THE ONTARIO RELIABILITY OUTLOOK

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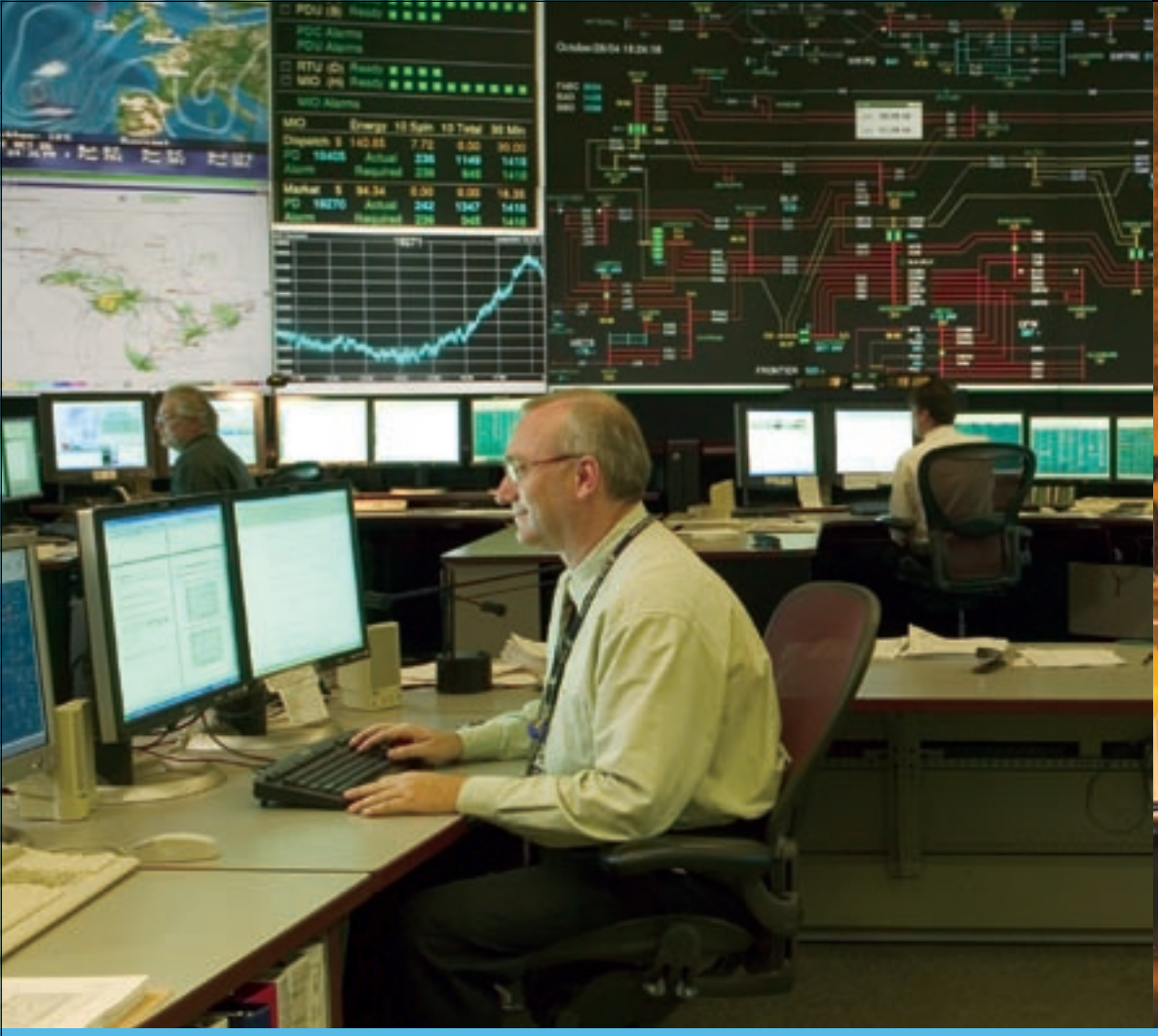
ieso
Power to Ontario. On Demand.



IESO control room

“In 15 years or so in the order of 15,000 MW of new or to some extent refurbished generation will be needed as current generators approach the end of their planned life.”

Dave Goulding, IESO President and CEO, Toronto Board of Trade Speech – March 2003

EXECUTIVE SUMMARY

George St., Peterborough

The Independent Electricity System Operator (IESO) regularly assesses the adequacy and reliability of Ontario's power system. For the near term, the information is reported quarterly through the 18-Month Outlook. Over the period covered by the 18-Month Outlook, reliability is largely governed by the availability of existing facilities and those already under construction and expected to come into service.

Through the semi-annual release of the Ontario Reliability Outlook, of which this is the first issue, the IESO will report on progress of the inter-related generation, transmission and demand-management projects underway to meet future reliability requirements. The overall approval, construction and implementation times for these projects typically extend well beyond the scope of the 18-Month Outlook. As projects flow from the longer-term integrated system planning being conducted by the Ontario Power Authority (OPA), the Ontario Reliability Outlook will monitor progress of infrastructure developments and their impact on reliability at least three to five years into the future and further, if appropriate.

As discussed in this report, timely resolution of the challenges facing Ontario's power system is needed to maintain reliability over the next three to five years.

Aging generating units, transmission constraints, under-investment in the electricity sector over the past decade, continued demand growth and potential weather-related impacts on the system, all contribute to the need for new generation and transmission facilities as well as increased conservation and demand-management activities. As noted in the IESO's 10-Year Outlook, released in July 2005, the provincial plan to phase out coal-fired generation in favour of cleaner forms represents one of the most significant undertakings in the Ontario electricity sector's 100-year history.

The 10-Year Outlook outlined the system changes needed to meet the supply requirements for various areas in Ontario and the provincial government's coal replacement objectives. Given the amount of change required, it is critical that more efficient regulatory approvals processes are developed to enable timely implementation of the required new generation and transmission facilities.

The current regulatory approvals process is complex, unnecessarily adding to the costs and time required for decision making. The IESO has been working with other entities including the Ontario Energy Board, the OPA and Hydro One to develop a more efficient process.

Toronto's needs

The IESO's 18-Month Outlook issued on December 22, 2005, highlighted the need for new supply and transmission facilities in the Greater Toronto Area (GTA).

The transmission system serving central Toronto was at or near capacity during peak periods in the summer of 2005. The loading of this system is reaching the point at which there is no longer the necessary redundancy available to reliably meet demand under all conditions. According to present forecasts, transmission equipment failures during peak demand periods could result in rotating load cuts as early as the summer of 2008 to avoid exceeding the load-meeting capability of the remaining transmission facilities.

Central Toronto's electricity requirements are met through supply generated outside the city and delivered through two main transmission paths. Secure supply to Canada's largest city requires local generation supply as well as new transmission facilities. As a result, 250 megawatts (MW) of generation is required within the central Toronto area by the summer of 2008 to adequately address the risk to reliability of an aging transmission infrastructure.

Longer term, additional generation within the city, together with a third transmission path into Toronto, will be necessary early in the next decade to maintain reliability under hot summer weather conditions and to provide a diversity of supply paths into the city.

Western GTA

Reliability risks in the western part of the GTA, previously identified in the 10-Year Outlook, will be substantially reduced as the Goreway natural gas plant in Brampton is brought into service over the next three years.

However, additional measures will still be needed to prevent overloading of the transmission facilities supplying the GTA, meet the forecast growth in demand and control voltages in the area. Accordingly, a combination of additional generation and transmission enhancements are required, given the risk that transmission facilities and lines serving the area could be overloaded during summer peak loads as early as the summer of 2007.

Regional needs

Plans are underway or identified for transmission reinforcements and new generation in a number of other areas of the province to maintain local reliability. These include the Newmarket-Aurora area, the Kitchener-Waterloo-Cambridge-Guelph-Orangeville area, Burlington, Sarnia-Windsor, Niagara and portions of Eastern and Northeastern Ontario. The IESO will continue to monitor these projects and identify other actions or adjustments that may be required.

Coal Replacement

The provincial government's planned transition from coal-fired generation is a challenging and complex task. Completing the move to cleaner forms of supply requires the replacement of up to 6,500 MW of generating capacity in a short period of time, and major restructuring of facilities across Ontario's power system.

Considerable steps have been taken and are planned to enable retirement of Ontario's coal-fired units. In executing these changes, flexibility is essential to accommodate the large amounts of new generation required, the tight timelines involved and the impact of each change on the entire system. Careful and continuous coordination and adjustment of plans will be required to successfully implement the coal replacement program while maintaining reliability.

Although significant progress has been made in arranging for the new supply, this Reliability Outlook reinforces the need identified in the 10-Year Outlook to have the coal units available for a period of time beyond the announced shutdown dates. This will allow for continued reliability by providing insurance to accommodate schedule delays for the replacement generation or reduced production from existing or new facilities.

While earlier retirements can be accommodated if circumstances permit, it is problematic to extend the period of reliable operation if the necessary fuel, staffing and maintenance plans have not been put in place ahead of time. Without timely preparations, the insurance afforded by maintaining the capability for reliable operation of those plants will be lost.

Several projects face a number of challenges – including the projects required to facilitate the shutdown of the Lambton Generating Station. Addressing local concerns and obtaining necessary approvals is taking longer than originally anticipated. As a result, prudence requires that provisions be made to ensure the availability of the Lambton units beyond the announced shutdown date. The 10-Year Outlook identified the need for them to be held available to operate if necessary to maintain reliability. This report confirms that fuel, staffing and maintenance plans are needed to ensure that Lambton units are capable of operation beyond currently specified dates. The IESO will continue to monitor developments and recommend timely adjustments.

Other characteristics of the coal-fired generation must also be maintained to support the overall adequacy and reliability of the power system. For example, units at the Nanticoke Generating Station are required either as generating sources or as non-coal burning synchronous condensers in order to meet the system's reactive power needs to maintain adequate voltage levels. The need for Nanticoke reactive power support intensifies with the return to service of two additional Bruce nuclear units and the additional wind generation being installed in southwest Ontario. Several Nanticoke generators must be converted to synchronous condensers to ensure that the system has sufficient reactive capability to allow for the introduction of this additional supply in the area, and as other new generation capacity becomes available, to allow the retirement of the remaining Nanticoke units.

Transmission enhancements are required to deliver the additional power from restored Bruce nuclear units and the new wind generation in the area, while reducing the need for synchronous condensers at Nanticoke.

Over this transition, staffing, fuel and maintenance provisions should also be undertaken to ensure that the Nanticoke units are capable of operating until the IESO confirms that reliability will not be impaired by station shutdown. As the Nanticoke units will be required primarily to provide reactive capability (provided replacement capacity is constructed on time), energy production and associated coal burn from these units would be minimized.

The IESO focus throughout this transition period will continue to be on the reliability of the power system. The IESO will monitor the progress of the coal replacement program and advise when circumstances are such that the units can be removed from service while maintaining reliability.

SUPPLY TO CENTRAL TORONTO

Toronto is one of the largest cities in North America without generation within its own vicinity to meet local demands. As a result, supply to the central area of Toronto (the area bounded by Highway 427, Lake Ontario, Eglinton Avenue and Victoria Park Avenue) is delivered through two main transmission paths and transformer stations (TS) – Manby TS in the west and Leaside TS in the east.

Manby TS is fed from Richview TS by five 230 kilovolt (kV) circuits. Leaside is fed by six 230 kV circuits from Cherrywood TS. These two stations and the circuits in and out of them are operating at or near maximum capacity during periods of high demand.

The supply to central Toronto will be exposed to the potential overload of the:

- 230 kV circuits from Cherrywood TS to Leaside TS;
- 230/115 kV auto-transformers at Leaside TS;
- 115 kV circuits from Leaside TS to Hearn TS;
- 230 kV circuits from Richview TS to Manby TS;
- 230/115 kV auto-transformers at Manby TS; and
- 115 kV circuits from Manby TS to downtown Toronto

Because the paths into central Toronto are forecast to be near their capacity, additional generation located outside the area cannot meet the need for power within Toronto during peak load periods. As a result, 250 MW of generation must be in service by June 1, 2008 to help meet local demand for electricity (particularly in the summer) without overloading equipment and prompting the need for rotating load shedding. Present forecasts indicate that 500 MW of total capacity should be planned for summer, 2010.

The IESO, the OPA, Toronto Hydro and Hydro One have considered alternatives and supplemental activities to the minimum generation requirements, including increased conservation and demand management, distributed generation, cogeneration and renewable energy. While all of the above alternatives should be part of the solution to address Toronto's needs, they are needed in addition to the minimum generation requirements in order to achieve an appropriate level of reliability.

This generation is necessary to provide needed flexibility to adequately address the risk to reliability of an aging transmission infrastructure within the city, and to allow for the incorporation of a new transmission supply to restore the assurance of long-term reliable electricity supplies for Toronto. This third transmission supply could bring about 1,000 MW of power to Toronto and should be in service early in the next decade, such that together with local generation within the city, a continued reliable and diverse supply for the city under hot summer weather conditions can be assured.

TORONTO

Population
2,629,030*

Central Toronto System Peak
2,350 MW

Ontario System Peak
26,160 MW

Installed Generation
0 MW

*Statistics Canada estimates, 2004, and Ontario Ministry of Finance projections

The transmission system serving central Toronto was at or near capacity during peak periods in the summer of 2005.

WESTERN GREATER TORONTO AREA

The OPA is implementing a directive from the provincial government for a new 860 MW gas project in the Goreway area in Brampton to address overloading concerns in the western GTA.

Stage One of the project, involving almost 485 MW of new generation, is forecast to be available by July 2007. Based on initial estimates of forecast loading on the Claireville auto-transformers, Stage One of the Goreway project meets most of the requirement for 2007, significantly reducing the risk of load interruptions in that time period. Stage Two of the project adds another 375 MW of new generation to the project and is forecast to be available by July 2008.

Elsewhere in the western GTA, the 117 MW GTAA project is now being commissioned and the 280 MW Greenfield South project is targeted to be in service in the first quarter of 2008.

The IESO has also identified concerns regarding potential overloading of the auto transformers at Trafalgar TS during summer peak loads as early as 2007. In addition, two 230 kV Trafalgar to Richview circuits were loaded above the IESO Supply Deliverability Guidelines in summer 2005 and required load interruption during a circuit outage. Resolving these loading problems requires a combination of generation and transmission solutions near Milton or Trafalgar, and 230 kV transmission enhancements between Meadowvale TS, Cardiff TS and Pleasant TS.

The supply projects that may result from the OPA's Western GTA Request For Qualifications are not predicted to be in service by the summer of 2007 deadline to reduce the risk of load interruptions. A transmission solution is also under discussion which, if implemented, could ameliorate this situation and allow for generation to be procured on a more achievable timeline.

While reliability risks will be reduced with planned new generation facilities, additional measures are still needed.

WEST GTA*

Population
1,683,060**

Local System Peak
3,190 MW

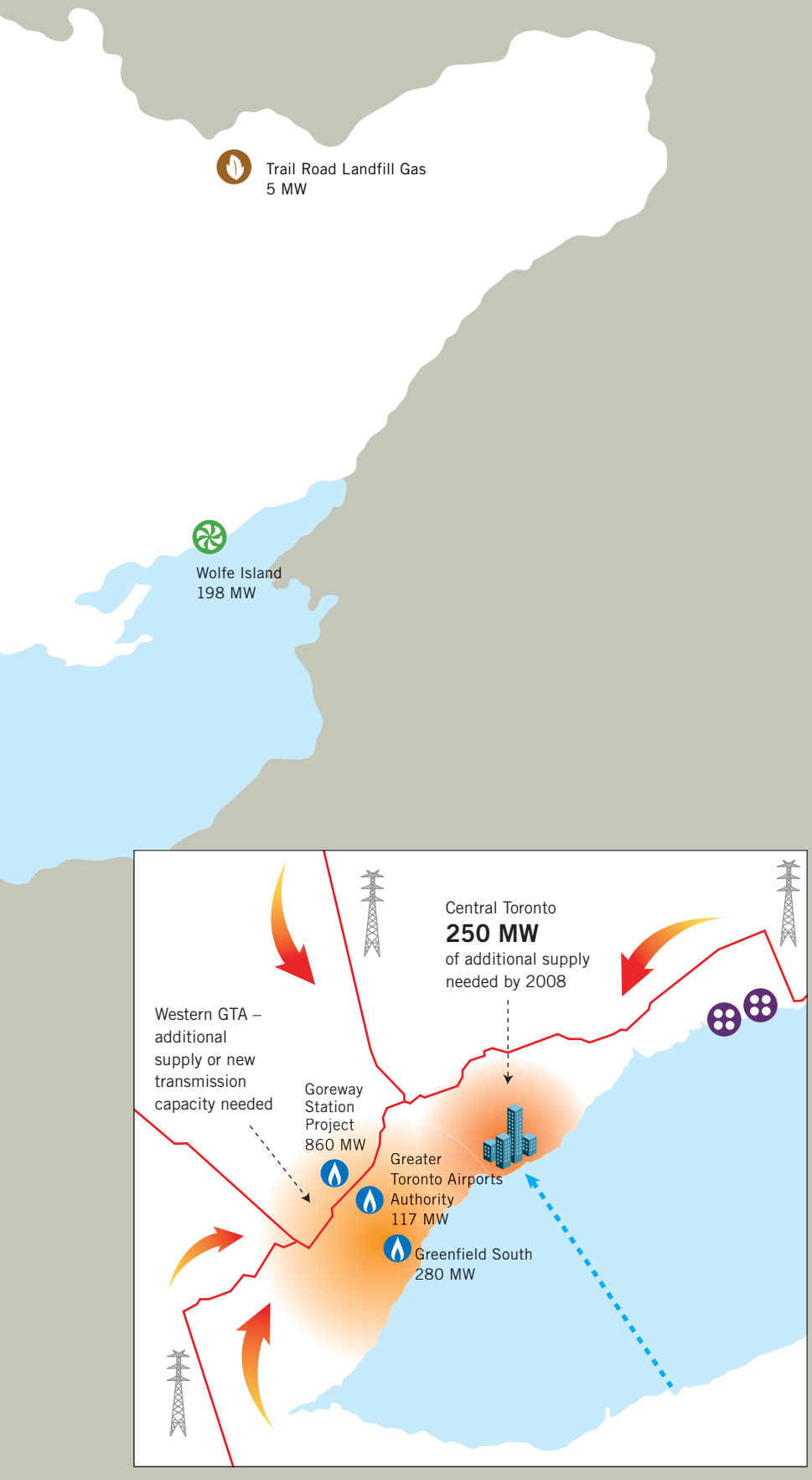
Ontario System Peak
26,160 MW

Installed Generation
117 MW

*West GTA has been defined as Halton Region (Burlington, Halton Hills, Milton and Oakville) and Peel Region (Brampton, Caledon and Mississauga).

**Statistics Canada estimates, 2004, and Ontario Ministry of Finance projections

ONTARIO ELECTRICITY PROJECTS AT A GLANCE



This map highlights both the major challenges facing the system – such as a lack of local generation or transmission constraints – and the new projects in the form of natural gas-fired facilities and renewable energies, already underway to address them. The majority of these projects are proceeding through the Ontario Power Authority's procurement program; more will be added as they are confirmed.

The IESO works with the proponents of each project to assess their connections to the system, ensuring that the facilities are reliably connected to the grid. The IESO also analyses the impact of the new flows of power on the system, to ensure that electricity will be able to travel to where it is needed within safety requirements.

Legend

- New Projects – Wind
- New Projects – Gas
- New Projects – Hydroelectric
- New Projects – Biomass
- Nuclear Plants (existing)
- Coal Plants (to be phased out)
- Power Flows
- Generation Deficiencies
- Transmission Lines
- Transmission Deficiencies
- Proposed Transmission Line (3rd supply)

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THE OFF-COAL TRANSITION

Photo: Canadian Hydro/Chinodin Wind Power

The phase out of coal-fired generation and the integration of cleaner forms of supply into the Ontario system is a major and complex undertaking. To illustrate, the 6,500 MW of coal-fired supply to be replaced is greater than the load served in the four Maritime provinces. In 2005, 19 per cent of the electricity generated in Ontario originated from coal-fired units.

The move to cleaner forms of generation is not simply about replacing 6,500 MW of supply. Given the inter-dependency of the system, any significant change will affect other parts of the system. Close coordination is essential and all plans have to be continuously evaluated to determine the system impacts and make the changes necessary to maintain reliable operation.

Extensive changes and realignment of the transmission infrastructure are also necessary to integrate the new supply. More than 10 large transmission infrastructure projects will need to be completed to facilitate the replacement of coal supply and to meet growing demand over the period of the coal replacement program.

In making the above provisions for coal replacement, it is also important to be able to accommodate potential delays in obtaining the regulatory approvals associated with new generation and transmission facilities. The regulatory approvals necessary for construction are often critical-path items for the overall schedule, but can be time-consuming, particularly given the complexity and constraints associated with the current approvals process.

Finally, this transition to cleaner supply must be achieved on a very aggressive timeline and at a time when the overall supply-demand balance in the province is tight.

There have been a number of recent developments to address the need for the additional supply required to enable the shutdown of coal fired generation in Ontario.

SYNCHRONOUS CONDENSERS

(CP PHOTO/Toronto Star/Ron Bull)

Produced by generators and consumed by most loads, reactive power is an inherent part of transmitting power over long distances. The longer the distance and the greater the amount of power traveling over that distance, the more reactive power must be produced to support those power flows.

Currently the Nanticoke generating station produces reactive power that stabilizes the power flows into the GTA including those from the Bruce nuclear station. Planned projects for new generation will not be adequate to replace the reactive power capability of Nanticoke.

To help replace the reactive power capability being lost when Nanticoke shuts down, the IESO is proposing that several Nanticoke units be converted to operate as synchronous condensers. A synchronous condenser produces reactive power and no coal burn would be required for units operating as such.

Synchronous condensers have been used in North American power systems, including Ontario.

These include:

- Renewables I RFP (395 MW)
- Renewables II RFP (1,000 MW)
- Renewables III RFP (200 MW)
- Combined Heat and Power Projects RFP (1,000 MW)
- Bruce Power return to service of Units 1 & 2 (1,540 MW)
- Goreway gas generation project Stage 1 and 2 (860 MW)
- Clean Energy Supply RFP (2,000 MW)

In assessing system adequacy, the IESO has taken into account the above projects as well as the predicted in-service dates of the supply projects that have already been contracted through the RFP process, including the Clean Energy Supply RFP.

Prudence requires that staffing, fuel and maintenance provisions be made to ensure the Lambton units are capable of operation beyond currently specified dates. This is needed to address both risks to the current schedules for replacement generation as a result of increased local concerns and potential delays to the approvals process; and any unexpected circumstances including reduced production from existing and new facilities.

To address the voltage support needs once the Nanticoke units are retired, there is a requirement to convert some of these units to operate as synchronous condensers. (see sidebar). Depending on the time needed for the conversions and the ability to carry them out in parallel, adjustments to the Nanticoke shutdown schedule may be necessary. Once sufficient capacity to replace Nanticoke production is in service and operating reliably, these units are only required to provide reactive capability without the need to burn coal.

As with Lambton, provisions are also recommended to ensure the availability of Nanticoke units, given their importance across the entire network, the need for additional synchronous condensers, and a better definition of the time required to convert the Nanticoke units to synchronous condensers.

Consistent with the provincial government's commitment to maintain reliability throughout the transition period, the IESO will monitor the progress of the coal replacement program, recommend adjustments as necessary and advise when circumstances are such that the units can be removed from service while retaining the necessary level of reliability.

The new supply projects and transmission enhancements required for coal replacement must provide the power system with the necessary operational capabilities currently being provided by the coal-fired units. The government has made significant progress and additional steps are planned to implement the new facilities. The projects listed in Table 1 (page 12), expected to provide additional generation or demand response between now and 2012, are designed to address various power system issues, such as overall adequacy, local adequacy and voltage control, while also enabling the retirement of the coal-fired units.

TABLE 1: GENERATION AND DEMAND RESPONSE PROJECTS PLANNED OR UNDERWAY IN ONTARIO

Source of Project	Generation and Demand Response Projects Planned or Underway	Capacity (MW)
Wind Generation projects resulting from Renewables I RFP	Melancthon Grey Wind Project	67.5*
	Kingsbridge Wind Power Project	39.6*
	Erie Shores Wind Farm	99*
	Prince Wind Farm	99*
	Blue Highlands Wind Farm	49.5*
Biomass Generation projects resulting from Renewables I RFP[1]	Woodward Avenue Plant	1.6
	Trail Road Landfill Gas Generating Station	5
Hydroelectric Generation project resulting from Renewables I RFP[2]	Umbata Falls Hydroelectric Project	22.8
Generation project resulting from government directive for Western GTA	Goreway Gas-fired Generation Project – Phase 1	485
	Goreway Gas-fired Generation Project – Phase 2	375
Projects resulting from Clean Energy Supply RFP	Greater Toronto Airports Authority	117
	Loblaws Properties (Demand Response)	10
	Greenfield Energy Centre Gas-fired Generation Project	1,005
	Greenfield South Gas-fired Generation Project	280
	St. Clair Gas-fired Generation Project	570
Wind Generation projects resulting from RES II RFP	Wolfe Island Wind Project	197.8*
	Leader Wind Power Project A	99*
	Leader Wind Power Project B	100.7*
	Prince II Wind Power Project	90*
	Kingsbridge II Wind Power Project	158.7*
	Ripley Wind Power Project	76*
	Kruger Energy Port Alma Project	101.2*
	Melancthon II Wind Project	132*
Hydroelectric Generation project resulting from RES II RFP	Island Falls Hydroelectric Project	20
Nuclear Generation projects underway with Bruce Power	Bruce Power Unit 1 Refurbishment	770
	Bruce Power Unit 2 Refurbishment	770
Hydroelectric Generation project under development with Ontario Power Generation	Mattagami Hydroelectric Generation	Up to 360
RFP Processes underway with the Ontario Power Authority	Northern York Region Demand Response RFP	20
	Western GTA Generation RFQ	1,000
	Combined Heat and Power RFP	1,000
Generation and Demand Response Procurement Processes under development	Renewables III RFP (facilities between 0.25 MW and 19.9 MW)	200
	Central Toronto Generation	250/500
	Demand Response RFP	250

* For capacity planning purposes wind generation has a dependable capacity contribution of 10% of the installed capacity of the project.

[1] Eastview Landfill Gas facility, which resulted from the Renewables I RFP, is currently in-service.

[2] Glenn Miller Hydroelectric facility, which resulted from the Renewables I RFP, is currently in-service.

Each of the coal-fired generating units can be retired once their respective requirements, as described in Table 2, are met. Where additional supply has been identified as a requirement the projects identified in Table 1 are expected to provide that supply. To ensure that the overall adequacy requirement is met there must be sufficient replacement supply to meet the forecast demand before each coal-fired unit can be retired.

TABLE 2: RELIABILITY REQUIREMENTS FOR RETIRING COAL-FIRED GENERATION

Retirement Project	Capacity (MW)	Requirements to Maintain Reliability and Retire Each of the Coal-fired Generation Units
Thunder Bay Units 2 and 3	306	Conversion of Unit 2 to gas-fired generation to be completed before conversion of Unit 3 is started
Atikokan	211	Conversion of Thunder Bay Units 2 and 3 to gas-fired generation
		Shunt capacitors in northwest Ontario (transmission enhancement required to replace voltage control provided by Atikokan)
		Unit must be available on reserve to ensure reliable operation of replacement generation
Lambton Units 1 – 4	1,972	Lambton switchyard re-configuration (transmission enhancement required to enable replacement generation to be introduced in the Sarnia area prior to shutdown of Lambton)
		Additional supply is required to meet overall adequacy requirements (see Table 1 for a list of supply projects that may be able to contribute to meeting this requirement)
		Retain each unit on reserve pending demonstrated reliable operation of replacement generation
Nanticoke Units 1 – 8	3,927	Additional supply is required to meet overall adequacy requirements (See Table 1 for a list of supply projects)
		Units must be available on reserve to ensure reliable operation of replacement generation
		Sufficient new supply located in the Western GTA and Central Toronto areas to alleviate transformer overloading in these areas and to reduce the need for voltage control from Nanticoke
		Staged conversion of several of the Nanticoke units to synchronous condenser operation is required to ensure the system has sufficient reactive capability. This is required to enable the return-to-service of Bruce Power Units 1 and 2 and to retire the Nanticoke units as coal fired generators (exact number of synchronous condensers required is dependent on amount of generation in the area and other technical factors).

REGIONAL REQUIREMENTS

There are a number of areas in Ontario that will require additional local supply and/or transmission enhancements to ensure reliability. There is currently sufficient time to address these issues but continued attention will be required to keep these plans on track.

Some of these local requirements may also contribute to overall adequacy and/or the requirements for retirement of the coal-fired units. The projects listed below are under study or have been proposed as options to address reliability needs.

Area	Reliability Needs in the Area	Required by	Project(s) Proposed to Fulfill Requirement
Newmarket – Aurora Area	Load growth taxing capability of existing circuits and local transformer station	2006-2011	York Region DR RFP (20 MW) and additional local generation and/or demand response
		2007-2008	New Holland Junction transformer station
		2011 or later	Additional transformer station at Aurora or Gormley, depending on the procurement of generation
Kitchener-Waterloo-Cambridge-Guelph and Orangeville Area	Local transmission enhancements required to relieve overloads and improve voltages	Spring 2007	Single 230/115 kV auto-transformer at Cambridge-Preston TS
		Fall 2008 – 2011	New 500/230 kV auto-transformer on the right-of-way of the 500 kV circuits between Middleport TS and the Milton/Claireville transformer stations
			New 230 kV double-circuit line into Cambridge-Preston TS
Burlington TS	Loading on the auto-transformers near the maximum ratings	Spring 2006	Enhance the 230/115 kV auto-transformers at Burlington TS
Bruce Complex	Ensure system has sufficient reactive capability to enable return-to-service of Bruce Power units 1 and 2 and retire the Nanticoke units	Dependent on the timetable for new generation	Staged conversion of several of the generating units at Nanticoke GS to synchronous condenser operation (exact number of synchronous condensers required is dependent on amount of generation in the area and other technical factors)
	Transmission enhancements required to allow increased power transfers to enable return-to-service of Bruce Power units 1 and 2	Spring 2007	Shunt capacitors in southwest Ontario
		May 2009	Series capacitors on the 500 kV circuits associated with the Bruce Complex
	Transmission enhancements required to enable operation of 8 units at the Bruce complex	January 2012	Transmission enhancements
Eastern Ontario	Loading on St. Lawrence to Hinchinbrook circuits limits Quebec and New York imports into Ontario	Summer 2006	Enhance existing Special Protection System to reduce generation in the event of a tower contingency to provide short-term relief
		Under review	Uprate the circuits as a long-term solution
	Ottawa Area Load Growth	Under review	Add shunt capacitors as required
			1,250 MW Ontario-Quebec high voltage direct current (HVdc) connection is under review and would affect the solution or alter requirements
	Supply to the Loads in the Oshawa and Belleville Areas	Under review	New 500/230 kV connection be established in the Bowmanville area or that the existing 230 kV connection from Cherrywood TS into the Oshawa area be reinforced with a new 230 kV double-circuit line

Area	Reliability Needs in the Area	Required by	Project(s) Proposed to Fulfill Requirement
Niagara Area	Increase import capability on Queenston Flow West (QFW)	Scheduled September 2006	Install two new 230 kV circuits between Allanburg TS and Middleport TS and reinforce the 230 kV transmission facilities into Burlington TS
Sarnia-Windsor Area	Enhancements to enable additional generation in the area resulting from CES contracts	Fall 2007	Reconfigure the terminations at Lambton SS to accommodate split operation
	Windsor area enhancements to address restrictions during high load conditions	Summer 2006 – Fall 2007	Re-terminate two of the connections at Essex TS and expand the exisiting Special Protection System so that additional post-contingency responses can be initiated
		Spring 2007	Transfer the Tilbury load to a dedicated circuit from Lauzon TS
		Under Review	Uprate the 115 kV circuits J3E and J4E and replace the 230/115 kV auto-transformers at Keith with larger units or enhance the 230 kV connection between Keith TS and Lauzon TS
	Enable additional power transfer over the J5D Interconnection with Michigan	Fall 2007	Assess the feasibility of uprating the 230 kV line to allow transfers from Michigan to Ontario over the J5D Interconnection to be increased by at least 200 MW
Northeastern Ontario	To reduce the use of load rejection and more effectively use the Special Protection Systems	October 2006	Enhancements to existing generation rejection scheme in the northeast and additional shunt reactors at Porcupine and/or Pinard TS
	To expand the north to south transfer capability and reduce restrictions on northern resources	Spring 2007/2009	Install series capacitors at Nobel SS to increase north to south transfer capability
	Transmission enhancements to enable Mattagami expansion	June 2009	Install series capacitors in the 500 kV circuits north of Sudbury together with shunt capacitors at Little Long GS and Hanmer TS to accommodate the increased capacity
	Existing 115 kV switchgear at Abitibi Canyon GS at end-of-life	Under Review	New switchgear should be consolidated at a new 115 kV busbar at Pinard TS
			Arrangement would also provide a suitable location for a future 230/115 kV auto-transformer to reinforce the existing connection between the local 230 kV and 115 kV systems

ONTARIO APPROVALS PROCESSES

The current regulatory approvals process is highly complex. Overlapping and uncoordinated requirements create unacceptably high risks to the timely implementation of the planned generation and transmission projects required to maintain reliability of the Ontario power system.

Proponents are required to obtain numerous approvals from a variety of agencies, resulting in many of the same issues having to be repeatedly addressed. This can unnecessarily add to costs and extend the time required for decision-making and approval processes, putting in-service dates at risk.

For example, the IESO has identified the need for a third transmission path to Central Toronto by early in the next decade. However, under the current approvals process, the in-service date could be as late as 2016.

Changes can and should be made to reduce unnecessary complexity and duplication, providing a more efficient process while maintaining necessary public and stakeholder participation and environmental protection.

The IESO has been working with other entities including the Ontario Energy Board, the OPA and Hydro One to identify necessary changes to the current regulatory approvals process.

CONCLUSIONS AND RECOMMENDATIONS

- Ontario's electricity sector is entering a period where aging generating units combined with the complex needs related to the coal replacement transition and the continued growth in demand, present significant challenges and require ongoing management and adjustments to maintain reliability.
- Conservation and demand-response initiatives should be aggressively pursued to help reduce the need for new supply.
- The current regulatory approvals process is complex and the requirements to comply present unacceptably high risks to the timely implementation of planned generation and transmission projects. Expedited, but thorough, approvals processes must be in place to ensure that timelines are met.
- The need for new supply, transmission and conservation initiatives remains particularly urgent in the GTA. There is a need for 250 MW of generation by 2008 to serve the central Toronto area.
- Given the reliability risks, prudence requires that provisions be made to ensure the capability of Lambton and Nanticoke Generating units to operate beyond the announced shutdown dates to accommodate circumstances such as schedule delays, extreme weather, outages or reduced performance of existing or new facilities.
- Actions are required from a number of market participants and organizations to achieve reliable supply over the next decade. These actions must be carefully coordinated and it is recognized that plans will need to be adjusted to address emerging issues and changes in schedules. The IESO will continue to monitor progress, identify risks and indicate additional actions that may be needed. The IESO observations and analysis will be reported through the Ontario Reliability Outlook, which the IESO plans to release semi-annually in conjunction with the June and December 18-Month Outlooks. As with the 18-Month Outlooks, interim updates may also be required.

Greater Toronto Airports Authority cogeneration facility

Actions are required from a number of market participants and organizations to achieve reliable supply over the next decade. The IESO will continue to monitor progress, identify risks and indicate additional actions that may be needed.

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The Independent Electricity System Operator (IESO) manages the province's power system so that Ontarians receive power when and where they need it. It does this by balancing demand for electricity against available supply through the wholesale market and directing the flow of electricity across the transmission system.