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| Lack of reserve - Credible Contingency List |
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| 1.0 | 16 January 2018 | First issue to accompany publication of Reserve Level Declaration Guidelines |

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# Introduction

## Purpose

This document lists the relevant *credible contingency* events, by *region*, that are considered by AEMO for the purposes of clause [4] of the Reserve Level Declaration Guidelines (**Guidelines**), made under clause 4.8.4A of the National Electricity Rules (**NER**).

The Guidelines may be found on AEMO’s website: [www.aemo.com.au](http://www.aemo.com.au).

## Definitions and Abbreviations

### Glossary

Terms defined in the NER and the Guidelines have the same meanings when used in this document.

# Relevant Credible contingency Events by region

Two separate credible contingency lists have been prepared due to the different dates for when the *National Electricity Amendment (Declaration of lack of reserve conditions) Rule 2017* takes effect and when an updated PASA solver enters production for the Dynamic LOR PASA project. The Dynamic LOR PASA solver includes additional capabilities to allow generation and interconnectors to be grouped and output values to be dynamically calculated.

Contingency List 1 includes generation and network contingencies that will be considered in the Reserve Assessment from 16 January 2018 until the Dynamic LOR PASA solver is implemented in to the production environment. Contingency List 2 will take effect once the Dynamic LOR PASA solver is implemented and includes additional generation and network contingencies that will be explicitly included in the Reserve Assessment from then onwards.

The Dynamic LOR PASA solver is currently expected to be implemented in to production in late January 2018, a market notice will issued once this occurs and Contingency List 2 takes effect.

## Contingency List 1

### Generator Contingencies

In all regions the following generation events are considered to be a credible contingency for LOR declaration:

* Loss of the largest single *scheduled generating unit*. Size is as indicated by its bid market availability.

### Network Contingencies

For capacities indicated below with an asterisk “\*”, the value will be calculated dynamically. The maximum potential capacity is shown in the tables. The dynamic output quantities will be calculated from:

* For *scheduled generating units*, the bid market availability.
* For interconnectors the interconnector flow calculated in the PASA solution.

#### South Australia

|  |  |  |
| --- | --- | --- |
| **Contingency** | **Risk** | **Capacity at risk**  **(MW)** |
| Murraylink | Murraylink | 220 |
| Either Heywood – South East 275 kV (No.1 and No.2) line. | Heywood is a double circuit interconnector. On the loss of one circuit, Heywood interconnector flow from Victoria to South Australia will be limited to 250 MW. Therefore, the normal capacity at risk associated with the loss of a circuit of the Heywood interconnector is 350 MW. The capacity at risk for the loss of both elements would normally be 600 MW. | 350 |

#### Victoria

| **Contingency** | **Risk** | **Capacity at risk (MW)** |
| --- | --- | --- |
| Basslink | Basslink | 594\* |

#### Tasmania

The Tasmanian contingency list includes contingencies that are part of the reclassification for the trip of any Tasmanian transmission lines and the Basslink interconnector when importing from Victoria. For further information on the reclassification please refer to SO\_OP\_3715 – Power System Security Guidelines.

|  |  |  |
| --- | --- | --- |
| **Contingency** | **Risk** | **Capacity at risk (MW)** |
| Basslink Import +  Any Generating unit connected to the power system by a single transmission line | Basslink Import +  Any Generating unit connected to the power system by a single transmission line | 622\* |
| Basslink Import | Basslink | 478\* |

## Contingency List 2

### Generator Contingencies

In all regions the following generation events are considered to be a credible contingency for LOR declaration:

* Loss of the largest single *scheduled generating unit*. Size is as indicated by its output calculated by the PASA solver for the specific trading interval under consideration.
* Loss of the largest wind or solar farm which is configured such that it would be fully disconnected by a single *credible contingency*. Size is as indicated by its output calculated by the PASA solver for the specific trading interval under consideration based on the forecast output from AEMO’s intermittent generation forecasting systems.

### Network Contingencies

For capacities indicated below the capacity values will be calculated dynamically. The maximum potential capacity is shown in the tables below. The dynamic quantities for generator outputs and interconnector flows are calculated based on the capacity as dispatched by the PASA solver for trading interval under consideration.

#### New South Wales

|  |  |  |
| --- | --- | --- |
| **Contingency** | **Risk** | **Capacity at risk (MW)** |
| Colongra – Munmorah 330 kV C1 Line | Colongra unit 1 + 2 | 362 |
| Colongra – Munmorah 330 kV C3 Line | Colongra unit 3 + 4 | 362 |
| Either Dumaresq – Bulli Creek 330 kV (8L or 8M) Lines | The double circuit line forms the Queensland – New South Wales Interconnector (QNI). On the loss of one circuit, flow from QLD to NSW will be limited to 250 MW. Therefore, the normal capacity at risk associated with the loss of an element of QNI is 828 MW. The capacity at risk for the loss of both elements would normally be 1078 MW. | 828 |

#### Queensland

| **Contingency** | **Risk** | **Capacity at risk (MW)** |
| --- | --- | --- |
| Braemar – Darling Downs 275 kV 8862 line | Darling Downs unit 2+3 | 256 |
| Braemar 2 PS – Braemar 275kV 8840 line | Braemar Unit 5 + 6 | 346 |
| Braemar PS - Braemar 275kV 8839 line | Braemar Unit 2 + 3 | 336 |
| Either Dumaresq – Bulli Creek 330 kV (8L or 8M) Lines | The double circuit line forms the Queensland – New South Wales Interconnector (QNI). On the loss of one circuit, flow from NSW to QLD will be limited to 50MW. Therefore, the normal capacity at risk associated with the loss of an element of QNI is 550 MW. The capacity at risk for the loss of both elements would normally be 600 MW. | 550 |

#### South Australia

|  |  |  |
| --- | --- | --- |
| **Contingency** | **Risk** | **Capacity at risk**  **(MW)** |
| Blyth West – Snowtown 275 kV line | Snowtown South + North wind farms | 270 |
| Murraylink | Murraylink | 220 |
| Canowi – Hallett 275 kV line | Hallett wind farm+ Hallett GTs | 315 |
| Snuggery – Mayura 132 kV line | Lake Bonney 1+2+3 wind farms | 279 |
| Yadnarie – Port Lincoln 132 kV line | Port Lincoln GTs + Cathedral rocks wind farm | 147 |
| TIPS – Torrens Island North No. 2 66 kV line | QPS units 1-4 | 100 |
| Either Heywood – South East 275 kV (No.1 or No.2) line. | Heywood is a double circuit interconnector. On the loss of one circuit, Heywood interconnector flow from Victoria to South Australia will be limited to 250 MW. Therefore, the normal capacity at risk associated with the loss of a circuit of the Heywood interconnector is 350 MW. The capacity at risk for the loss of both elements would normally be 600 MW. | 350 |

#### Victoria

| **Contingency** | **Risk** | **Capacity at risk (MW)** |
| --- | --- | --- |
| Mt Beauty – Mckay Ck 220 kV line | All Bogong units and Mckay units | 300 |
| Basslink | Basslink | 594 |
| Either Heywood – South East 275 kV (No.1 or No.2) line. | Heywood is a double circuit interconnector. On the loss of one circuit, Heywood interconnector flow from South Australia to Victoria will be limited to 250 MW. Therefore, the normal capacity at risk associated with the loss of an element of Heywood interconnector is 250 MW. The capacity at risk for the loss of both elements would normally be 500 MW. | 250 |
| Murraylink | Murraylink | 200 |

#### Tasmania

The Tasmanian contingency list includes contingencies that are part of the reclassification for the trip of any Tasmanian transmission lines and the Basslink interconnector when importing from Victoria. For further information on the reclassification please refer to SO\_OP\_3715 – Power System Security Guidelines.

|  |  |  |
| --- | --- | --- |
| **Contingency** | **Risk** | **Capacity at risk (MW)** |
| Basslink Import +  Any Generating unit connected to the power system by a single transmission line | Basslink Import +  Any Generating unit connected to the power system by a single transmission line | 510-646 |
| Liapootah-Wayatinah 220 kV line | Wayatinah + Catagunya | 86 |
| Basslink Import | Basslink | 478 |