

1 August 2013

## System Restart Standard

### 1. Introduction

This System Restart Standard (standard) was determined by the Reliability Panel (Panel) in accordance with clauses 8.8.1(a)(1a) and 8.8.3 of the National Electricity Rules (Rules). The purpose of this standard is to provide guidance and set a benchmark to assist the Australian Energy Market Operator (AEMO) in procuring sufficient system restart ancillary services (SRAS) to meet the requirements of the National Electricity Market (NEM). This standard is effective from 1 August 2013.

### 2. Requirements of the standard

The requirements of the standard are specified under clause 8.8.3(aa) of the Rules, which states that (*italicised terms are defined under the Rules*):

*“The system restart standard must:*

1. be consistent with the SRAS objective referred to in clause 3.11.4A(a);
2. apply equally across all *regions*, unless the *Reliability Panel* varies the *system restart standard* between *electrical sub-networks* to the extent necessary:
  - (a) to reflect any technical system limitations or requirements; or
  - (b) if the benefits of adopting the *system restart standard* would be outweighed by the costs of implementing such a standard;
3. identify the maximum amount of time within which *system restart ancillary services* are required to restore *supply* to a specified level;
4. include guidelines on the required reliability of *primary restart services* and *secondary restart services*;
5. include guidelines to be followed by AEMO in determining *electrical sub-networks*, including the determination of the appropriate number of *electrical sub-networks* and the characteristics required within an *electrical sub-network* (such as the amount of generation or load, or electrical distance between *generation centres*, within an *electrical sub-network*);
6. include guidelines specifying the diversity and strategic locations required of *primary restart services* and *secondary restart services*.”

In making its determination of the standard, the Panel detailed the factors considered in its decision in AEMC Reliability Panel 2012, System Restart Standard, Final Determination, 12 April 2012. Consistency of the standard with the SRAS objective is explained in this report and the final decision with respect to the other requirements under clause 8.8.3(aa) are outlined below.

### **3. Applicability of the standard in electrical sub-networks**

This standard shall apply equally across all regions and electrical sub-networks.

### **4. Restoration timeframe**

For each electrical sub-network, AEMO shall procure SRAS sufficient to:

- re-supply and energise the auxiliaries of power stations within 1.5 hours of a major supply disruption occurring to provide sufficient capacity to meet 40 per cent of peak demand in that sub-network; and
- restore generation and transmission such that 40 per cent of peak demand in that sub-network could be supplied within four hours of a major supply disruption occurring.

The restoration timeframe represents the 'target timeframe' to be used by AEMO in the procurement process. It is not a specification of any operational requirement that should be achieved in the event of a black system condition.

### **5. Reliability of services**

Primary restart services shall have a reliability of 90 per cent.

Secondary restart services shall have a reliability of 60 per cent.

Services may be considered in combination to meet a higher level of reliability than the individual service.

AEMO will determine the manner in which reliability will be assessed, and clarify the provisions for combining services, in accordance with the requirements under the Rules.

### **6. Guidelines for the determination of electrical sub-networks**

AEMO shall determine the boundaries for electrical sub-networks without limitation by taking into account the following factors:

- the number and strength of transmission corridors connecting an area to the remainder of the power system;
- the electrical distance (length of transmission lines) between generation centres;
- the quantity of generation in an area, which should be in the order of 1000MW or more; and
- the quantity of load in an area, which should be in the order of 1000MW or more.

### **7. Guidelines for specifying the diversity and strategic location of services**

There shall be diversity in the SRAS procured by AEMO to provide an appropriate level of independence between the services procured. AEMO shall consider diversity of the services by taking into account the following guidelines:

- Electrical - diversity in the electrical characteristics shall be considered particularly with respect to whether there would be a single point of electrical or physical failure;

- Technological - diversity in technologies shall be considered to minimise the reliance of services on a common technological attribute;
- Geographical - diversity in geography shall be considered to minimise the potential impact of geographical events such as natural disasters; and
- Fuel - diversity in the type of fuel utilised by services shall be considered to minimise the reliance on one particular fuel source.