18-MONTH OUTLOOK

UPDATE

From September 2009 to February 2011

ieso
Power to Ontario. On Demand.

An Assessment of the Reliability and Operability of the Ontario Electricity System -Update

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Executive Summary

The outlook for the reliability of Ontario's electricity system remains positive for the next 18 months.

Nearly 2700 megawatts (MW) of new and refurbished supply is scheduled to come into service over the next 18 months. In addition to this new supply, Ontario's import capability was increased in July 2009, with completion of the first stage of the new interconnection between Ontario and Québec. Additional transmission reinforcements in Québec scheduled to be in service by May 2010 will allow transfers up to 1,250 MW.

The capability to move energy away from the Bruce area will increase throughout the outlook period as upgrades to the 230 kilovolt (kV) transmission system are completed, prior to the two refurbished Bruce units coming into operation in the third and fourth quarters of 2010. This will reduce the potential for generation to become constrained as units return to service before the proposed 500 kV double-circuit line between Bruce and Milton is available.

The Outlook incorporates Ontario's coal reduction program and demonstrates that the emission limits should not impact on reliability, provided emission strategies for 2010 and 2011 build proportionally on the 2009 strategy.

Peak and energy demand are down significantly for 2009 due to the confluence of a number of factors. The recession, unseasonable weather, conservation and the growth in embedded generation have all combined to push demand lower. With the anticipated economic recovery in 2010, energy demand should see a slight increase as the province's manufacturing sector picks up from 2009 levels. Energy demand is expected to decline by 5.5% in 2009 before showing a slight increase of 0.2% in 2010. Peak demands however are expected to decline throughout the forecast. Conservation programs aimed at reducing peak demands, time of use rates and the growth in embedded generation will more than offset the growth in weather sensitive load. The following table summarizes the planned scenario's peak demands for the upcoming seasons under the Normal and Extreme weather scenarios.

Season	Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Winter 2009-10	22,848	24,061
Summer 2010	23,936	26,153
Winter 2010-11	22,761	23,881

Conclusions & Observations

The following conclusions and observations are based on the results of this assessment.

Overall

- The system is positioned to operate reliably over the Outlook period. There will be challenges associated with accommodating outages required to maintain existing equipment, accommodate new facilities and associated with growing surplus baseload generation.

Demand Forecast

- The recession has reduced both energy and peak demand. This will continue into the near term. As the economy improves over the Outlook period energy demand will show a small increase in 2010. Peak demands however, are expected to decline throughout the forecast, as conservation initiatives, growth in embedded generation and time of use rates combined mitigate peak demands.
- Lower energy and peak demand will act to enhance system reliability. High peak demands are likely under extreme weather conditions but should not pose any provincial reliability concerns.
- Lower minimum demand levels can have operational impacts as they increase the likelihood of surplus base load generation.

Resource Adequacy

- Reserves above requirement are expected to be met for all weeks in the normal weather scenario.
- Outages previously scheduled for a number of large generating units have been cancelled contributing to a higher reserve above requirement than reported in Q2.
- The impact of the economy, conservation and embedded generation on wholesale demand has contributed to greater resource surpluses.
- The Ontario program to reduce emissions from coal-powered generation in the province commenced in 2009. This Outlook demonstrates that the program limitations should be achievable over the next 18 month period without impacting on reliability, although the complete strategy for 2010 and 2011 has not been confirmed.

	Normal Weather Scenario	Extreme Weather Scenario
Planned Scenario	• Reserves are higher than required for all weeks	• Reserves are met in all but 11 weeks
Firm Scenario	• Reserves are higher than required for all weeks	• Reserves are met in all but 17 weeks

Transmission Adequacy

- The Ontario transmission system with the planned system enhancements is expected to be adequate to supply the demand under the extreme and normal weather conditions forecast for the Outlook period**.**
- Several transmission projects planned for service during the timeframe of this Outlook will relieve loadings of existing transformer stations and provide additional capacity for future load growth.
- Transmission outages scheduled in this Outlook period in the Bruce, Niagara, Southwest and West zones will reduce the transfer capability out of the Bruce area for periods of time. These reductions along with the additional generation in those areas may result in bottled generation capacity in the Bruce and West zones.

Operability

- The risk of surplus baseload generation conditions that persisted throughout the summer of 2009 is expected to be reduced heading into the fall and winter months. Beginning in late spring 2010, this risk will re-emerge and extend out to the end of the forecast period. Overnight demand is expected to remain low during this period in spite of the economic recovery, due to the impact of increasing embedded generation and conservation initiatives. In addition, the anticipated return of Bruce nuclear units 1 & 2 and addition of two new wind farms will increase baseload supply.

- End of Section

Caution and Disclaimer

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1.0 Introduction

This Outlook covers the 18-month period from September 2009 to February 2011. It is an update to the last Outlook released on May 25, 2009.

The purpose of the 18-Month Outlook is:

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

The contents of this Outlook focus on the assessment of resource and transmission adequacy. Additional supporting documents are located on the IESO website at http://www.ieso.ca/imoweb/monthsYears/monthsAhead.asp

This Outlook presents an assessment of resource and transmission adequacy based on the stated assumptions, using the described methodology. Readers may envision other possible scenarios, recognizing the uncertainties associated with various input assumptions, and are encouraged to use their own judgment in considering possible future scenarios.

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

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

- Toll Free: 1-888-448-7777
- Tel: 905-403-6900
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- E-mail: customer.relations@ieso.ca.

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2.0 Updates to This Outlook

There were no methodological changes in derivation of the Outlook.

2.1 Updates to Demand Forecast

The demand forecast was based on actual demand, weather and economic data through to the end of May 2009. The economic outlook has been updated based on the most recent data. Actual weather and demand data for June and July has been included in the tables.

2.2 Updates to Resources

Installed capacity has increased by 1,314 MW as a result of the following changes:

- Enbridge Ontario Wind Farm (182 MW) became operational
- Wolfe Island Wind Project (198 MW) became operational
- GenSet Resource Management Inc added a generator with 1 MW capacity to their fleet
- Goreway Station (942 MW) became operational
- Aubrey Falls G2 derated by 9 MW due to equipment limitations

The assessment uses planned generator outages as submitted by market participants to the IESO's Integrated Outage Management System (IOMS). This Outlook is based on submitted generation outage plans as of July 24, 2009.

2.3 Updates to Transmission Outlook

The list of transmission projects, planned transmission outages and actual experience with forced transmission outages have been updated from the previous 18-Month Outlook. For this Outlook, transmission outage plans submitted to the IOMS as of June 26, 2009 were used.

2.4 Updates to Operability Outlook

A forecast of surplus baseload generation (SBG) conditions for the next 18 months has been updated with submitted generation outage plans as of July 24, 2009. Expected contribution to baseload from variable resources such as hydroelectric and wind generation has also been updated to reflect the most recent information

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3.0 Demand Forecast

The IESO is responsible for forecasting electricity demand on the IESO-controlled grid. This demand forecast covers the period September 2009 to February 2011 and supersedes the previous forecast released May 2009. Tables containing supporting information are contained in the 2009 Q3 Outlook Tables spreadsheet.

Peak demands will contract over the course of the forecast due to the confluence of a number of factors. The recession, unseasonal weather and conservation initiatives have eroded the peaks in 2009. For 2010, peak demands are expected to continue to decline as conservation programs, embedded generation and time of use rates work to offset any growth coming from the economic recovery and increasing building stock.

Overall energy demand will drop significantly in 2009 as a result of the recession. Ontario's manufacturing sector has been particularly hard hit over the past 12 months. With the anticipated recovery throughout 2010 energy demand is expected to see a slight boost over the levels seen in 2009. However, this increase will be small as the some factors that are limiting the growth in peak demand – conservation and embedded generation – will also work to mitigate the growth in energy demand. Programs and prices which lead to load shifting will contribute to energy growth while reducing peak demands.

The following table shows the seasonal peaks and annual energy demand over the forecast horizon of the Outlook.

Table 3.1: Forecast Summary

Season	Normal Weather Peak (MW)	Extreme Weather Peak (MW)
Winter 2009-10	22,848	24,061
Summer 2010	23,936	26,153
Winter 2010-11	22,761	23,881
Year	**Normal Weather Energy (TWh)**	**% Growth in Energy**
2006 Energy	152.3	-1.9%
2007 Energy	151.6	-0.5%
2008 Energy	148.9	-1.8%
2009 Energy (Forecast)	140.6	-5.6%
2010 Energy (Forecast)	141.1	0.3%

Forecast Details

The following Table 3.2 shows the weekly peak and energy demands for the system.

Table 3.2: Weekly Energy and Peak Demand

Week Ending	Normal Peak (MW)	Extreme Peak (MW)	Load Forecast Uncertainty (MW)	Normal Energy Demand (GWh)	Week Ending	Normal Peak (MW)	Extreme Peak (MW)	Load Forecast Uncertainty (MW)	Normal Energy Demand (MWh)
06-Sep-09	21,055	25,203	1,460	2,622	20-Jun-10	21,683	24,095	560	2,964
13-Sep-09	20,479	25,002	1,445	2,528	27-Jun-10	22,555	24,980	443	2,944
20-Sep-09	19,505	24,215	1,380	2,554	04-Jul-10	21,913	24,492	523	2,898
27-Sep-09	18,938	22,842	868	2,511	11-Jul-10	22,804	24,480	397	2,874
04-Oct-09	18,363	22,857	796	2,540	18-Jul-10	23,313	25,196	778	2,844
11-Oct-09	18,703	20,086	601	2,575	25-Jul-10	23,936	26,153	762	2,801
18-Oct-09	19,163	20,265	544	2,559	01-Aug-10	23,256	25,336	768	2,738
25-Oct-09	19,518	20,551	725	2,665	08-Aug-10	22,191	25,028	793	2,552
01-Nov-09	20,215	21,040	752	2,696	15-Aug-10	23,302	26,056	816	2,575
08-Nov-09	20,335	21,433	726	2,718	22-Aug-10	22,916	25,397	885	2,530
15-Nov-09	21,000	22,212	653	2,764	29-Aug-10	22,031	24,664	538	2,480
22-Nov-09	21,250	22,650	842	2,798	05-Sep-10	21,940	24,710	679	2,442
29-Nov-09	21,362	23,196	814	2,825	12-Sep-10	21,111	25,188	833	2,447
06-Dec-09	21,681	23,207	720	2,880	19-Sep-10	20,361	24,828	404	2,417
13-Dec-09	21,919	23,232	592	2,870	26-Sep-10	19,346	24,069	898	2,453
20-Dec-09	21,919	23,113	512	2,877	03-Oct-10	18,705	22,817	1,390	2,406
27-Dec-09	21,254	22,342	474	2,786	10-Oct-10	18,724	23,076	1,379	2,513
03-Jan-10	21,657	22,932	410	2,859	17-Oct-10	19,039	20,028	1,339	2,505
10-Jan-10	22,069	23,059	376	2,946	24-Oct-10	19,364	20,466	1,112	2,615
17-Jan-10	22,382	23,264	604	2,971	31-Oct-10	19,761	20,706	1,176	2,656
24-Jan-10	22,848	24,017	581	3,025	07-Nov-10	20,043	20,988	1,405	2,642
31-Jan-10	22,804	24,061	458	2,995	14-Nov-10	20,345	21,477	863	2,781
07-Feb-10	22,601	23,841	430	2,997	21-Nov-10	20,811	22,100	1,106	2,768
14-Feb-10	21,957	23,147	560	2,964	28-Nov-10	21,068	22,654	1,293	2,875
21-Feb-10	21,852	22,870	443	2,944	05-Dec-10	21,519	23,320	929	2,812
28-Feb-10	21,567	22,852	523	2,898	12-Dec-10	22,184	23,611	990	2,750
07-Mar-10	21,500	22,350	397	2,874	19-Dec-10	22,255	23,477	1,015	2,781
14-Mar-10	20,799	22,747	778	2,844	26-Dec-10	20,676	22,051	980	2,753
21-Mar-10	20,526	22,389	653	2,764	02-Jan-11	21,287	22,565	845	2,708
28-Mar-10	19,875	21,782	842	2,798	09-Jan-11	22,184	23,276	1,159	2,701
04-Apr-10	19,051	21,189	814	2,825	16-Jan-11	22,197	23,267	1,389	2,579
11-Apr-10	18,844	20,292	720	2,880	23-Jan-11	22,761	23,820	1,426	2,548
18-Apr-10	18,354	19,813	592	2,870	30-Jan-11	22,555	23,778	1,312	2,528
25-Apr-10	18,455	21,610	512	2,877	06-Feb-11	22,750	23,881	1,077	2,497
02-May-10	17,778	21,441	474	2,786	13-Feb-11	22,061	23,412	612	2,550
09-May-10	17,783	21,124	410	2,859	20-Feb-11	22,032	23,160	497	2,529
16-May-10	17,952	21,581	376	2,946	27-Feb-11	21,673	22,923	544	2,613
23-May-10	18,667	21,476	604	2,971	06-Mar-11	21,304	22,178	681	2,661
30-May-10	18,919	22,186	581	3,025	13-Mar-11	20,776	22,611	865	2,667
06-Jun-10	19,877	24,359	458	2,995	20-Mar-11	20,485	22,507	795	2,683
13-Jun-10	20,087	23,160	430	2,997	27-Mar-11	19,927	21,874	744	2,738

Additional tables in the 2009 Q3 Outlook Tables spreadsheet contain detailed forecast information. The spreadsheet has the following tables:

- Table 3.1.1 has the monthly peak and energy demands for the system
- Table 3.1.2 has the weekly coincident peak demands for the 10 zones
- Table 3.1.3 the weekly energy demand by zone.

3.1 Actual Weather and Demand

Since the last forecast the actual demand and weather data for May through July has been recorded.

- Overall, May was milder than normal at both high and low temperatures. May's warm days were cooler than normal and its cold days were warmer than normal. The peak day temperature was 29°C but without humidity or any heat build-up. The peak demand of 17,560 MW (17,980 weather-corrected) was the lowest May peak since 1997. Energy demand was 10.5 TWh (10.6 TWh weather-corrected), also the lowest May value since 1997. Both peak and energy were down due to the recession and other conservation-related factors.
- June was also milder than normal. Once again the peak day temperature was fairly close to normal but the rest of the month was quite mild. It was the coolest June since 1992. The peak of 22,540 MW (22,750 MW weather-corrected) was the lowest peak since 2000. Due to the recession and the mild weather energy demand was 10.9 TWh (11.0 TWh weather-corrected) the lowest level since 1997.
- July 2009 was the second coldest July in forty years, placing second to July 1992. The peak demand of 20,011 MW (22,168 MW weather-corrected) was the only hour in the month that topped 20,000 MW. With the monthly average temperature lower than normal, energy demand was also lower at 11.3 TWh (11.9 TWh weather-corrected).

Wholesale customer consumption has declined significantly over the first half of the year. Recent data shows that consumption is starting to level off. For the first six months of 2009, wholesale consumption is down 23% compared to 2008. Of the 2.4 TWh decline in wholesale consumption steel (36%), pulp & paper (24%) and mining (20%) have accounted for the vast majority of decline. The auto sector – which is not as energy-intensive – ranked a distant fifth (5%). In the 2009 Q3 Outlook Tables spreadsheet there are several tables containing historical data. They are:

- Table 3.3.1 has the weekly weather and demand history since market opening
- Table 3.3.2 has the monthly weather and demand history since market opening
- Table 3.3.3 has the monthly demand data by Market Participant role.

3.2 Forecast Drivers

Economic Outlook

The economy currently appears to be near the bottom of its recessionary trough. Leading indicators have either slowed in their descent or leveled off. This would dovetail with most analysts' expectations that Canada's economy would start to rebound in the last quarter of 2009 and the beginning of 2010. Ontario's economy with its energy-intensive export-oriented industrial sector has been hit harder than the overall Canadian economy. As such, an "electricity recovery" will take longer than the economic recovery as those hardest hit sectors will continue to lag compared to the overall economy.

- Table 3.3.4 has the economic assumptions for the demand forecast

Weather Scenarios

For the purpose of forecasting the IESO uses weather scenarios to produce demand forecasts. These scenarios include Normal and Extreme weather, along with a measure of uncertainty in demand due to weather volatility. This measure is called Load Forecast Uncertainty.

- Table 3.3.5 of the 2009 Q3 Outlook Tables spreadsheet has the weekly weather data for the forecast period.

Conservation and Demand Management

This forecast assumes that conservation will continue to grow based on information provided by the OPA. The demand forecast is decremented for the impacts of conservation and embedded generation.

Demand measures (dispatchable loads, demand response programs, contracted loads) are not decremented from the demand forecast but instead are treated as a resource in the assessment. Therefore the effects of demand measures are added back into the demand history and the forecast is produced prior to these impacts. That total demand measure capacity is discounted – based on historical and contract data - to reflect the reliably available capacity.

- End of Section -

4.0 Resource Adequacy Assessment

This section provides an assessment of the adequacy of resources to meet the forecast demand. The key messages are:

- When reserves are below required levels and can adversely affect the reliability of the grid, the IESO has the authority to reject outages based on their order of precedence.
- Conversely, an opportunity exists for additional outages when reserves are above required levels

These actions address shortages and surpluses of reserves to a large extent.

In recognition of the uncertainty that exists regarding the future availability of resources, two resource scenarios are described in this section: the Firm Scenario and the Planned Scenario

Over the course of the Outlook period nearly 2,700 MW of new and refurbished supply is scheduled to come into service.

The existing installed generating capacity is summarized in Table 4.1. This excludes capacity that is commissioning.

Table 4.1 Existing Installed Generation Resources as of August 21, 2009

Fuel Type	Total Capacity (MW)	Number of Stations	Change in Capacity (MW)	Change in Stations
Nuclear	11,426	5	0	0
Hydroelectric	7,826	69	-9	0
Coal	6,434	4	0	0
Oil / Gas	8,525	26	943	1
Wind	1084	8	380	2
Biomass / Landfill Gas	75	5	0	0
Total	35,370	117	1,314	3

4.1 Committed and Contracted Generation Resources

Table 4.2 summarizes generation that is scheduled to come into service, be upgraded or retired within the Outlook period. This includes generation projects in the IESO's Connection Assessment and Approval Process (CAA) that are under construction and projects contracted by the OPA. Details regarding the IESO's CAA process and the status of all projects in the CAA queue can be found on the IESO's web site at http://www.ieso.ca/imoweb/connassess/ca.asp.

The estimated effective date in Table 4.2 indicates the date on which additional capacity is assumed to be available to meet Ontario demand. For projects that are under contract, the estimated effective date is the best estimate of the date when the contract requires the additional capacity to be available. If a project is delayed the estimated effective date will be the best estimate of the commercial in-service date for the project.

Table 4.2 Committed and Contracted Generation Resources

Proponent/Project Name	Zone	Fuel Type	Estimated Effective Date	Change	Project Status	Capacity Considered in Scenario (MW)	
						Firm (MW)	Planned (MW)
East Windsor Cogeneration Centre	West	Gas	2009-Q3		Commissioning	84	84
Deregistration of Fort Frances Gas Turbine and	Northwest	Gas	2009-Q4		Commissioning	-105	-105
conversion to burn biomass to power Steam Turbine		Biomass					47
Nuclear Upgrade	N/A	Uranium	2010-Q1	Delayed	Construction	27	27
Retirement of Wawaitin 25 Hz generation to	Northeast	Water	2010-Q1		Connection Assessment	-11	-11
Thorold Cogeneration Project	Niagara	Gas	2010-Q2		Construction		236
Healey Falls	East	Water	2010-Q2		Construction		16
Bruce Unit 2	Bruce	Uranium	2010-Q3		Construction		750
Raleigh Wind Energy Centre	West	Wind	2010-Q3		Approvals & Permits		78
Halton Hills Generating Station	Southwest	Gas	2010-Q3		Construction		632
Bruce Unit 1	Bruce	Uranium	2010-Q4		Construction		750
Island Falls	Northeast	Water	2010-Q4		Approvals & Permits		16
Byran Wind Project	East	Wind	2010-Q4		Approvals & Permits		65
Return of Sandy Falls as 60 Hz plant	Northeast	Water	2010-Q4		Construction		5
Return of Lower Sturgeon as 60 Hz plant	Northeast	Water	2010-Q4		Construction		14
Return of Wawaitin as 60 Hz plant	Northeast	Water	2010-Q4		Construction		15
Hound Chute	Northeast	Water	2010-Q4		Construction		10
Total						**-5**	**2,629**

Notes to Table 4.2:

1. Shading indicates a change from the previous Outlook.
2. The total may not add up due to rounding. Total does not include In-Service facilities.
3. Project status provides an indication of the project progress. The milestones used are:
    a. Connection Assessment - the project is undergoing an IESO system impact assessment
    b. Approvals & Permits - the proponent is acquiring major approvals and permits required to start construction (e.g. environmental assessment, municipal approvals etc)
    c. Construction - the project is under construction
    d. Commissioning - the project is undergoing commissioning tests with the IESO

4.2 Summary of Scenario Assumptions

In order to assess future resource adequacy, the IESO must make assumptions on the amount of available resources. The Outlook considers two scenarios: a Firm Scenario and a Planned Scenario. Both scenarios' starting point is the existing installed resources shown in Table 4.1.

Under both scenarios, all existing resources and resources that are scheduled to come into service are assumed to be available over the study period, except for those units scheduled to retire and those for which the generator has submitted planned outages.

The generation capability assumptions are as follows:

- Hydroelectric capability (including energy and operating reserve) is based on median historical values during weekday peak demand hours from May 2002 to March 2009.
- Thermal generators' capacity and energy contributions are based on market participant submissions, including planned outages, expected forced outage rates and seasonal deratings.

- For wind generation the monthly Wind Capacity Contribution (WCC) values are used at the time of weekday peak, while total energy contribution is assumed to be 30%.

The Firm and Planned Scenarios differ in their assumptions regarding the amount of demand measures and generation capacity. These differences are summarized in the following table.

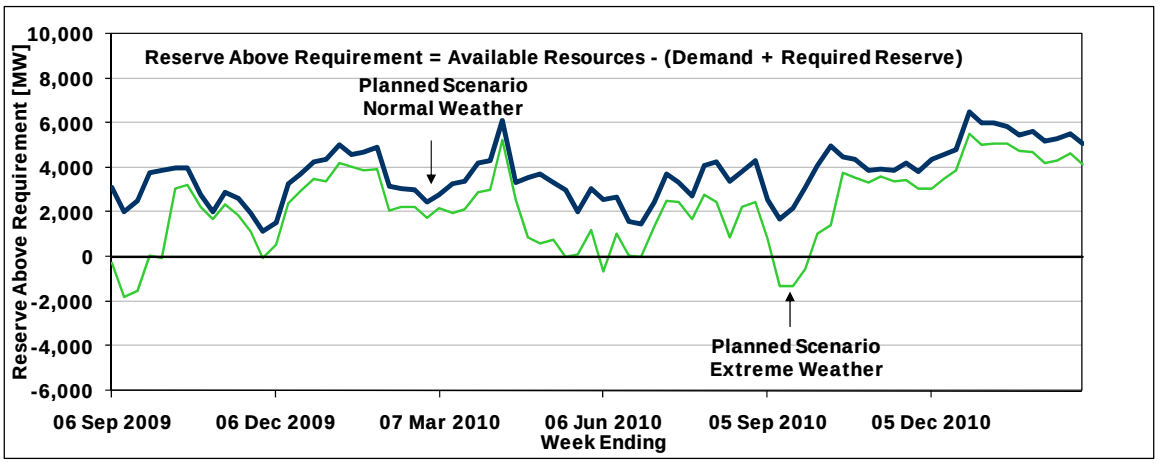
Table 4.3 Summary of Scenario Assumptions

Assumptions		Planned Scenario	Firm Scenario
Resource	Existing Installed Resources	Total Capacity	Total Capacity
		35,370 MW	35,370 MW
	New Generation and Capacity Changes	All	Only Capacity Changes, Commissioning Generators and Generators starting in the first 3 months
		2,629 MW	295 MW
Demand Forecast	Conservation	Incremental	
		Incremental growth of 230 MW at time of peak	
	Embedded Generation	Incremental	
		Incremental growth of 460 MW at time of peak	
	Demand Measures	Incremental	Existing
		1,096 MW	678 MW

4.3 Planned Scenario with Normal and Extreme Weather

Reserve Above Requirement levels, which represent the difference between Available Resources and Required Resources, are shown in Figure 4.1.

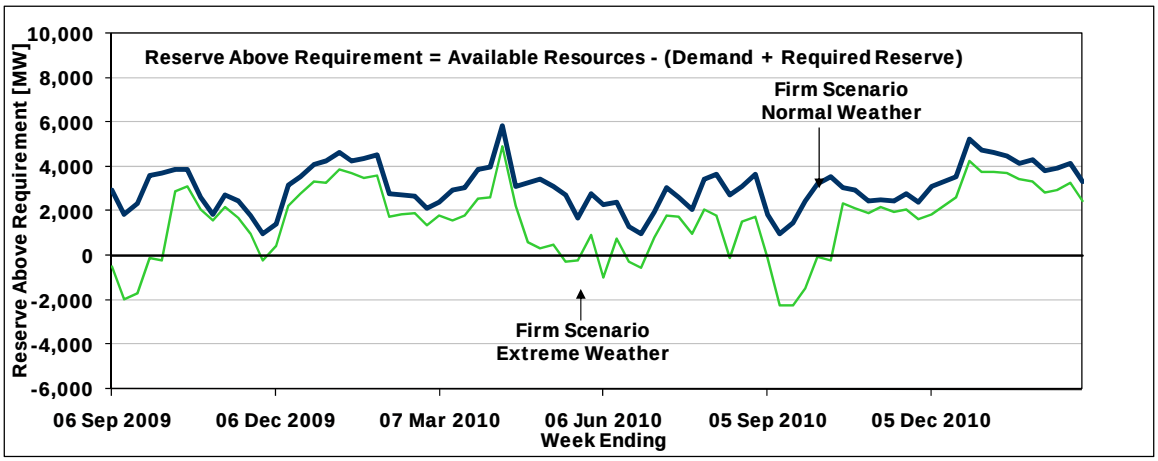
Figure 4.1 Reserve Above Requirement: Planned Scenario with Normal vs. Extreme Weather



4.4 Firm Scenario with Normal and Extreme Weather

Reserve Above Requirement levels, which represent the difference between Available Resources and Required Resources, are shown in Figure 4.2.

Figure 4.2 Reserve Above Requirement: Firm Scenario with Normal vs. Extreme Weather



4.5 Comparison of Resource Scenarios

Table 4.4 shows a snapshot of the forecast available resources, under the two scenarios, at the time of the summer and winter peak demands during the Outlook.

The monthly forecast of energy production capability, as provided by market participants, is included in Appendix A, Table A7.

Table 4.4 Summary of Available Resources

Notes	Description	Winter Peak 2010		Summer Peak 2010		Winter Peak 2011	
		Firm Scenario	Planned Scenario	Firm Scenario	Planned Scenario	Firm Scenario	Planned Scenario
1	Installed Resources (MW)	35,454	35,454	35,366	35,413	35,366	37,891
2	Imports (MW)	0	0	0	0	0	0
3	Total Resources (MW)	35,454	35,454	35,366	35,413	35,366	37,891
4	Total Reductions in Resources (MW)	8,075	8,075	8,982	8,842	7,142	8,563
5	Demand Measures (MW)	678	823	678	1,027	678	1,027
6	Available Resources (MW)	28,057	28,202	27,062	27,598	28,902	30,355

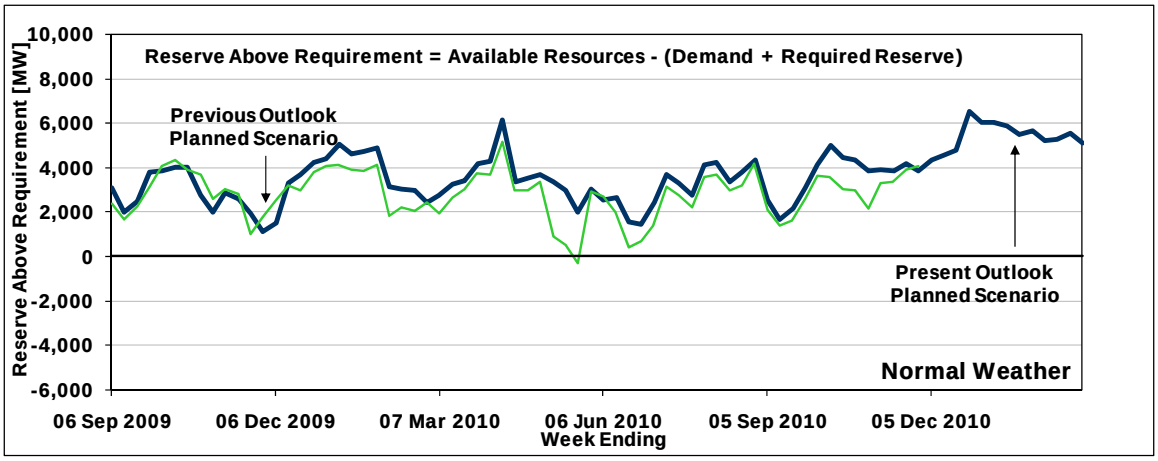
Notes to Table 4.4:

1. Installed Resources: This is the total generation capacity assumed to be installed at the time of the summer and winter peaks.
2. Imports: The amount of external capacity considered to be delivered to Ontario.
3. Total Resources: The sum of Installed Resources (line 1) and Imports (line 2).
4. Total Reductions in Resources: Represent the sum of deratings, planned outages, limitations due to transmission constraints, generation constraints due to transmission outages/limitations and allowance for capability levels below rated installed capacity.
5. Demand Measures: The amount of demand available to be reduced.
6. Available Resources: Equals Total Resources (line 3) minus Total Reductions in Resources (line 4) plus Demand Measures (line 5).

Comparison of the Weekly Adequacy Assessments for the Planned Scenario

Figure 4.3 provides a comparison between the forecast Reserve Above Requirement values in the present Outlook and the forecast Reserve Above Requirement values in the previous Outlook published on May 25, 2009. The difference is mainly due to the changes to generator outages and the change in the demand forecast.

Figure 4.3 Reserve Above Requirement: Planned Scenario with Present Outlook vs. Previous Outlook



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5.0 Transmission Reliability Assessment

5.0 Transmission Reliability Assessment

This section provides an assessment of the reliability of the transmission system for the Outlook period. The transmission reliability assessment has three key objectives:

- To identify all major transmission and load supply projects that are planned for completion during the Outlook period and to present their reliability benefits.
- To forecast any reduction in transmission capacity brought about by specific transmission outages.
- To identify equipment outage events on the grid that could require contingency planning by market participants or by the IESO. By reviewing planned transmission outages in conjunction with major planned resource outages and the scheduled completion of new generation and transmission projects, transmission reliability risks are identified.

5.1 Transmission and Load Supply Projects

Demand growth from the economic expansion over the last decade had resulted in some area loads reaching or exceeding the capability of the local transmission system prior to the current economic downturn. Transmitters and distributors had initiated plans to address this problem and to provide additional transmission capacity for future load growth. These plans are expected to continue despite the current situation, in preparation for next period of growth as we move into the post-recession recovery phase.

Several transmission reinforcements are currently underway or about to begin construction and are planned for service during the Outlook period. Major transmission and load supply projects planned to be in service in the Outlook period are shown in Appendix B.

5.2 Transmission Outages

The assessment of transmission outages is limited to those with a scheduled duration of greater than five days or to those outages that are part of a project where the combined scheduled duration is greater than five days. The IESO's assessment of the transmission outage plans is shown in Appendix C, Tables C1 to C10.

This Outlook contains transmission outage plans submitted to the IESO as of June 26, 2009.

Hydro One has prepared a construction plan for the proposed 500 kV line from Bruce to Milton. The related equipment outages started in the second quarter of 2009 and continue beyond this outlook.

5.3 Transmission System Adequacy

The Ontario transmission system with the planned system enhancements and known transmission outages is expected to be adequate to supply the demand under the extreme and normal weather conditions forecast for the Outlook period.

5.3.1 Toronto and Surrounding Area

The projected loadings on the Trafalgar, Claireville, Parkway and Cherrywood autotransformers are expected to be within their continuous capability with all transmission facilities and resources in the GTA in service. The presence of the Goreway Station and completion of Portlands Energy Centre will reduce the loadings of all GTA autotransformers and thereby, increase their spare capability.

Under summer normal and extreme forecast weather conditions, loadings on the autotransformers are not expected to exceed their long term emergency capability following either the forced outages of any one GTA autotransformer and two Pickering units, or the forced outages of one Pickering unit and any two autotransformers. However, the presence of Sithe Goreway is critical, as it provides significant loading relief to Claireville TS in case of multiple autotransformer outages.

Subsequent autotransformer or generation outages or deratings could result in loadings of remaining GTA autotransformers exceeding their long term emergency limits, and mitigating measures would be required.

To be able to serve the load growth in the York Region, the new Holland transformer station went in service in mid March 2009. To further consolidate the load supply capability in the area the OPA announced a new generation resource scheduled to go on line in 2011.

5.3.2 Bruce and Southwest Zones

Planned refurbishments at the Bruce generation station and new wind power resources in southwestern Ontario will increase generation capacity in the Bruce and Southwest zones. In the near term, transmission reinforcements that will increase the transfer capability out of Bruce include the installation of seven additional high voltage shunt capacitors at Buchanan, Middleport and Nanticoke in addition to the recently completed up-rating of the Hanover to Orangeville 230 kV circuits. These near term reinforcements are part of the plan to reduce potential constrained generation for the time when Bruce is operated with seven and eight units before the proposed 500 kV double-circuit line between Bruce and Milton is available.

5.3.3 Niagara Zone and the New York Interconnection

The completion date for transmission reinforcement from Niagara region into the Hamilton-Burlington area continues to be delayed and to affect the use of both the available Ontario generation in the Niagara area and imports into the province, particularly during hot weather and high demand periods. The forced outage to the 230 kV circuit BP76 on the Ontario-New York interconnection at Niagara continues to reduce the total Ontario-New York import and export capability until its scheduled return to service in the third quarter of 2010.

5.3.4 East Zone and Ottawa Zone

The new interconnection between Hawthorne transformer station (TS) in Ontario and Outaouais station in Québec went in service at the beginning of July 2009. The new interconnection is designed for an ultimate capacity of 1,250 MW; however, for most of the Outlook period the import and export capability could be limited to less than the nominal capacity, depending on level of load and generation in the Outaouais region. After the completion of transmission reinforcement work in Québec, anticipated for May 2010, the interconnection will be able to operate up to its nominal capacity.

5.3.5 West Zone and the Michigan Interconnection

With the availability of Greenfield, St Clair and Lambton resources starting from the second quarter of the 2009, transmission constraints in this zone may restrict resources in southwestern Ontario and imports from Michigan.

Phase angle regulators (PARs) installed on the Ontario-Michigan interconnection at Lambton TS continue to be idle. The failed PAR located in Michigan on the interconnection between Scott TS and Bunce Creek is scheduled for replacement in 2010.

5.3.6 Northeast and Northwest Zones

The transmission corridor east of Mississagi TS has been experiencing increased congestion due to the addition of new resources and lack of transmission reinforcements. It is expected that congestion will increase even further when projects currently under construction in the area will become operational.

For the near–term, the IESO has recommended that the existing Mississagi generation rejection scheme be enhanced as soon as possible to alleviate constrained generation west of Mississagi and to reduce congestion over the North-South transmission corridors. Hydro One is planning to implement the required modifications by the first quarter of 2011.

5.3.7 Ontario 25 Hz System

The remaining 25 Hz system and facilities in northeastern Ontario are expected to be deregistered by the end of this Outlook period.

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6.0 Operability Assessment

The IESO monitors existing and emerging operability issues that could potentially impact system reliability. A forecast for surplus baseload generation (SBG) conditions over the next 18 months is presented below. The risk of SBG conditions is expected to be low over most of the fall and winter of 2009/2010. However, beginning in late spring 2010, this risk will reemerge and extend out to the end of the forecast period.

SBG conditions typically arise during periods of low demand. Certain types of generation such as nuclear and some hydroelectric generators must maintain minimum output levels to ensure generation is available in future high demand hours or to respect environmental, operational or safety constraints. In addition, intermittent and self-scheduling generation may inject power into the grid during low demand periods. Intermittent generation, such as wind or landfill gas, operates whenever its "fuel" is available. Self-scheduling generation, such as combined heat and power (CHP) and commissioning generators, may also choose to operate during periods of low demand. At the same time, transmission line outages can exacerbate SBG by reducing or eliminating the flow of electricity on key circuits, at times impacting Ontario's ability to export surplus generation.

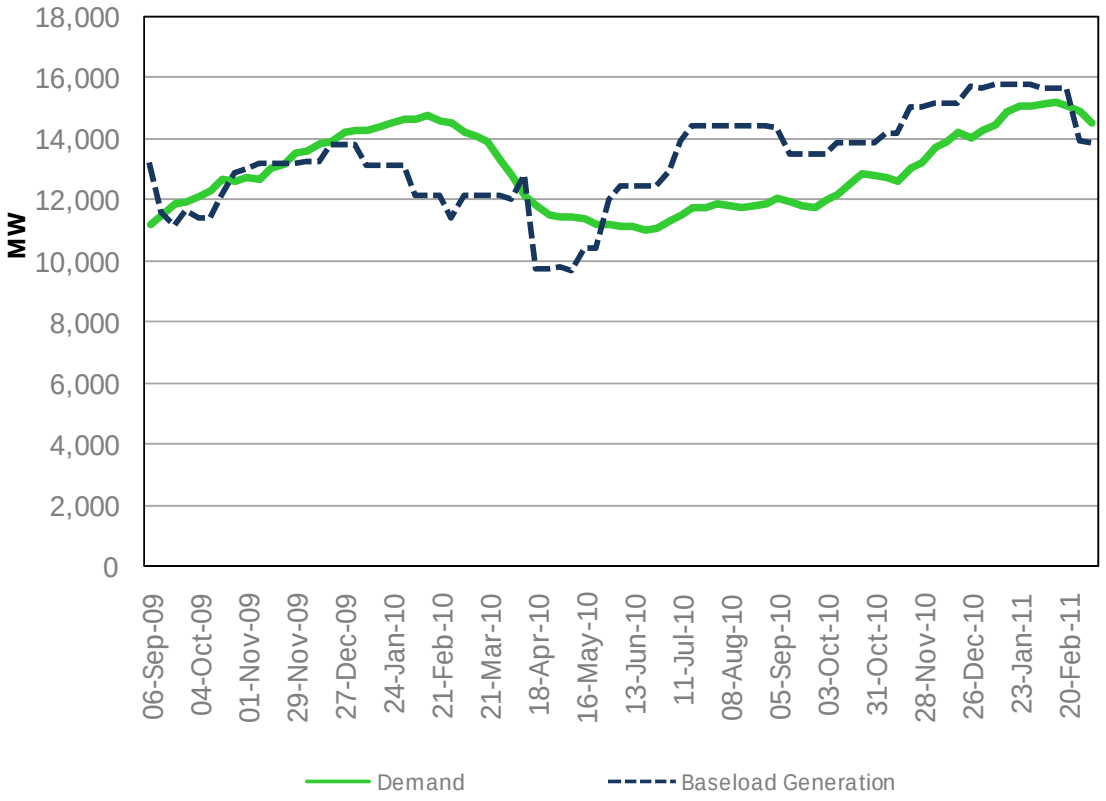
The previous Outlook reported on extended periods of SBG experienced in the spring of 2009. Since then, SBG conditions have persisted throughout most of the summer, as cooler temperatures and the ongoing impact of the economic downturn resulted in the lowest overnight demands of the year occurring in mid-June.

Figure 6.1 shows projected weekly minimum demand against the expected level of baseload generation. The baseload generation line has been updated from the previous Outlook to include the latest planned outage information, and expected contribution from self-scheduling and intermittent generation. As seen in Figure 6.1, the IESO expects that the risk of SBG will be reduced heading into the fall and winter months, but reemerge in late spring of 2010. Overnight demand is expected to remain low during this period in spite of the expected economic recovery, due to the impact of increasing embedded generation and conservation initiatives. The anticipated return of Bruce nuclear units G2 and G1 in Q3 and Q4 2010 respectively, and the addition of two new wind farms in Q3 and Q4 2010, will increase baseload capacity.

The expected output from commissioning units is explicitly excluded from this analysis due to uncertainty associated with commissioning schedules, as well as the highly variable nature of commissioning units. Readers are invited to make assumptions regarding commissioning generation based on expected in-service dates presented in Table 4.2.

Because of the impact surplus baseload generation can have on system and market operations, proper management of these occasions is a top priority for the IESO. The IESO is continuing discussions with market participants and stakeholders to evolve the appropriate processes for managing these conditions.

Figure 6.1 Minimum Demand and Baseload Generation



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