
26-Jun-05	30,053	3,668	199	26,584	26,484	13.1	3,083	12.7	2,983	100

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	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Jul-05	30,053	3,631	199	26,621	26,569	15.8	3,634	15.6	3,582	52
10-Jul-05	30,053	2,982	199	27,270	27,321	14.6	3,472	14.8	3,523	-51
17-Jul-05	30,053	2,127	199	28,125	27,005	18.4	4,373	13.7	3,253	1,120
24-Jul-05	30,053	2,108	199	28,144	26,889	19.6	4,614	14.3	3,359	1,255
31-Jul-05	30,053	2,083	199	28,169	26,817	20.2	4,731	14.4	3,379	1,352
07-Aug-05	30,053	2,049	199	28,203	26,616	22.0	5,080	15.1	3,493	1,587
14-Aug-05	30,053	1,994	199	28,258	26,798	20.8	4,864	14.6	3,404	1,460
21-Aug-05	30,053	1,954	199	28,298	26,594	21.5	5,013	14.2	3,309	1,704
28-Aug-05	30,053	1,912	199	28,340	26,594	22.8	5,259	15.2	3,513	1,746
04-Sep-05	30,053	3,225	199	27,027	26,886	15.6	3,637	15.0	3,496	141
11-Sep-05	30,053	3,794	199	26,458	26,273	18.1	4,063	17.3	3,878	185
18-Sep-05	30,053	3,825	199	26,427	25,301	20.6	4,520	15.5	3,394	1,126
25-Sep-05	30,053	4,550	199	25,702	24,746	19.7	4,234	15.3	3,278	956
02-Oct-05	30,053	6,010	199	24,242	23,012	24.3	4,745	18.0	3,515	1,230
09-Oct-05	30,053	6,202	199	24,050	21,913	24.6	4,748	13.5	2,611	2,137
16-Oct-05	30,053	6,061	199	24,191	22,276	22.6	4,459	12.9	2,544	1,915
23-Oct-05	30,053	5,961	199	24,291	22,768	20.5	4,136	13.0	2,613	1,523
30-Oct-05	30,053	5,958	199	24,294	23,252	17.7	3,661	12.7	2,619	1,042
06-Nov-05	30,078	4,535	199	25,742	24,037	20.4	4,369	12.5	2,664	1,705
13-Nov-05	30,078	4,311	199	25,966	24,193	20.8	4,466	12.5	2,693	1,773
20-Nov-05	30,078	3,868	199	26,409	24,641	19.6	4,324	11.6	2,556	1,768
27-Nov-05	30,078	3,434	199	26,843	25,175	19.5	4,381	12.1	2,713	1,668
04-Dec-05	30,078	3,349	199	26,928	25,662	19.5	4,384	13.8	3,118	1,266
11-Dec-05	30,078	2,743	199	27,534	26,785	18.7	4,329	15.4	3,580	749
18-Dec-05	30,078	2,270	199	28,007	26,683	19.9	4,651	14.2	3,327	1,324
25-Dec-05	30,078	1,383	199	28,894	26,998	24.1	5,617	16.0	3,721	1,896
01-Jan-06	30,078	1,397	199	28,880	25,055	32.4	7,067	14.9	3,242	3,825
08-Jan-06	30,078	1,216	199	29,061	26,598	25.1	5,835	14.5	3,372	2,463
15-Jan-06	30,078	1,895	199	28,382	27,326	19.5	4,640	15.1	3,584	1,056
22-Jan-06	30,078	1,915	199	28,362	27,262	18.1	4,348	13.5	3,248	1,100
29-Jan-06	30,078	1,939	199	28,338	27,094	19.5	4,615	14.2	3,371	1,244
05-Feb-06	30,078	2,421	199	27,856	26,824	17.9	4,226	13.5	3,194	1,032
12-Feb-06	30,078	2,399	199	27,878	26,598	19.3	4,516	13.9	3,236	1,280
19-Feb-06	30,078	2,505	199	27,772	26,672	20.3	4,676	15.5	3,576	1,100
26-Feb-06	30,078	2,538	199	27,739	25,955	22.1	5,021	14.3	3,237	1,784
05-Mar-06	30,078	2,823	199	27,454	25,565	22.1	4,960	13.7	3,071	1,889
12-Mar-06	30,078	2,908	199	27,369	25,386	23.3	5,166	14.3	3,183	1,983
19-Mar-06	30,078	3,444	199	26,833	24,717	23.6	5,117	13.8	3,001	2,116
26-Mar-06	30,078	3,540	199	26,737	24,292	25.2	5,376	13.7	2,931	2,445
02-Apr-06	30,078	4,443	199	25,834	23,687	24.1	5,013	13.8	2,866	2,147

Table A2 Assessment of Resource Adequacy: Planned Resource Scenario

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Oct-04	31,151	8,314	199	23,036	22,253	19.4	3,737	15.3	2,954	783
10-Oct-04	31,151	9,311	199	22,039	22,341	13.9	2,686	15.4	2,988	-302
17-Oct-04	31,151	9,049	199	22,301	22,910	12.6	2,503	15.7	3,112	-609
24-Oct-04	31,151	6,395	199	24,955	23,357	23.1	4,683	15.2	3,085	1,598
31-Oct-04	31,151	6,441	199	24,909	24,026	18.4	3,866	14.2	2,983	883
07-Nov-04	31,176	6,564	257	24,869	24,399	16.4	3,508	14.2	3,038	470
14-Nov-04	31,176	6,010	257	25,423	24,816	16.5	3,592	13.7	2,985	607
21-Nov-04	31,176	5,689	257	25,744	25,299	15.8	3,513	13.8	3,068	445
28-Nov-04	31,176	5,522	257	25,911	25,489	16.0	3,570	14.1	3,148	422
05-Dec-04	31,176	5,254	257	26,179	26,614	13.5	3,114	15.4	3,549	-435
12-Dec-04	31,176	5,138	257	26,295	26,576	13.1	3,050	14.3	3,331	-281
19-Dec-04	31,176	3,268	383	28,291	26,916	21.9	5,079	16.0	3,704	1,375
26-Dec-04	31,176	1,790	383	29,769	26,022	32.7	7,330	16.0	3,583	3,747
02-Jan-05	31,176	1,752	383	29,807	25,176	37.5	8,130	16.1	3,499	4,631
09-Jan-05	31,176	2,424	383	29,135	27,140	23.6	5,562	15.1	3,567	1,995
16-Jan-05	31,176	2,422	383	29,137	27,307	23.3	5,497	15.5	3,667	1,830
23-Jan-05	31,176	2,501	383	29,058	27,289	21.6	5,153	14.2	3,384	1,769
30-Jan-05	31,176	2,476	383	29,083	27,104	23.2	5,468	14.8	3,489	1,979
06-Feb-05	31,176	2,949	383	28,610	26,793	21.6	5,086	13.9	3,269	1,817
13-Feb-05	31,176	3,430	383	28,129	26,499	21.0	4,875	14.0	3,245	1,630
20-Feb-05	31,176	3,491	383	28,068	26,559	22.1	5,083	15.6	3,574	1,509
27-Feb-05	31,176	3,536	383	28,023	25,856	23.9	5,413	14.4	3,246	2,167
06-Mar-05	31,176	3,884	418	27,710	25,879	23.8	5,330	15.6	3,499	1,831
13-Mar-05	31,176	3,889	418	27,705	25,704	25.6	5,638	16.5	3,637	2,001
20-Mar-05	31,176	5,566	418	26,028	24,969	20.5	4,425	15.6	3,366	1,059
27-Mar-05	31,176	5,568	418	26,026	24,522	22.5	4,779	15.4	3,275	1,504
03-Apr-05	31,176	5,577	418	26,017	23,993	25.6	5,309	15.9	3,285	2,024
10-Apr-05	31,176	5,188	418	26,406	23,605	29.3	5,981	15.6	3,180	2,801
17-Apr-05	31,176	5,158	468	26,486	23,257	32.5	6,491	16.3	3,262	3,229
24-Apr-05	31,176	6,865	468	24,779	22,485	25.2	4,983	13.6	2,689	2,294
01-May-05	31,176	6,320	468	25,324	22,265	32.0	6,141	16.1	3,082	3,059
08-May-05	30,028	5,971	468	24,525	21,887	27.2	5,248	13.5	2,610	2,638
15-May-05	30,028	5,467	468	25,029	21,694	30.5	5,850	13.1	2,515	3,335
22-May-05	30,028	4,261	468	26,235	24,340	26.4	5,472	17.2	3,577	1,895
29-May-05	30,028	4,322	468	26,174	23,717	26.2	5,435	14.4	2,978	2,457
05-Jun-05	30,053	4,428	468	26,093	23,850	24.8	5,187	14.1	2,944	2,243
12-Jun-05	30,053	4,023	468	26,498	24,531	26.6	5,572	17.2	3,605	1,967
19-Jun-05	30,053	3,566	468	26,955	26,000	19.6	4,411	15.3	3,456	955
26-Jun-05	30,053	3,668	468	26,853	26,484	14.3	3,352	12.7	2,983	369

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	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Jul-05	30,053	3,631	544	26,966	26,569	17.3	3,979	15.6	3,582	397
10-Jul-05	30,053	2,982	544	27,615	27,321	16.0	3,817	14.8	3,523	294
17-Jul-05	30,053	2,127	544	28,470	27,005	19.9	4,718	13.7	3,253	1,465
24-Jul-05	30,053	2,108	544	28,489	26,889	21.1	4,959	14.3	3,359	1,600
31-Jul-05	30,053	2,083	544	28,514	26,817	21.7	5,076	14.4	3,379	1,697
07-Aug-05	30,053	2,049	544	28,548	26,616	23.5	5,425	15.1	3,493	1,932
14-Aug-05	30,053	1,994	544	28,603	26,798	22.3	5,209	14.6	3,404	1,805
21-Aug-05	30,053	1,954	544	28,643	26,594	23.0	5,358	14.2	3,309	2,049
28-Aug-05	30,053	1,912	544	28,685	26,594	24.3	5,604	15.2	3,513	2,091
04-Sep-05	30,568	3,225	544	27,887	26,896	19.2	4,497	15.0	3,506	991
11-Sep-05	30,568	3,794	544	27,318	26,307	22.0	4,923	17.5	3,912	1,011
18-Sep-05	30,568	3,825	544	27,287	25,335	24.6	5,380	15.7	3,428	1,952
25-Sep-05	30,568	4,550	544	26,562	24,778	23.7	5,094	15.4	3,310	1,784
02-Oct-05	30,568	6,010	544	25,102	23,050	28.8	5,605	18.2	3,553	2,052
09-Oct-05	30,568	6,202	544	24,910	21,945	29.1	5,608	13.7	2,643	2,965
16-Oct-05	30,568	6,061	544	25,051	22,311	27.0	5,319	13.1	2,579	2,740
23-Oct-05	30,568	5,961	544	25,151	22,801	24.8	4,996	13.1	2,646	2,350
30-Oct-05	30,568	5,958	544	25,154	23,285	21.9	4,521	12.9	2,652	1,869
06-Nov-05	30,593	4,535	544	26,602	24,072	24.5	5,229	12.6	2,699	2,530
13-Nov-05	30,593	4,311	544	26,826	24,228	24.8	5,326	12.7	2,728	2,598
20-Nov-05	30,593	3,868	544	27,269	24,676	23.5	5,184	11.7	2,591	2,593
27-Nov-05	30,593	3,434	544	27,703	25,209	23.3	5,241	12.2	2,747	2,494
04-Dec-05	30,593	3,349	544	27,788	25,662	23.3	5,244	13.8	3,118	2,126
11-Dec-05	30,593	2,743	544	28,394	26,785	22.4	5,189	15.4	3,580	1,609
18-Dec-05	30,593	2,270	544	28,867	26,683	23.6	5,511	14.2	3,327	2,184
25-Dec-05	30,593	1,383	544	29,754	26,998	27.8	6,477	16.0	3,721	2,756
01-Jan-06	30,593	1,397	544	29,740	25,055	36.3	7,927	14.9	3,242	4,685
08-Jan-06	30,593	1,216	544	29,921	26,598	28.8	6,695	14.5	3,372	3,323
15-Jan-06	30,593	1,895	544	29,242	27,326	23.2	5,500	15.1	3,584	1,916
22-Jan-06	30,593	1,915	544	29,222	27,262	21.7	5,208	13.5	3,248	1,960
29-Jan-06	30,593	1,939	544	29,198	27,094	23.1	5,475	14.2	3,371	2,104
05-Feb-06	30,593	2,421	544	28,716	26,824	21.5	5,086	13.5	3,194	1,892
12-Feb-06	30,593	2,399	544	28,738	26,598	23.0	5,376	13.9	3,236	2,140
19-Feb-06	30,593	2,505	544	28,632	26,672	24.0	5,536	15.5	3,576	1,960
26-Feb-06	30,593	2,538	544	28,599	25,955	25.9	5,881	14.3	3,237	2,644
05-Mar-06	30,593	2,823	544	28,314	25,600	25.9	5,820	13.8	3,106	2,714
12-Mar-06	30,593	2,908	544	28,229	25,412	27.1	6,026	14.5	3,209	2,817
19-Mar-06	30,593	3,444	544	27,693	24,751	27.5	5,977	14.0	3,035	2,942
26-Mar-06	30,593	3,540	544	27,597	24,327	29.2	6,236	13.9	2,966	3,270
02-Apr-06	30,593	4,443	544	26,694	23,721	28.2	5,873	13.9	2,900	2,973

Table A3 Demand Forecast Range For Required Resources Calculation

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
03-Oct-04	19299	22842
10-Oct-04	19353	20074
17-Oct-04	19798	20798
24-Oct-04	20272	21100
31-Oct-04	21043	21532
07-Nov-04	21361	22158
14-Nov-04	21831	22826
21-Nov-04	22231	23377
28-Nov-04	22341	23937
05-Dec-04	23065	24818
12-Dec-04	23245	24459
19-Dec-04	23212	25413
26-Dec-04	22439	23872
02-Jan-05	21677	23113
09-Jan-05	23573	25616
16-Jan-05	23640	25513
23-Jan-05	23905	25157
30-Jan-05	23615	25235
06-Feb-05	23524	25150
13-Feb-05	23254	24661
20-Feb-05	22985	24619
27-Feb-05	22610	23860
06-Mar-05	22380	23961
13-Mar-05	22067	23752
20-Mar-05	21603	23048
27-Mar-05	21247	22551
03-Apr-05	20708	21939
10-Apr-05	20425	21995
17-Apr-05	19995	21228
24-Apr-05	19796	20700
01-May-05	19183	20295
08-May-05	19277	20187
15-May-05	19179	23000
22-May-05	20763	22692
29-May-05	20739	23378
05-Jun-05	20906	24127
12-Jun-05	20926	24977
19-Jun-05	22544	25886
26-Jun-05	23501	25798

(Table A3 continued)

Week Ending Day	Ontario Demand Normal Weather MW	Ontario Demand Extreme Weather MW
03-Jul-05	22987	25720
10-Jul-05	23798	26724
17-Jul-05	23752	25982
24-Jul-05	23530	25708
31-Jul-05	23438	25307
07-Aug-05	23123	25725
14-Aug-05	23394	25943
21-Aug-05	23285	25562
28-Aug-05	23081	25251
04-Sep-05	23390	26121
11-Sep-05	22395	25337
18-Sep-05	21907	25036
25-Sep-05	21468	24272
02-Oct-05	19497	23107
09-Oct-05	19302	23314
16-Oct-05	19732	20445
23-Oct-05	20155	21154
30-Oct-05	20633	21456
06-Nov-05	21373	21981
13-Nov-05	21500	22252
20-Nov-05	22085	23085
27-Nov-05	22462	23613
04-Dec-05	22544	24145
11-Dec-05	23205	24988
18-Dec-05	23356	24570
25-Dec-05	23277	25497
01-Jan-06	21813	23155
08-Jan-06	23226	25185
15-Jan-06	23742	25641
22-Jan-06	24014	25264
29-Jan-06	23723	25342
05-Feb-06	23630	25258
12-Feb-06	23362	24767
19-Feb-06	23096	24732
26-Feb-06	22718	23966
05-Mar-06	22494	24079
12-Mar-06	22203	23865
19-Mar-06	21716	23166
26-Mar-06	21361	22687
02-Apr-06	20821	22052

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

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Oct-04	31,151	8,320	199	23,030	26,251	0.8	188	14.9	3,409	-3,221
10-Oct-04	31,151	9,311	199	22,039	23,104	9.8	1,965	15.1	3,030	-1,065
17-Oct-04	31,151	9,012	199	22,338	23,950	7.4	1,540	15.2	3,152	-1,612
24-Oct-04	31,151	6,395	199	24,955	24,013	18.3	3,855	13.8	2,913	942
31-Oct-04	31,151	6,441	199	24,909	24,509	15.7	3,377	13.8	2,977	400
07-Nov-04	31,176	6,564	199	24,811	25,185	12.0	2,653	13.7	3,027	-374
14-Nov-04	31,176	6,010	199	25,365	25,924	11.1	2,539	13.6	3,098	-559
21-Nov-04	31,176	5,689	199	25,686	26,563	9.9	2,309	13.6	3,186	-877
28-Nov-04	31,176	5,522	199	25,853	27,200	8.0	1,916	13.6	3,263	-1,347
05-Dec-04	31,176	5,254	199	26,121	28,123	5.3	1,303	13.3	3,305	-2,002
12-Dec-04	31,176	5,114	199	26,261	27,658	7.4	1,802	13.1	3,199	-1,397
19-Dec-04	31,176	3,215	199	28,160	28,666	10.8	2,747	12.8	3,253	-506
26-Dec-04	31,176	1,725	199	29,650	27,091	24.2	5,778	13.5	3,219	2,559
02-Jan-05	31,176	1,637	199	29,738	26,264	28.7	6,625	13.6	3,151	3,474
09-Jan-05	31,176	2,420	199	28,955	28,897	13.0	3,339	12.8	3,281	58
16-Jan-05	31,176	2,416	199	28,959	28,778	13.5	3,446	12.8	3,265	181
23-Jan-05	31,176	2,469	199	28,906	28,356	14.9	3,749	12.7	3,199	550
30-Jan-05	31,176	2,445	199	28,930	28,449	14.6	3,695	12.7	3,214	481
06-Feb-05	31,176	2,919	199	28,456	28,351	13.2	3,306	12.7	3,201	105
13-Feb-05	31,176	3,427	199	27,948	27,792	13.3	3,287	12.7	3,131	156
20-Feb-05	31,176	3,445	199	27,930	27,746	13.5	3,311	12.7	3,127	184
27-Feb-05	31,176	3,438	199	27,937	26,825	17.1	4,077	12.4	2,965	1,112
06-Mar-05	31,176	3,884	199	27,491	27,123	14.7	3,530	13.2	3,162	368
13-Mar-05	31,176	3,889	199	27,486	26,868	15.7	3,734	13.1	3,116	618
20-Mar-05	31,176	5,566	199	25,809	26,181	12.0	2,761	13.6	3,133	-372
27-Mar-05	31,176	5,473	199	25,902	25,564	14.9	3,351	13.4	3,013	338
03-Apr-05	31,176	5,472	199	25,903	24,857	18.1	3,964	13.3	2,918	1,046
10-Apr-05	31,176	5,094	199	26,281	24,950	19.5	4,286	13.4	2,955	1,331
17-Apr-05	31,176	5,104	199	26,271	24,183	23.8	5,043	13.9	2,955	2,088
24-Apr-05	31,176	6,652	199	24,723	23,203	19.4	4,023	12.1	2,503	1,520
01-May-05	31,176	6,176	199	25,199	23,104	24.2	4,904	13.8	2,809	2,095
08-May-05	30,028	5,935	199	24,292	22,576	20.3	4,105	11.8	2,389	1,716
15-May-05	30,028	5,458	199	24,769	25,803	7.7	1,769	12.2	2,803	-1,034
22-May-05	30,028	4,311	199	25,916	25,337	14.2	3,224	11.7	2,645	579
29-May-05	30,028	4,317	199	25,910	26,186	10.8	2,532	12.0	2,808	-276
05-Jun-05	30,053	4,475	199	25,777	26,928	6.8	1,650	11.6	2,801	-1,151
12-Jun-05	30,053	3,969	199	26,283	27,948	5.2	1,306	11.9	2,971	-1,665
19-Jun-05	30,053	3,508	199	26,744	29,007	3.3	858	12.1	3,121	-2,263
26-Jun-05	30,053	3,680	199	26,572	28,924	3.0	774	12.1	3,126	-2,352

(Table A4 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Jul-05	30,053	3,608	199	26,644	28,808	3.6	924	12.0	3,088	-2,164
10-Jul-05	30,053	2,974	199	27,278	29,964	2.1	554	12.1	3,240	-2,686
17-Jul-05	30,053	2,074	199	28,178	28,982	8.5	2,196	11.6	3,000	-804
24-Jul-05	30,053	2,049	199	28,203	28,644	9.7	2,495	11.4	2,936	-441
31-Jul-05	30,053	2,034	199	28,218	28,173	11.5	2,911	11.3	2,866	45
07-Aug-05	30,053	2,083	199	28,169	28,662	9.5	2,444	11.4	2,937	-493
14-Aug-05	30,053	2,028	199	28,224	28,929	8.8	2,281	11.5	2,986	-705
21-Aug-05	30,053	2,001	199	28,251	28,468	10.5	2,689	11.4	2,906	-217
28-Aug-05	30,053	1,949	199	28,303	28,101	12.1	3,052	11.3	2,850	202
04-Sep-05	30,053	3,275	199	26,977	29,336	3.3	856	12.3	3,215	-2,359
11-Sep-05	30,053	3,794	199	26,458	28,431	4.4	1,121	12.2	3,094	-1,973
18-Sep-05	30,053	3,774	199	26,478	28,071	5.8	1,442	12.1	3,035	-1,593
25-Sep-05	30,053	4,554	199	25,698	27,274	5.9	1,426	12.4	3,002	-1,576
02-Oct-05	30,053	5,927	199	24,325	25,980	5.3	1,218	12.4	2,873	-1,655
09-Oct-05	30,053	5,993	199	24,259	26,270	4.1	945	12.7	2,956	-2,011
16-Oct-05	30,053	5,977	199	24,275	22,890	18.7	3,830	12.0	2,445	1,385
23-Oct-05	30,053	5,809	199	24,443	23,636	15.6	3,289	11.7	2,482	807
30-Oct-05	30,053	5,719	199	24,533	23,998	14.3	3,077	11.9	2,542	535
06-Nov-05	30,078	4,406	199	25,871	24,520	17.7	3,890	11.6	2,539	1,351
13-Nov-05	30,078	4,301	199	25,976	24,802	16.7	3,724	11.5	2,550	1,174
20-Nov-05	30,078	3,881	199	26,396	25,664	14.3	3,311	11.2	2,579	732
27-Nov-05	30,078	3,429	199	26,848	26,364	13.7	3,235	11.7	2,751	484
04-Dec-05	30,078	3,368	199	26,909	26,796	11.5	2,764	11.0	2,651	113
11-Dec-05	30,078	2,686	199	27,591	27,775	10.4	2,603	11.2	2,787	-184
18-Dec-05	30,078	2,122	199	28,155	27,248	14.6	3,585	10.9	2,678	907
25-Dec-05	30,078	1,194	199	29,083	28,350	14.1	3,586	11.2	2,853	733
01-Jan-06	30,078	1,271	199	29,006	25,779	25.3	5,851	11.3	2,624	3,227
08-Jan-06	30,078	1,190	199	29,087	27,902	15.5	3,902	10.8	2,717	1,185
15-Jan-06	30,078	1,872	199	28,405	28,543	10.8	2,764	11.3	2,902	-138
22-Jan-06	30,078	1,872	199	28,405	28,085	12.4	3,141	11.2	2,821	320
29-Jan-06	30,078	1,872	199	28,405	28,179	12.1	3,063	11.2	2,837	226
05-Feb-06	30,078	2,399	199	27,878	28,124	10.4	2,620	11.4	2,866	-246
12-Feb-06	30,078	2,399	199	27,878	27,506	12.6	3,111	11.1	2,739	372
19-Feb-06	30,078	2,399	199	27,878	27,464	12.7	3,146	11.1	2,732	414
26-Feb-06	30,078	2,417	199	27,860	26,513	16.3	3,894	10.6	2,547	1,347
05-Mar-06	30,078	2,834	199	27,443	26,831	14.0	3,364	11.4	2,752	612
12-Mar-06	30,078	2,855	199	27,422	26,584	14.9	3,557	11.4	2,719	838
19-Mar-06	30,078	3,391	199	26,886	25,762	16.1	3,720	11.2	2,596	1,124
26-Mar-06	30,078	3,504	199	26,773	25,230	18.0	4,086	11.2	2,543	1,543
02-Apr-06	30,078	4,337	199	25,940	24,547	17.6	3,888	11.3	2,495	1,393

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

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Oct-04	31,151	8,320	199	23,030	26,251	0.8	188	14.9	3,409	-3,221
10-Oct-04	31,151	9,311	199	22,039	23,104	9.8	1,965	15.1	3,030	-1,065
17-Oct-04	31,151	9,012	199	22,338	23,950	7.4	1,540	15.2	3,152	-1,612
24-Oct-04	31,151	6,395	199	24,955	24,013	18.3	3,855	13.8	2,913	942
31-Oct-04	31,151	6,441	199	24,909	24,509	15.7	3,377	13.8	2,977	400
07-Nov-04	31,176	6,564	257	24,869	25,185	12.2	2,711	13.7	3,027	-316
14-Nov-04	31,176	6,010	257	25,423	25,924	11.4	2,597	13.6	3,098	-501
21-Nov-04	31,176	5,689	257	25,744	26,563	10.1	2,367	13.6	3,186	-819
28-Nov-04	31,176	5,522	257	25,911	27,200	8.3	1,974	13.6	3,263	-1,289
05-Dec-04	31,176	5,254	257	26,179	28,123	5.5	1,361	13.3	3,305	-1,944
12-Dec-04	31,176	5,114	257	26,319	27,658	7.6	1,860	13.1	3,199	-1,339
19-Dec-04	31,176	3,215	383	28,344	28,666	11.5	2,931	12.8	3,253	-322
26-Dec-04	31,176	1,725	383	29,834	27,091	25.0	5,962	13.5	3,219	2,743
02-Jan-05	31,176	1,637	383	29,922	26,264	29.5	6,809	13.6	3,151	3,658
09-Jan-05	31,176	2,420	383	29,139	28,897	13.8	3,523	12.8	3,281	242
16-Jan-05	31,176	2,416	383	29,143	28,778	14.2	3,630	12.8	3,265	365
23-Jan-05	31,176	2,469	383	29,090	28,356	15.6	3,933	12.7	3,199	734
30-Jan-05	31,176	2,445	383	29,114	28,449	15.4	3,879	12.7	3,214	665
06-Feb-05	31,176	2,919	383	28,640	28,351	13.9	3,490	12.7	3,201	289
13-Feb-05	31,176	3,427	383	28,132	27,792	14.1	3,471	12.7	3,131	340
20-Feb-05	31,176	3,445	383	28,114	27,746	14.2	3,495	12.7	3,127	368
27-Feb-05	31,176	3,438	383	28,121	26,825	17.9	4,261	12.4	2,965	1,296
06-Mar-05	31,176	3,884	418	27,710	27,123	15.7	3,749	13.2	3,162	587
13-Mar-05	31,176	3,889	418	27,705	26,868	16.6	3,953	13.1	3,116	837
20-Mar-05	31,176	5,566	418	26,028	26,181	12.9	2,980	13.6	3,133	-153
27-Mar-05	31,176	5,473	418	26,121	25,564	15.8	3,570	13.4	3,013	557
03-Apr-05	31,176	5,472	418	26,122	24,857	19.1	4,183	13.3	2,918	1,265
10-Apr-05	31,176	5,094	418	26,500	24,950	20.5	4,505	13.4	2,955	1,550
17-Apr-05	31,176	5,104	468	26,540	24,183	25.0	5,312	13.9	2,955	2,357
24-Apr-05	31,176	6,652	468	24,992	23,203	20.7	4,292	12.1	2,503	1,789
01-May-05	31,176	6,176	468	25,468	23,104	25.5	5,173	13.8	2,809	2,364
08-May-05	30,028	5,935	468	24,561	22,576	21.7	4,374	11.8	2,389	1,985
15-May-05	30,028	5,458	468	25,038	25,803	8.9	2,038	12.2	2,803	-765
22-May-05	30,028	4,311	468	26,185	25,337	15.4	3,493	11.7	2,645	848
29-May-05	30,028	4,317	468	26,179	26,186	12.0	2,801	12.0	2,808	-7
05-Jun-05	30,053	4,475	468	26,046	26,928	8.0	1,919	11.6	2,801	-882
12-Jun-05	30,053	3,969	468	26,552	27,948	6.3	1,575	11.9	2,971	-1,396
19-Jun-05	30,053	3,508	468	27,013	29,007	4.4	1,127	12.1	3,121	-1,994
26-Jun-05	30,053	3,680	468	26,841	28,924	4.0	1,043	12.1	3,126	-2,083

(Table A5 continued)

Week Ending Day	Total Resources MW	Total Reductions in Resources MW	Demand Response MW	Available Resources MW	Required Resources MW	Available Reserve %	Available Reserve MW	Required Reserve %	Required Reserve MW	Reserve Above Requirement MW
03-Jul-05	30,053	3,608	544	26,989	28,808	4.9	1,269	12.0	3,088	-1,819
10-Jul-05	30,053	2,974	544	27,623	29,964	3.4	899	12.1	3,240	-2,341
17-Jul-05	30,053	2,074	544	28,523	28,982	9.8	2,541	11.6	3,000	-459
24-Jul-05	30,053	2,049	544	28,548	28,644	11.1	2,840	11.4	2,936	-96
31-Jul-05	30,053	2,034	544	28,563	28,173	12.9	3,256	11.3	2,866	390
07-Aug-05	30,053	2,083	544	28,514	28,662	10.8	2,789	11.4	2,937	-148
14-Aug-05	30,053	2,028	544	28,569	28,929	10.1	2,626	11.5	2,986	-360
21-Aug-05	30,053	2,001	544	28,596	28,468	11.9	3,034	11.4	2,906	128
28-Aug-05	30,053	1,949	544	28,648	28,101	13.5	3,397	11.3	2,850	547
04-Sep-05	30,568	3,275	544	27,837	29,297	6.6	1,716	12.2	3,176	-1,460
11-Sep-05	30,568	3,794	544	27,318	28,379	7.8	1,981	12.0	3,042	-1,061
18-Sep-05	30,568	3,774	544	27,338	28,033	9.2	2,302	12.0	2,997	-695
25-Sep-05	30,568	4,554	544	26,558	27,235	9.4	2,286	12.2	2,963	-677
02-Oct-05	30,568	5,927	544	25,185	25,932	9.0	2,078	12.2	2,825	-747
09-Oct-05	30,568	5,993	544	25,119	26,198	7.7	1,805	12.4	2,884	-1,079
16-Oct-05	30,568	5,977	544	25,135	22,926	22.9	4,690	12.1	2,481	2,209
23-Oct-05	30,568	5,809	544	25,303	23,635	19.6	4,149	11.7	2,481	1,668
30-Oct-05	30,568	5,719	544	25,393	23,957	18.4	3,937	11.7	2,501	1,436
06-Nov-05	30,593	4,406	544	26,731	24,550	21.6	4,750	11.7	2,569	2,181
13-Nov-05	30,593	4,301	544	26,836	24,822	20.6	4,584	11.6	2,570	2,014
20-Nov-05	30,593	3,881	544	27,256	25,613	18.1	4,171	11.0	2,528	1,643
27-Nov-05	30,593	3,429	544	27,708	26,286	17.3	4,095	11.3	2,673	1,422
04-Dec-05	30,593	3,368	544	27,769	26,754	15.0	3,624	10.8	2,609	1,015
11-Dec-05	30,593	2,686	544	28,451	27,711	13.9	3,463	10.9	2,723	740
18-Dec-05	30,593	2,122	544	29,015	27,184	18.1	4,445	10.6	2,614	1,831
25-Dec-05	30,593	1,194	544	29,943	28,276	17.4	4,446	10.9	2,779	1,667
01-Jan-06	30,593	1,271	544	29,866	25,817	29.0	6,711	11.5	2,662	4,049
08-Jan-06	30,593	1,190	544	29,947	27,860	18.9	4,762	10.6	2,675	2,087
15-Jan-06	30,593	1,872	544	29,265	28,489	14.1	3,624	11.1	2,848	776
22-Jan-06	30,593	1,872	544	29,265	28,040	15.8	4,001	11.0	2,776	1,225
29-Jan-06	30,593	1,872	544	29,265	28,139	15.5	3,923	11.0	2,797	1,126
05-Feb-06	30,593	2,399	544	28,738	28,052	13.8	3,480	11.1	2,794	686
12-Feb-06	30,593	2,399	544	28,738	27,456	16.0	3,971	10.9	2,689	1,282
19-Feb-06	30,593	2,399	544	28,738	27,409	16.2	4,006	10.8	2,677	1,329
26-Feb-06	30,593	2,417	544	28,720	26,508	19.8	4,754	10.6	2,542	2,212
05-Mar-06	30,593	2,834	544	28,303	26,762	17.5	4,224	11.1	2,683	1,541
12-Mar-06	30,593	2,855	544	28,282	26,522	18.5	4,417	11.1	2,657	1,760
19-Mar-06	30,593	3,391	544	27,746	25,742	19.8	4,580	11.1	2,576	2,004
26-Mar-06	30,593	3,504	544	27,633	25,263	21.8	4,946	11.4	2,576	2,370
02-Apr-06	30,593	4,337	544	26,800	24,577	21.5	4,748	11.5	2,525	2,223

Table A6 Energy Production Capability Forecast

Month	Existing Resource Scenario Forecast Energy Production Capability (GWh)	Planned Resource Scenario Forecast Energy Production Capability (GWh)
Oct 2004	13,462	13,462
Nov 2004	15,188	15,188
Dec 2004	17,847	17,847
Jan 2005	17,222	17,222
Feb 2005	15,259	15,259
Mar 2005	15,758	15,758
Apr 2005	14,722	14,722
May 2005	15,460	15,460
Jun 2005	15,800	15,800
Jul 2005	17,291	17,291
Aug 2005	17,325	17,325
Sep 2005	14,927	15,279
Oct 2005	14,020	14,384
Nov 2005	15,569	15,921
Dec 2005	17,756	18,120
Jan 2006	16,545	16,909
Feb 2006	14,717	15,046
Mar 2006	16,168	16,532

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Appendix B Transmission Projects

Bruce Zone	

East Zone	Projected I/S Date
Kingston: Second DESN at Kingston-Gardiner TS	2005-Q2

Essa Zone	Projected I/S Date

Niagara Zone	Projected I/S Date
Kalar TS: New 115/14.2 kV transformer station off lines A36N and A37N.	2004-Q3

Northeast Zone	Projected I/S Date
Gartshore TS: reconfiguration of Gartshore TS	2004-Q4
Sudbury: new supply point to Falconbridge Nickel Rim Mine via 115kV circuit S6F	2004-Q4

Northwest Zone	Projected I/S Date

Ottawa Zone	Projected I/S Date
Hawthorne TS: Add one 250 MVA 230/115 kV autotransformer and one new double circuit line from Hawthorne to Blackburn Jct.	2004-Q3
Upgrade 115 kV circuit H9A.	2004-Q4

Southwest Zone	Projected I/S Date
Trafalgar TS: New 230 kV, 300 MVAR shunt capacitor	2005-Q2
Burlington TS: Install 230 kV, 300 Mvar shunt capacitor.	2004-Q4
Brant TS: New DESN connected to 115kV circuits B12/B13	2004-Q4
Detweiler TS: Upgarde circuitsD5/9G	2005-Q3

Toronto Zone	Projected I/S Date
Richview TS, John TS : Install, respectively, 230 kV, 412 Mvar and 115 kV, 100 Mvar shunt capacitor banks.	2004-Q4
Leaside TS: Install second 125 Mvar shunt capacitor.	2005-Q2
Cardiff TS: New transformer station (formerly Mississauga TS).	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

- 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

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/27/04 7:00 AM	11/12/04 3:00 PM	Bruce A TS.AL562	CWW	1 Week	FABC	0 MW

Table C2 East Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/20/04 7:30 PM	11/13/04 12:00 PM	Chenaux TS.A1-A2	CWW	Non-Recallable		
11/15/04 7:00 AM	11/26/04 5:00 PM	IPBJCT B5D-Q B5D::BEAUHARNOIS_GS::IPBJCT	CWW	Non-Recallable	B5D	Quebec to IMO 3 Terminal Mode limit is 400 MW
10/18/04 7:00 AM	11/5/04 6:00 PM	B31L::BEAUHARNOIS_GS::IPBJCT B31L::IPBJCT::ST.LAWRENCE_TS B31L::BEAUHARNOIS_GS::IPBJCT B5D-B31L B31L::IPBJCT::ST.LAWRENCE_TS 49-B31L B31L-D	CNW	Non-Recallable	B31L	Quebec to IMO 4 Terminal Mode limit reduced from 800 to 400 MW
9/27/04 7:00 AM	11/25/04 6:00 PM	P33C::CHATS_FALLS_TS::PAUGAN_GS, 2-P33C	CWW	2 Week	P33C	Quebec to IMO limit is reduced from 345MW to 0MW

Table C3 Essa Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
9/7/04 7:00 AM	10/11/04 2:30 PM	Waubaushene TS T6Q 98-E26 T6Q T6	CWW	5 Day		

Table C4 Niagara Zone

No outages to assess.

Table C5 Northeast Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
5/17/04 8:01 AM	11/1/04 4:01 PM	Mackay TS 647 ANJIGAMI LINE #2 ANJIGAMI 823 824 825 MILLWOOD 801 802 ANJIGAMI#1::MACKAY_TS::ANJIGAMI_TS MACKAY 648 649 ANJIGAMI 813 814 815	CWW	Non-Recallable	EWTE	UP TO 75 mw
10/4/04 9:00 AM	10/29/04 2:00 PM	Pinard TS.PL22	CWW	Non-Recallable		

Table C6 Northwest Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
1/23/04 12:01 AM	12/31/04 11:59 PM	Agimak DS Disconnect Switch T2-L Load Transformer T2	CWW	Non-Recallable		
7/22/04 9:01 AM	10/31/04 11:59 PM	Inco Shebandowan CTS T1, 115SH1B	CWW	Non-Recallable		
12/13/04 12:01 AM	12/19/04 11:59 PM	Thunder Bay C1	CWW	Non-Recallable		
6/12/05 12:01 AM	6/19/05 11:59 PM	Thunder Bay C1	CWW	Non-Recallable		
12/12/05 12:01 AM	12/18/05 11:59 PM	Thunder Bay C1	CWW	Non-Recallable		

Table C7 Ottawa Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
2/5/03 4:18 PM	12/31/04 11:59 PM	Masson-HQ CGS MD5A-L	CWW	Non-Recallable	D5A	D5A Transfer Limit reduced from 200MW to 0
4/17/03 9:00 PM	12/31/04 11:59 PM	Masson MB5	CWW	Non-Recallable	D5A	D5A Transfer Limit reduced from 200MW to 0
9/20/04 5:00 AM	10/29/04 3:00 PM	Hawthorne TS SC11 SC11Q SC11SC	CWW	Non-Recallable	FIO	50MW Reduction in FIO Transfer Limit
9/20/04 5:00 AM	10/1/04 6:00 PM	Merivale TS.D1L10	CWW	Non-Recallable		
10/4/04 5:00 AM	10/22/04 6:00 PM	Merivale TS.D1L4	CWW	Non-Recallable		

Table C8 Southwest Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
10/27/03 11:43 AM	12/31/04 6:00 PM	Gage TS Breaker T2Q Load Transformer T2 Disconnect Switch T2-P	CWW	Non-Recallable		
9/7/04 7:00 AM	10/1/04 3:00 PM	Trafalgar TS.HT15	CWW	5 Day		
9/7/04 8:00 AM	10/8/04 4:00 PM	Burlington TS T6P T6-H1 T6 T6K	CWW	5 Day		

Table C9 Toronto Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
8/25/04 7:00 AM	11/4/04 6:00 PM	Cecil TS.T3A5A6	CWW	Non-Recallable		
10/3/04 5:00 AM	11/15/04 6:00 PM	Manby West TS Disconnect Switch T4-H1 Breaker T4Y Disconnect Switch TR4-S Disconnect Switch TR4-T Load Transformer T4	CWW	3 Week		
10/7/04 8:00 AM	11/27/04 3:00 PM	Claireville TS.W3L570	CWW	5 Day		
10/11/04 7:00 AM	10/22/04 6:00 PM	Fairchild TS.BY	CWW	Non-Recallable		
10/31/04 5:00 AM	11/7/04 8:00 PM	Claireville TS DL551 W4L551 C551V::CHERRYWOOD_TS::CLAIREVILLE_TS CHERRYWOOD W2L551	CWW	3 Day		
11/8/04 6:00 AM	11/14/04 8:00 PM	Cherrywood TS W3L550 JL550 C550V::CHERRYWOOD_TS::CLAIREVILLE_TS CLAIREVILLE AL550 W2L550	CWW	3 Day	FABC, FETT	up to 100 MW and 400 MW penalties to FABC and FETT limits respectively
3/7/05 7:00 AM	4/22/05 3:00 PM	Claireville TS.KL83	CWW	5 Day		
10/3/05 5:00 AM	11/18/05 6:00 PM	Manby East TS TR5-T TR5-S T5-H2 T5	CWW	4 Week		
3/6/06 5:00 AM	4/14/06 6:00 PM	Manby East TS TR5-S T5-H2 T5 TR5-T	CWW	4 Week		

Table C10 West Zone

Start Date/Time	End Date/Time	Equipment	Outage Type	Recall	Impact	Reduction in Limit
10/4/04 7:00 AM	11/30/04 5:00 PM	Tillsonburg TS Breaker T1B Load Transformer T1 Disconnect Switch T1-L	CWW	Non-Recallable		
10/4/04 7:00 AM	11/7/04 5:00 PM	Tillsonburg TS Disconnect Switch T1-LC Load Transformer T1 Breaker T1B Disconnect Switch T1-L	CWW	Non-Recallable		
12/1/04 7:00 AM	12/17/04 5:00 PM	Tillsonburg TS Breaker T2Y Load Transformer T2 Disconnect Switch T2-L Disconnect Switch T2-LC	CWW	Non-Recallable		

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