

**ELECTRICITY INDUSTRY ACT**

**ELECTRICITY INDUSTRY (WHOLESALE ELECTRICITY  
MARKET) REGULATIONS 2004**

**WHOLESALE ELECTRICITY MARKET RULES**

**Power System Operation Procedure:  
Network Modelling Data**

## VERSION HISTORY

System Management Transition Date	First release to fulfil requirements for Network Modelling Data Procedure

## TABLE OF CONTENTS

RELATIONSHIP WITH MARKET RULES .....	4
RELATED DOCUMENTS .....	4
COMMENCEMENT .....	4
1 SCOPE .....	5
2 ACCESS TO INFORMATION.....	5
2.1 GENERAL.....	5
2.2 TECHNICAL INFORMATION REQUIREMENTS.....	5
2.2.1 POSITIVE, NEGATIVE AND ZERO SEQUENCE IMPEDANCES .....	5
2.2.2 INFORMATION ON NETWORK TOPOLOGY .....	6
2.2.3 INFORMATION ON SECURITY CONSTRAINTS.....	6
2.2.4 OVERLOAD RATINGS.....	7
2.2.5 SHORT CIRCUIT CAPABILITY.....	7
2.3 TECHNICAL AND COMMUNICATIONS CRITERIA .....	8
2.4 PROCESS FOR SYSTEM MANAGEMENT .....	8

## RELATIONSHIP WITH MARKET RULES

1. This Power System Operation Procedure (PSOP): Network Modelling Data (Procedure) has been developed in accordance with, and should be read in conjunction with, the Wholesale Electricity Market Rules (Market Rules).
2. References to particular Market Rules within the Procedure in bold and square brackets **[MR XX]** are current as of the System Management Transition Date. These references are included for convenience only, and are not part of this procedure.
3. This Procedure is subservient to the Market Rules. In the event of conflict between this Procedure and the Market Rules or any other document, the order of precedence is as set out in the Market Rules **[MR 1.5.2]**
4. This Procedure may include explanatory text, including quotations from the Market Rules. Such explanatory text is for information only, does not form part of the Procedure, and is italicised and contained in a rectangular box.
5. A word or phrase defined in the Electricity Industry Act 2004, or in the Regulations or Market Rules made under that Act, has the same meaning when used in this Procedure.

## RELATED DOCUMENTS

1. This Procedure is related to, and should be read in conjunction with, the following documents:
  - a. SWIS Technical Rules and Operating Standards
  - b. PSOP: Dispatch
  - c. PSOP: Power System Security
  - d. PSOP: Communications and Control Systems.
  - e. PSOP: Operational Data Points for Generating Plant
  - f. PSOP: Operational Data Points for Non-Western Power Networks, Substations and Loads
  - g. PSOP: Monitoring and Reporting Protocol
  - h. IMS Interface Market Procedure – Network Operators and AEMO

## COMMENCEMENT

1. This Procedure has effect from the System Management Transition Date.

## 1 SCOPE

1. This Procedure has been developed in accordance with clause **[MR 2.28.3A]** of the Market Rules and documents:
  - a. System Management's technical modelling information requirements for Networks;
  - b. The process to be followed by Network Operators and System Management for providing and accessing that information; and
  - c. The technical and communication criteria that a Network Operator must meet with respect to System Management's access to that information.
2. This Procedure covers all Networks forming part of the power system (SWIS).

## 2 ACCESS TO INFORMATION

*The procedures below are intended to reflect the arrangements that are in place as at the System Management Transition Date. This Procedure will be refined from time to time as per the Power System Operating Procedure Change Process, for example where AEMO introduces new systems.*

### 2.1 GENERAL

System Management is required to ensure the SWIS operates securely and reliably as per **[MR 2.2.1]**. In order to fulfill this key function, AEMO in its capacity as System Management must have the ability to model the power system accurately to assess the effects of various operating scenarios (in accordance with the *PSOP: Power System Security*). This Procedure is intended to define the data requirements for System Management to perform these assessments, and the processes to following in accessing this data and making this data available.

### 2.2 TECHNICAL INFORMATION REQUIREMENTS

This section describes the categories of information that are required, and System Management's requirements for access to the information. Network Operators must provide the information below to System Management in accordance with this Procedure.

#### 2.2.1 POSITIVE, NEGATIVE AND ZERO SEQUENCE IMPEDANCES

##### Data

These impedance values are modelled inside of the Western Power EMS (noting that the negative and zero sequence impedance values inside the Western Power EMS are not used operationally – see Information on Security Constraints and Short Circuit Capability below).

##### Access Requirements

System Management requires access to the Western Power EMS at all times (as specified in the IMS Interface Market Procedure – System Management and Network Operators).

##### Process

- The Network Operator must maintain an accurate network model within the EMS, updating that model as soon as practicable to allow for network augmentations.
- The EMS model must be aligned as much as practicable with other models used for determining security constraints.
- Where System Management identifies an issue or a change requirement in the model within the EMS (including telemetry or calculations that support the model and its functionality, such as the state estimator and contingency analysis), Western Power must agree on the requirements with System Management and a timeframe for implementation.

## **2.2.2 INFORMATION ON NETWORK TOPOLOGY**

### Data

Information on network topology is primarily available to System Management inside of the Western Power EMS and GIS tools. However, System Management also require periodic data transfers of current network topology for use in geographic display tools.

### Access Requirements

System Management requires access to the Western Power EMS and GIS tools at all times for this information, as well as periodic data transfers on transmission network topology (as specified in the IMS Interface Market Procedure – System Management and Network Operators).

### Process

- Western Power must maintain an accurate network model within the EMS, updating that model as soon as practicable to allow for network augmentations.
- The EMS model must be aligned as much as practicable with other models used for determining network topology.
- Where System Management identifies an issue or a change requirement in the model within the EMS or GIS tools, Western Power must agree on the requirements with System Management and a timeframe for implementation.

## **2.2.3 INFORMATION ON SECURITY CONSTRAINTS**

### Data

Information on security constraints are primarily provided to System Management by Network Operators in accordance with the processes set out in the PSOP: Power System Security. However, System Management also requires access to the Western Power EMS to monitor and assess the status of those constraints.

### Access Requirements

System Management requires access to the Western Power EMS at all times for this information, (as specified in the IMS Interface Market Procedure – System Management and Network Operators).

### Process

- Western Power must maintain an accurate network model within the EMS, updating that model as soon as practicable to allow for network augmentations (including any additional telemetry or calculations to monitor the security constraint).
- Western Power must ensure sufficient reliable telemetry is available within the EMS to support the convergence of the EMS model.
- The EMS model must be aligned as much as practicable with other models used for determining security constraints.
- Where System Management identifies an issue or change requirement in the model within the EMS (including telemetry or calculations to support modelling of the constraint), Western Power must agree on the requirements with System Management and a timeframe for implementation.

## 2.2.4 OVERLOAD RATINGS

### Data

Information on overload ratings are primarily accessed by System Management in the Western Power EMS, and Western Power limit management tools. However, Network Operators may advise System Management of temporary overload ratings or other changes in overload ratings in accordance with the processes set out in the PSOP: Power System Security.

### Access Requirements

System Management requires access to the Western Power EMS and Western Power limit management tools at all times for this information, (as specified in the IMS Interface Market Procedure – System Management and Network Operators).

### Process

- Western Power must maintain the following rating limits within the EMS (as per the PSOP: Power System Security):
  - Limit 1 – 100% of the equipment rating
  - Limit 2 –the maximum allowable 15 minute overload rating for the equipment (or adjusted as per the procedure in the PSOP: Power System Security)
- Western Power must ensure any alternative ratings (e.g. seasonal ratings) are available in the EMS or other limit tools for System Management to use when assessing power system security and reliability outside of the current timeframe (in accordance with the PSOP: Power System Security).
- Where System Management identifies an issue or change requirement in the limit data (including missing limit data), Western Power must agree on the requirements with System Management and a timeframe for implementation.
- Western Power must provide System Management with historical limit values when requested (The Market Rules **[MR 10.1.2]** require information to be retained for a period of seven years from the date of creation, or such longer period as may be required by law).

## 2.2.5 SHORT CIRCUIT CAPABILITY

### Data

Information on short circuit capability is provided to System Management by exception, i.e. where Western Power identify a short circuit limitation that requires active management System Management must be notified in accordance with the PSOP: Power System Security. For these instances, System Management monitor the status of the short circuit limit in the Western Power EMS.

### Access Requirements

System Management requires access to the Western Power EMS for this information, (as specified in the IMS Interface Market Procedure – System Management and Network Operators).

### Process

- Western Power must maintain the necessary calculations and telemetry to monitor the status of the short circuit limit, and ensure that those calculations and telemetry are accurate and reliable.
- Where System Management identifies an issue or change requirement in calculations or telemetry, Western Power must agree on the requirements with System Management and a timeframe for implementation.

## **2.3 TECHNICAL AND COMMUNICATIONS CRITERIA**

Western Power must ensure the systems and tools required to access the data identified in section 2.2 above are available for System Management to use at all times, at both primary and backup control room locations, in accordance with the requirements in the IMS Interface Market Procedure – System Management and Network Operators.

## **2.4 PROCESS FOR SYSTEM MANAGEMENT**

System Management will access the systems and tools identified in section 2.2 above via dedicated computer workstations, allocated by Western Power for this purpose. System Management will notify Western Power via the nominated support process to raise issues and change requests and agree on resolution timeframes, in accordance with the requirements in the IMS Interface Market Procedure – System Management and Network Operators.