

10-YEAR OUTLOOK HIGHLIGHTS



An Assessment of the Adequacy of
Generation and Transmission Facilities to
Meet Future Electricity Needs in Ontario

From January 2006 to December 2015

EXECUTIVE SUMMARY



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.

Aging generation facilities and the continued increase in demand for electricity add to the urgency of proceeding with new generating and transmission facilities over the next 10 years.

Over the last 12 months, 650 megawatts (MW) of new gas-fired generation has been put in place and 515 MW of nuclear generation and 370 MW of renewable generation is expected to be in service within the next 18 months. There are also a number of projects totalling more than 9,000 MW of additional capacity that are in various stages of discussion, development or negotiation. Timely progress to achieve this additional capacity must continue if Ontario is to ensure a reliable supply of electricity over the next decade and beyond.

The 10-Year Outlook provides an assessment of the demand-supply picture for the province over the next decade and provides a plan identifying the timing and requirements of system changes needed to meet the government's coal shutdown timeframe. Under the provisions of Bill 100, the Ontario Power Authority (OPA) is responsible for long term forecasting. However, the IESO has agreed to produce the 10-Year Outlook in 2005 while the OPA determines how best to address its forecasting responsibilities.

Electricity Supply Outlook

There have been a number of positive developments in Ontario's electricity sector since the IESO published the previous 10-year Outlook on March 31, 2004.

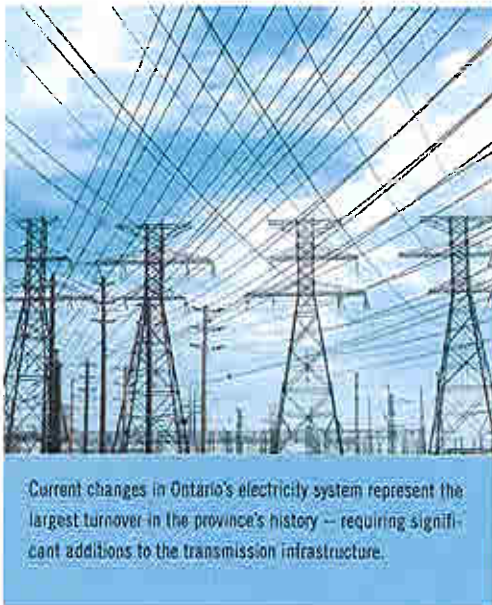
These new developments include the introduction of 650 MW of gas-fired generation into the Ontario market, the decision to proceed with restarting Pickering Unit 1 (bringing an additional 515 MW on-line in September 2005,) and the announcement of 2,200 MW of new supply initiatives and 395 MW in renewable energy projects under the provincial government's recent Request for Proposals (RFP) process. All of the new supply resources announced under the RFP process are expected to be in service within the next four years.

The government has also clarified the timing associated with the commitment to phase out coal-fired generation, which has extended the phase-out period for the units at the Nanticoke Generating Station until 2009.

In addition to the committed projects discussed above, there are a number of other projects which are in various stages of discussion, development, or negotiation. These projects represent more than 9,000 MW of additional generation and include:

- The return to service of Bruce Generating Station (GS) Units 1 and 2;
- Increasing the energy capability of Beck 2 GS by construction of a third tunnel;
- The development of additional hydroelectric generation capacity in Northern Ontario;
- Recently announced plans for additional generation in downtown Toronto and the western Greater Toronto Area (GTA), co-generation across the province and demand-side measures;
- The return to service of Pickering Units 2 and 3;
- The development of conservation programs under the Ontario Power Authority;
- The development of additional renewable generation to meet the Renewable Portfolio Standard of 2,700 MW by 2010; and
- Long-term power purchases from Manitoba and Newfoundland and Labrador.

Timely decisions on these projects will be key to ensuring that the coal shutdown can proceed as planned. Continuing progress toward establishing and meeting in-service dates is critical. The supply picture with the first four items listed above included – these being considered to be the more advanced projects – is provided in the diagram on the next page.



Ontario Demand Forecast

The government has set aggressive targets for energy conservation to reduce peak electricity consumption by 5 per cent by 2007. However, because the impact of new conservation initiatives is as yet difficult to forecast, the effects of conservation efforts are not reflected in the Ontario demand forecast used in this Outlook. These conservation efforts can make a significant difference. Without them energy consumption is forecasted to grow from about 157 terawatt-hours (TWh) in 2006 to about 170 TWh in 2015, an average annual growth rate of energy of 0.9 per cent.

Normal weather peak demands are expected to increase from about 24,200 MW in 2006 to 26,900 MW in the summer of 2015, an increase of 2,700 MW. Under extreme weather conditions, the summer peak is projected to approach the 30,000 MW level by the end of the forecast period.

Coal Replacement

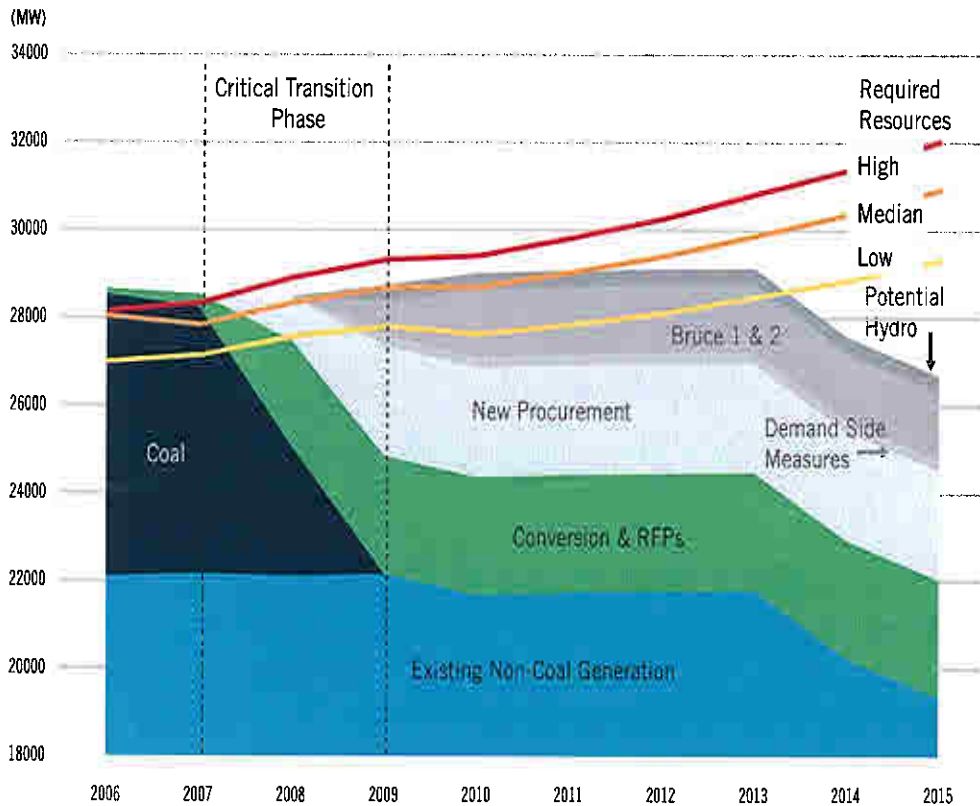
The Ontario government is committed to phasing out the remaining 6,500 MW of coal-fired generation in the province beginning in 2007 and ending in 2009 as replacement resources become available.

This transition represents the largest and most significant electricity system change ever undertaken in Ontario and involves major technical considerations. It also involves significant risks and challenges that need to be addressed.

The IESO will monitor and assess the coal shutdown and replacement resource plans and will provide advice to all parties regarding the actions or adjustments required to ensure reliability is maintained.

COAL REPLACEMENT SCENARIO

Electricity supply and required resources using three different demand forecasts: low, median, and high for the next 10 years. The forecast for supply includes existing generation, the planned shutdown of coal stations by 2009 and proposed new projects.



New generation units typically encounter more operating issues affecting their reliability for a period of time after they come into service. These can be significant. Accordingly, a critical requirement of the coal replacement plan is that while coal plants can be scheduled to stop running, those units will be held available for a period of time to operate if necessary to maintain reliability.

Coal supply makes up a large part of Ontario's flexible generation, and it has traditionally been required to meet changing demand, to supply demand when other supply sources are unreliable, and to balance load and generation at all times. The specific operating characteristics of new generation will require changes to current practices in order to provide operating flexibility and sustained energy production capability as and when it is needed.

The impact of new generation on the transmission system will also be assessed, and necessary transmission upgrades must be completed to ensure reliable system operation.

A plan outlined in the full 10-Year Outlook provides timing and requirements of system changes needed to meet the government's coal replacement objective.

Supply to Downtown Toronto

New generation and transmission facilities supplying the downtown Toronto area are urgently needed over the next few years to meet this area's growing need for electricity.

The government has requested that the OPA procure 500 MW of new supply to address the concerns raised in the last 10-Year Outlook about supply to downtown Toronto.

There is an increasingly high risk of transmission facilities supplying downtown Toronto becoming overloaded during heavy demand periods and a combination of new generation capacity, demand-side initiatives and transmission are needed to alleviate this concern. The present transmission facilities are already operated at or near their capacity during hot summer days when electricity demand is high due to the heavy use of air conditioning. As electricity demands continue to grow faster than new transmission can be built, it is vitally important for generation to be located in the downtown area within the next two to three

years in order to reduce power flows through heavily loaded transmission facilities to acceptable levels.

In the absence of additional generation as well as demand-side initiatives, it is expected that emergency rotational power outages would be required in order to prevent the overloading of transmission facilities.

The immediate risk that power outages will be necessary in Toronto can be avoided for a number of years by locating additional generation in the area. However, over time, this risk will again grow to unacceptable levels as electricity demand in downtown Toronto continues to grow, and new transmission, or more generation, must be built to provide more supply capability to downtown Toronto. Hydro One has proposed two alternative transmission projects to address this need – a Direct Current (DC) Option and an Alternating Current (AC) Option. Both options meet IESO criteria and improve the reliability of supply to downtown Toronto. However, the DC option is preferred as it requires fewer other transmission system upgrades and provides desirable geographic diversity.



New electricity supply to downtown Toronto through new generation and transmission projects is urgently needed. Projects must be completed in the next few years to avoid the risk of overloading transmission facilities during heavy demand periods

Supply to Western Greater Toronto Area (GTA)

The previous 10-Year Outlook indicated that additional generation capacity or demand-side initiatives were required in the western GTA to replace generation previously supplied by the Lakeview coal-fired station, and to thereby alleviate the risk of auto-transformer overloading.

The recently completed first phase of the Parkway Transformer Station in Markham, the extension of an existing 230 kV double circuit line between Richmond Hill and Markham, and the installation of new transmission equipment in a number of stations within the GTA have provided necessary short-term relief.

Several successful RFP projects are located within the western GTA, to be brought into service between Fall 2005 and Summer 2009. However, these projects are not sufficient to address the growing problem. The need for additional supply in this area is still urgently required. The government's plan includes procurement of an additional 1,000 MW to meet this need.