

Methodology to Perform Long Term Assessments

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Power to Ontario. On Demand.

Table 3.1 Monthly Wind Capacity Contribution values

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WCC (% of Installed Capacity)	32.8%	32.8%	26.7%	21.2%	20.3%	13.4%	13.4%	13.4%	16.6%	22.6%	29.7%	32.8%

Forced Outage Rates of Generating Units

Derating-Adjusted Forced outage rates that are used for each unit reflect both forced outages and periods of derated output. The values are provided by the generation plant owners, based on past experience modified to reflect forecast improvements from maintenance activities or declines due to age or need for repair. When forecast forced outage rates are not available, forced outage rates compiled from generating units past performance information are used.

3.2.4 Representation of Interconnected Systems

There are five interconnected systems that could provide additional resources to supply Ontario, namely, New York, Michigan, Quebec, Minnesota and Manitoba.

In the probabilistic calculation of reserve requirements, the interconnected systems are modeled as fictitious generators having forced outage rates assigned. Therefore, the calculated Required Reserve levels take into account the potential need for external generating capacity.

At the deterministic calculation stage, Available Resource values include external purchases that are backed by firm contracts. The inclusion of only firm purchases in the assessment represents a conservative assumption. Therefore, whenever reserves are lower than required, the necessary level of assistance from neighbouring systems is considered as a possible control action. The confidence level in the availability of such an assistance level is also assessed, using past operational information, as well as latest load and capacity reports issued by the neighbouring jurisdictions, in which forecast levels of spare capacity are included.

3.2.5 Representation of the Transmission System

The IESO-controlled grid consists of a robust southern grid and a sparse northern grid. The northern grid has limitations, which potentially constrain the use of some generation capacity. As new generation projects materialize, the relatively large generation capacity additions in the Bruce and West zones of the system cause the operation of some generation to be constrained at times, because of the transmission interface limitations. The amount of generation constrained varies with the demand level and the amount of total generating capacity in a zone. All transmission constrained generation and the reserve carried for that constrained generation are subtracted from the Available Resources when calculating the Reserve Above Requirement.

3.3 Multi-Area Reliability Simulation (MARS) Approach

The MARS program allows the reliability assessment of a generation system composed of a number of interconnected areas and/or zones that can be grouped into pools. The IESO-controlled grid has been modeled as a pool composed of ten zones. Figure 4.1.1 provides a pictorial representation of Ontario's ten zones.