POWER SYSTEM ~~OPERATING~~ OPERATION PROCEDURE: MEDIUM TERM PROJECTED ASSESSMENT OF SYSTEM ADEQUACY

PREPARED BY: System Management (WA)

DOCUMENT REF: SO_OP_WA_3806~~[Enter Doc Ref here eg SO_OP_WA_XXXX]~~

VERSION: ~~X~~6.0

EFFECTIVE DATE: [Enter date]

STATUS: DRAFT FOR CONSULTATION

Approved for distribution and use by:

APPROVED BY: ~~[Approver]~~Cameron Parrotte

TITLE: ~~[Approver title]~~EGM, WA

VERSION RELEASE HISTORY

Version	Effective Date	Summary of Changes
1	21 September 2006	Power System Operation Procedure (Market Procedure) for Commissioning and Testing
2	17 July 2009	System Management amended changes to the procedure resulting from Procedure Change Report PPCL0009
3	23 June 2011	System Management amended changes to the procedure resulting from Procedure Change Report PPCL0016
4	Balancing Market Commencement Day	System Management replacement of the procedure resulting from Procedure Change Report PPCL0023
5	1 March 2014	System Management amended changes to the procedure resulting from Procedure Change Proposal PPCL 0025
6.0	dd MMM YYYY	Changes resulting from Procedure Change Proposal AEPC_2018_XX

CONTENTS

1	PROCEDURE OVERVIEW	4
1.1	Relationship with the Wholesale Electricity Market Rules	4
1.2	Interpretation	4
1.3	Purpose and application of this Procedure	4
1.4	Associated documents	4
2	TIMETABLE	5
2.1	Timing requirements	5
3	INFORMATION REQUIREMENTS	5
3.1	General requirements	5
3.2	Allowable use of AEMO data	5
3.3	Submission of Revised Data	5
4	MEDIUM TERM RESERVE MARGIN	7~~5~~
4.1	General	7~~5~~
4.2	Assessment of Medium Term Reserve Margin	7~~6~~

LIST OF TABLES

Table 1	Defined Terms	4
Table 2	Background Procedures	4

1 PROCEDURE OVERVIEW

1.1 Relationship with the Wholesale Electricity Market Rules

1.1.1 This Power System Operation Procedure (PSOP): Medium Term Projected Assessment of System Adequacy (Procedure) has been developed in accordance with clauses 3.16 of the Wholesale Electricity Market Rules (WEM Rules).

1.1.2 References to particular WEM Rules within the Procedure in bold and square brackets **[Clause XX]** are current as at 13 October 2017. These references are included for convenience only and are not part of this Procedure.

1.2 Interpretation

In this Procedure:

(a) terms that are capitalised but not defined in this Procedure have the meaning given in the WEM Rules;

(b) to the extent that this Procedure is contrary or inconsistent with the WEM Rules, the WEM Rules shall prevail to the extent of the inconsistency;

(c) a reference to the WEM Rules or Market Procedures includes any associated forms required or contemplated by the WEM Rules or Market Procedures; and

(d) words expressed in the singular include the plural or vice versa.

1.2.2 In addition, the following defined term has the meaning given.

Table 1 Defined Terms

Term	Definition
Planning Horizon	Three years, starting from the month following the month in which the Medium Term PASA study is performed **[Clause 3.16.2].**
Reserve Margin	The value identified in step 4.1.2~~6.1.2~~.

1.3 Purpose and application of this Procedure

1.3.1 The purpose of this Procedure is to detail the processes to be followed by:

(a) AEMO, Market Participants and Network Operators when conducting a Medium Term PASA study **[Clause 3.16.10]**; and

(b) Market Participants and Network Operators in providing information or clarifications AEMO requests **[Clause 3.16.7 and Clause 3.16.8A]**.

1.4 Associated documents

1.4.1 The following documents in Table 2~~Table 2Table 2~~ (available on the Market Web Site) provide background information to this Procedure:

Table 2 Background Procedures

Reference	Title	Location
SO_OP_WA_3804	PSOP: Facility Outages	Market Web Site
SO_OP_WA_3808	PSOP: Power System Security	Market Web Site
SO_OP_WA_3809	PSOP: Short Term PASA	Market Web Site

2 TIMETABLE

2.1 Timing requirements

2.1.1 The timing requirements that AEMO must follow when completing and reviewing a Medium Term PASA study~~,~~ and AEMO's obligation to publish the relevant information ~~are~~ as defined in the ~~Market~~ WEM Rules **[Clause 3.16.1, Clause 3.16.2 and Clause 3.16.9]**.

3 INFORMATION REQUIREMENTS

3.1 General requirements

3.1.1 AEMO may direct Rule Participants ~~in writing~~ from time to time, to provide the information specified in the ~~Market~~ WEM Rules, in a manner and timeframe specified by AEMO **[Clause 3.16.4]**.

3.1.2 ~~-~~A Rule Participant must ~~respond~~ provide the information~~to this request~~ requested in step 3.1.1 within ~~2 weeks following the date it was issued~~the timeframe specified by AEMO **[Clause 3.16.7]**.

3.1.3 AEMO shall review information provided by Rule Participants, and where necessary, seek additional information or clarifications. AEMO must specify a timeframe for this information to be provided **[Clause 3.16.8]**.

3.1.4 Rule Participants must provide any additional information or clarifications requested by AEMO in step 3.1.3 in the timeframe specified by AEMO **[Clause 3.16.8A]**.

~~3.1.1 Rule Participants must use reasonable endeavours to provide AEMO with a reasonable estimate of the amount of demand side management capacity that can be provided.~~

~~3.1.2 With the exception of demand side management, where information is provided by Network Operators, Market Generators and Market Customers this information must be provided via the System Management Market Information Technology ('SMMITS') web interface system, unless otherwise directed.~~

~~3.1.3 Rule Participants must provide demand side management related information to AEMO via email, unless otherwise directed.~~

3.2 Allowable use of AEMO data

3.2.1 AEMO may utilise its own information in certain circumstances in substitution of information submitted by Rule Participants ~~in accordance with the Market Rules~~ **[Clause 3.16.6]**, and shall document reasons for doing so in the MT PASA report **[Clause 3.16.9(i)]**.

3.2.2 In addition to information provided by a Rule Participant, AEMO may use information that it develops ~~pursuant to the Market Rules~~in accordance with clause 3.16.5 of the WEM Rules ~~**[Clause 3.16.5]**~~, and any other information AEMO considers necessary.

3.3 Submission of Revised Data

~~3.3.1~~ When a Rule Participant becomes aware of circumstances relating to material changes to information provided in accordance with step 3.1.1, ~~in MT PASA detailed~~

in the Market Rules, Rule Participants must submit revised data in a timeframe specified by AEMO **[Clause 3.16.8A]** including:

(a) Any variations to capacity or performance from Standing Data; and

3.3.2 Changes from the details in the outage plans submitted to AEMO..

3.3.3 Additions and omissions in Rule Participant data

AEMO shall review information provided by Rule Participants, and where necessary, seek additional information or clarifications. Rule Participants must provide any additional information or clarifications when requested by AEMO in accordance with the Market Rules **[Clause 3.16.8 and Clause 3.16.8A]**.

3.3.43.3.1 The participant must respond to this request in the earliest time practical.

3.4 Situations where AEMO can use its own information

3.4.1 In addition to information provided by a Rule Participant, AEMO may use information that it develops pursuant to the Market Rules **[Clause 3.16.5]**, and any other information AEMO considers necessary.

4 LOAD FORECAST

4.1 General

AEMO must ensure that the results of a Medium Term PASA study includes, for the Planning Horizon, the peak load forecasts for scenarios stipulated in clause 3.16.9 of the WEM Rules.

AEMO must prepare an aggregate forecast of peak system MW load for the South West Interconnected system (SWIS) and, where necessary each region of the SWIS, for each day of the MT PASA Planning Horizon using AEMO's modelling and forecasting system.

4.1.1 Peak system load is defined as the peak MW demand on the transmission network, which is represented by the sum of the peak consumer demand at the network off-take points plus the distribution and transmission losses occurring within the network at that time.

4.1.2 In preparing the MT PASA forecast, AEMO must consider all information provided by Rule Participants as well as:

(a) Seasonal, weekly and daily patterns of electricity usage monitored by AEMO; and

(b) Other sources of forecast information deemed relevant by AEMO.

4.2 Load forecast

4.2.1 AEMO must ensure that the results of a Medium Term PASA study includes, for the Medium Term PASA Planning Horizon, the peak load forecasts for scenarios stipulated in the Market Rules **[Clause 3.16.9(a)** and **Clause 3.16.9(b)]**.

4.2.2 For each day of the MT PASA planning period, AEMO must forecast:

(a) A mean forecast of system load showing the expected daily peak for each SWIS region and for the SWIS as a whole;

~~(b) A mean plus one standard deviation" forecast of the expected daily peak load for each region and for the SWIS; and~~

~~(c) A mean plus two standard deviation forecast of the expected daily peak load for each region and for the SWIS.~~

~~5 MT PASA PLANNING CRITERIA~~

~~5.1 Generation security~~

~~5.1.1 AEMO must allow for sufficient generation to be available to cater for Forced Outages of Market Generators. The value of unplanned unavailability will be the loss of the largest total generation, remaining after outages have been accounted for, resulting from a single contingency event.~~

~~5.2 Transmission security~~

~~5.2.1 AEMO must adjust total generation to take account of any constraints on the transmission system, after allowing for all credible contingencies specified in the PSOP: Power System Security and maintain operations within the boundaries of the Technical Envelope.~~

~~5.3 Ancillary Services~~

~~5.3.1 AEMO must allow for sufficient Ancillary Services and Ready Reserve generation to be available, taking into account the non-availability of facilities that provide Ancillary Services to meet the criteria specified in the PSOP: Power System Security and maintain operations within the boundaries of the Technical Envelope.~~

~~5.4 Demand management~~

~~5.4.1 AEMO must prepare the MT PASA based on a reasonable forecast of the availability of all Interruptible Loads.~~

~~6~~4 MEDIUM TERM RESERVE MARGIN

~~6.1~~4.1 General

~~6.1.1~~4.1.1 AEMO must assess the ~~Medium Term~~ Reserve Margin for ~~each day of~~ the ~~MT~~ Medium Term PASA Planning Horizon.

4.1.2 The ~~Medium Term~~ Reserve Margin is ~~the~~ excess ~~spare generation~~ capacity ~~available after the forecast peak load has been met, all planned outages and forced outage allowance been taken into account, and all security standards and Ancillary Service requirements have been satisfied~~as detailed in step 4.2.1~~6.2.1~~.

4.1.3 ~~AEMO will take actions to ensure the Reserve Margin is greater than zero.~~AEMO must indicate in its results those periods within the MT PASA Planning Horizon where the Reserve Margin is less than zero.

~~6.2~~4.2 Assessment of Medium Term Reserve Margin

~~6.2.1~~4.2.1 AEMO must estimate the applicable ~~Medium Term~~ Reserve Margin by forecasting:

(a) The capacity of Scheduled Generators, Non-Scheduled Generators ~~the total generation~~and Demand Side Programmes after allowing for ~~Planned, Scheduled and any other~~ outages that AEMO has knowledge of or has been informed of, less

(b) The mean plus two standard deviation system peak load forecast, less

(c) The effects of any generation being constrained due to insufficient transmission capacity remaining in service, less

(d) An allowance for that quantity of generation capacity required to operate as an Ancillary Service, to maintain the frequency standards specified in the PSOP: Power System Security, less

(e) An allowance for Ready Reserve, less

~~(e)~~(f) An allowance for the availability of Non-Scheduled Generation and Demand Side Programmes.~~As quantified within the planning criteria set out in section 5 of this Procedure.~~

~~CONTENT OF MT PASA STUDY RESULTS REPORT~~

~~General~~

~~6.2.2 For the MT PASA Study Results Report that is prepared and published each month AEMO must set out the forecast value of the Medium Term Reserve Margin, the data set out in the Market Rules, and other data relevant to the medium term security assessment of the SWIS.~~

~~6.2.3 Where practical, the information should be presented in graphical form in SMMITS, and cover each period of a three year MT PASA Planning Horizon.~~

~~6.2.4~~

~~6.3 Aggregate forecast information~~

~~6.3.1 AEMO must include in the MT PASA report the information set out in the Market Rules **[Clause 3.16.9]** and the additional information listed in Table 3, for each day of the MT PASA Planning Horizon.~~

~~**Table 3 MT PASA Reporting Parameters**~~

~~Reporting Parameter~~	~~Description~~
~~Reserve Margin~~	~~The quantity defined in Market Rule **[Clause 3.16.9(d)]** and being for each study period, the mean plus two standard deviation peak load forecast, minus the total forecast available generation capacity.~~
~~Peak Load Forecasts~~	~~The peak load estimate for the SWIS for the following scenarios:~~ ~~(a) Mean;~~ ~~(b) Mean plus one standard deviation; and~~ ~~(c) Mean plus two standard deviations.~~
~~Forecast total available Generation Capacity~~	~~The total available Generation Capacity forecast to be available over the planning horizon, after taking account of planned outages.~~

~~Reporting Parameter~~	~~Description~~
~~Forecast total available Demand Management Capacity~~	~~The total available Demand Side Management capacity available at the time of the daily peak.~~
~~Transmission Constrained Capacity~~	~~Any generation capacity output constrained at the time of peak SWIS demand as a consequence of transmission limitations.~~
~~Provision for unplanned loss of Generation Facilities~~	~~The provision for unplanned un-availability of generation facilities (forced outages).~~
~~Ancillary Services~~	~~The quantity of generation capacity diverted to serve as an ancillary service, and not available for energy supply purposes.~~
~~Negative Capacity Planning Margin~~	~~Highlighting of periods when the MT Capacity Planning Margin is negative.~~

~~Explanatory information~~

~~6.3.2 AEMO may include as an attachment to the MT PASA report additional information to assist Rule Participants in understanding and utilising the information in MT PASA.~~

~~6.3.3 AEMO should use reasonable endeavours to provide explanation of changes where there are significant differences in the level of Reserve Margin between consecutive MT PASA reports.~~

~~7 AGGREGATION OF INFORMATION~~

~~7.1.1 In publishing the MT PASA report, AEMO will endeavour to ensure that as much as practical, individual participant's data submitted to AEMO cannot be identified. Information will be published in aggregate form for each class of Market Participant.~~