

~~ELECTRICITY INDUSTRY ACT~~

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

~~WHOLESALE ELECTRICITY MARKET RULES~~

~~Power System Operation Procedure:~~

~~Medium Term Projected Assessment
of System Adequacy (MT PASA)~~

Commencement: This Market Procedure is to have effect from 8:00am (WST) on the same date as the Wholesale Electricity Market Rule, in which this procedure is made in accordance with, commences.

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~~0. MEDIUM TERM PROJECTED ASSESSMENT OF SYSTEM
ADEQUACY (MT PASA)~~

~~MEDIUM TERM PROJECTED
ASSESSMENT OF SYSTEM
ADEQUACY ('MT PASA')
DETAILS PROCEDURES THAT
SYSTEM MANAGEMENT AND
RULE PARTICIPANTS MUST
FOLLOW IN THE PREPARATION
AND PUBLICATION OF THE~~

WEM RULES

POWER SYSTEM OPERATION PROCEDURE: MEDIUM TERM PROJECTED ASSESSMENT OF SYSTEM ADEQUACY (MT PASA)

PREPARED BY: System Management (WA)
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VERSION RELEASE HISTORY

<u>Version</u>	<u>Effective Date</u>	<u>Summary of Changes</u>
<u>1</u>	<u>21 September 2006</u>	<u>Power System Operation Procedure (Market Procedure) for Medium Term Projected Assessment of System Adequacy</u>
<u>2</u>	<u>1 April 2009</u>	<u>System Management amended changes to the procedure resulting from Procedure Change Report PPCL0005</u>
<u>3.0</u>	<u>TBC 2019</u>	<u>Changes resulting from Procedure Change Proposal AEPC 2019_02</u>

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1. PROCEDURE OVERVIEW

1.1. Relationship with the Wholesale Electricity Market Rules

This Power System Operation Procedure (PSOP): Medium Term Projected Assessment of System Adequacy report.

1. RELATIONSHIP WITH MARKET RULES

1.1.1.1. This (Procedure) has been developed in accordance with, and should be read in conjunction with, clause 3.16.10 of the Wholesale Electricity Market (WEM) Rules (Market Rules (WEM Rules)).

1.1.1.2. References to particular MarketWEM Rules within the Procedure in bold and square brackets [MRClause XX] are current as at 1 November 2008. These references are included for convenience only, and are not part of this procedureProcedure.

1. In performing its functions under the Market Rules, System Management may be required to disclose certain information to Market Participants and Network Operators. In selecting the information that may be disclosed, System Management will utilize best endeavours and act in good faith to disclose only the information reasonably required by the application of the Market Rules.

1. SCOPE

The MT PASA Procedure details processes that Rule Participants and System Management must follow in conducting Medium Term PASA studies to assist System Management in setting Ancillary Service Requirements over the year, outage planning for Registered Facilities, assessing the availability of Facilities providing Capacity Credits and other capacity, amongst other functions associated with the management of Power System Security and Power System Reliability in the SWIS. The Medium Term PASA studies are based on a three year planning horizon.

Similarly, Short Term Projected Assessment of System Adequacy studies are derived from a common formulation, but is instead based on a shorter three week planning horizon.

1. ASSOCIATED PROCEDURES AND OPERATION STANDARDS

The following ~~Power System Operation Procedures~~ are associated with this ~~MT PASA~~ procedure:

~~o. Power System Operation Procedure – ST PASA;~~

1.2. Power System Operation Interpretation In this Procedure:

- (a) terms that are capitalised, but not defined, have the meaning given in the WEM Rules;
- (b) to the extent that this Procedure is inconsistent with the WEM Rules, the WEM Rules 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;
- (d) words expressed in the singular include the plural and vice versa; and
- (e) unless the context requires otherwise, references to AEMO include AEMO in its System Management capacity.

1.2.2. In addition, the following defined terms have the meaning given.

Table 1 Defined Terms

<u>Term</u>	<u>Definition</u>
<u>PASA</u>	<u>Projected Assessment of System Adequacy.</u>
<u>PASA Reference Point</u>	<u>A value for each week of the Planning Horizon [Clause 3.17.3].</u>
<u>PASA Reserve Margin</u>	<u>The value identified in step 4.1.2.</u>
<u>PASA Report</u>	<u>The results of the PASA study published as required by WEM Rule 3.16.1 and 3.16.9.</u>
<u>Planning Horizon</u>	<u>A three year period, starting from the month following the month in which the Medium Term PASA study is performed [Clause 3.16.2].</u>

1.16.1.3. Purpose and application of this Procedure – Power System Security; and

1.16.1.3.1. Power System Operation-The purpose of this Procedure – Facility Outages is to document the processes:

~~1. TIMETABLE FOR MT PASA~~

~~(b)(a) The timing requirements that System Management AEMO must follow when completing and reviewing conducting a Medium Term PASA study, the provision of this information to the Independent Market Operator ('IMO'), and the IMO's obligation to publish the relevant information are defined in the Market Rules [MR [Clause 3.16.1, MR 3.16.2]10]; and MR 3.16.9].~~

~~1. System Management will prepare and maintain an internal process detailing how and by which method the MT PASA results are transmitted to the IMO.~~

~~1. INFORMATION REQUIREMENTS~~

~~1.8 for Rule Participants in providing General Requirements~~

~~1. System Management may direct Rule Participants in writing from time to time, to provide the information specified in the Market Rules [MR 3.16.4]. A Rule Participant must respond to this request within 2 weeks following the date it was issued.~~

~~1. Rule Participants must use reasonable endeavours to provide System Management with a reasonable estimate of the amount of demand side management capacity that can be provided.~~

~~1. 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.~~

~~1. Rule Participants must provide demand side management related information to System Management via email, unless otherwise directed.~~

~~1.17 Use of information developed by System Management~~

~~1. System Management may utilise its own information in certain circumstances in substitution of information submitted by Rule Participants in accordance with the Market Rules [MR 3.16.6], and shall document reasons for doing so in the MT PASA report.~~

~~1. In addition to information provided by a Rule Participant, System Management may use information that it develops pursuant to the Market Rules [MR 3.16.5], and any other information System Management considers necessary.~~

~~1.23 Additions and Omissions in Participant Data~~

~~(b)~~ System Management 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 as requested by System Management in accordance with the Market Rules [MR AEMO [Clauses 3.16.87 and MR Clause 3.16.8A].

1.4. Associated documents

1.4.1. The participant must respond documents in Table 2 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 relevant information in the Medium Term PASA Report, are specified in the WEM Rules [Clauses 3.16.1 and 3.16.9].

2.1.2. AEMO must complete and publish a Medium Term PASA study by the 15th day of each month [Clauses 3.16.1 and 3.16.9].

3. INFORMATION REQUIREMENTS

3.1. General requirements

3.1.1. Unless otherwise directed by AEMO, Rule Participants must submit the information to AEMO detailed in clause 3.16.4 of the WEM Rules for each PASA Reference Point in the Planning Horizon.

3.1.2. AEMO must specify the format and manner of submission of the information in step 3.1.1 on the Market Web Site.

3.1.3. Rule Participants must provide the information in step 3.1.1, and any other data they are aware of that might be relevant to a Medium Term PASA Study, by the 5th day of each month [Clauses 3.16.4 and 3.16.7].

3.1.4. AEMO may seek clarification or further details of the information provided in step 3.1.1 [Clause 3.16.8].

3.1.5. A Rule Participant must provide the information requested in step 3.1.4 within 2 Business Days of AEMO's request in the earliest [Clause 3.16.8A].

3.2. Directions

3.2.1. Where AEMO determines the information in step 3.1.1 is not required, AEMO must publish a direction on the Market Web Site.

~~1.17.1.3.2.2.~~ AEMO may revoke directions published in accordance with step 3.2.1 for any Rule Participant or class of Rule Participant at any time ~~practical~~.

3.2.3. Prior to revoking a direction published in accordance with step 3.2.1, AEMO must engage with the affected Rule Participants or class of Rule Participants in relation to the date on which the revocation becomes effective and the method of provision of information by the Rule Participant(s) to AEMO.

3.2.4. To revoke a direction published in accordance with step 3.2.1, AEMO must publish a revocation on the Market Web Site at least 5 Business Days prior to the date from which the revocation becomes effective.

3.3. Allowable use of AEMO data

3.3.1. AEMO may use its own information instead of information submitted by Rule Participants [Clause 3.16.6] and must document reasons for doing so in the Medium Term PASA Report [Clause 3.16.9(i)].

3.3.2. In addition to information provided by a Rule Participant, AEMO may use information that it develops in accordance with clause 3.16.5 of the WEM Rules, and any other information AEMO considers appropriate.

4. PASA RESERVE MARGIN

General

1. MT PASA LOAD FORECAST

4.1.

4.1.1. AEMO must assess the PASA Reserve Margin for each PASA Reference Point in the Short Term PASA Planning Horizon.

4.1.2. The PASA Reserve Margin is the capacity remaining in service, as detailed in step 4.2.1, used to evaluate Outage Plans [Clause 3.18.11] and to approve Planned Outages [Clause 3.19.6].

4.1.3. AEMO must indicate in the PASA Report any PASA Reference Point within the Planning Horizon where the PASA Reserve Margin is less than zero.

4.1.4. AEMO must develop and publish methodologies detailing:

(a) Relevant assumptions related to the aggregation of data for the PASA study;

(b) The peak load forecast, where this must include:

(1) daily, weekly and monthly demand patterns;

(2) seasonal variations;

(3) weather conditions;

(4) significant loads; and

(5) assumptions regarding block loads.

(c) The determination of transmission constraints between potentially constrained regions in accordance with clause 3.16.9(c) of the WEM Rules;

(d) The allowance for the Ancillary Service Requirements;

(e) The allowance for the Ready Reserve Standard in accordance with clause 3.18.11A of the WEM Rules;

(f) The allowance for the unavailability of Scheduled Generation;

(g) The allowance for the unavailability of Non-Scheduled Generation which must consider seasonal variation and fuel type; and

(h) The allowance for the unavailability of Demand Side Programmes.

4.1.5. Prior to publishing the methodologies in step 4.1.4, AEMO must engage with Market Participants and Network Operators in relation to the implementation of the methodologies.

4.2. Assessment of the PASA Reserve Margin

4.2.1. AEMO must estimate the applicable PASA Reserve Margin by forecasting:

(a) The capacity of Scheduled Generators, Non-Scheduled Generators and Demand Side Programmes after allowing for outages that AEMO has knowledge of or has been informed of [Clause 3.18.11(a)], less

(b) The mean plus two standard deviation system peak load forecast [Clause 3.16.9(a)], calculated in accordance with step 4.1.4(b), less

- (c) The effects of any generation being constrained due to insufficient transmission capacity remaining in service [Clauses 3.18.11(b) and 3.16.9(c)] calculated according to step 4.1.4(c), less
- (d) An allowance for the quantity of generation capacity required to maintain the Ancillary Service Requirements [Clause 3.18.11(c)] calculated according to step 4.1.4(d), less
- (e) An allowance for the Ready Reserve Standard [Clause 3.18.11(a)] calculated according to step 4.1.4(e), less:
- (f) An allowance for the unavailability of Scheduled Generation calculated according to step 4.1.4(f), less
- (g) An allowance for the unavailability of Non-Scheduled Generation calculated according to step 4.1.4(g), less
- (h) An allowance for the unavailability of Demand Side Programmes calculated according to step 4.1.4(h).

5. CONTENT OF PASA REPORT

1.20.5.1. General

~~1. System Management must prepare an aggregate forecast of peak system MW load for the SWIS and, where necessary each region of the SWIS, for each day of the MT PASA planning horizon using System Management's modelling and forecasting system.~~

~~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.~~

~~5.1.1. In preparing the MT PASA forecast, System Management must consider all AEMO must include in the PASA Report for each PASA Reference Point in the Planning Horizon:~~

- ~~(a) the information provided by set out in WEM Rule 3.16.9; and~~
- ~~(b) the PASA Reserve Margin as determined under this Procedure.~~

~~1.20.5.1.2. AEMO must use reasonable endeavours to include in the PASA Report sufficient information to allow Rule Participants as well as to identify the assumptions used from each methodology in step 4.1.4.~~

- ~~t. seasonal, weekly and daily patterns of electricity usage monitored by System Management; and~~
- ~~t. other sources of forecast information deemed relevant by System Management.~~

~~1.20~~ **MT** When publishing the PASA Load Forecast

~~System Management Report, 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 [MR 3.16.9(a) and MR 3.16.9(b)].~~

~~1. System Management must forecast for each day of the MT PASA planning period:~~

- ~~t. a “mean” forecast of system load showing the expected daily peak for each SWIS region and for the SWIS as a whole;~~
- ~~t. a “mean plus one standard deviation” forecast of the expected daily peak load for each region and for the SWIS; and~~
- ~~t. a “mean plus two” standard deviation forecast of the expected daily peak load for each region and for the SWIS.~~

~~1. MT PASA PLANNING CRITERIA~~

~~1.20 Generation Security~~

~~System Management must allow for sufficient generation to be available to cater for forced outages of generation facilities. 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.~~

~~1.20 Transmission security~~

~~System Management must adjust total generation to take account of any constraints on the transmission system, after allowing for all credible contingencies regard to the confidentiality principle specified in the PSOP: Power System Security and maintain operations within the boundaries clause 10.2.3(k) of the Technical Envelope.~~

~~1.20—Ancillary Services~~

~~System Management 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.~~

~~1.20—Demand Management~~

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

~~1.—MEDIUM TERM PASA RESERVE MARGIN~~

~~1.20—General~~

~~1.—System Management must assess the “Medium Term Reserve Margin” for each day of the MT PASA planning horizon.~~

~~1.—The Medium Term Reserve Margin is the 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.~~

~~1.20—Assessment of Reserve Margin~~

~~System Management must estimate the applicable Reserve Margin by forecasting:~~

- ~~a.—the capacity of the total Generation after allowing for Planned, Scheduled and any other outages that System Management has knowledge of or has been informed of, less~~
- ~~a.—the mean plus two standard deviation system load forecast, less~~
- ~~a.—the effects of any Generation being constrained due to insufficient transmission capacity remaining in service, less~~
- ~~a.—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~~
- ~~a.—as quantified within the planning criteria set out in section 8 of this procedure.~~

~~1.—CONTENT OF MEDIUM TERM PASA STUDY RESULTS REPORT~~

~~1.20—General~~

~~0.—The MT PASA Study Results Report (the MT PASA report) prepared and published each month by System Management must set out the forecast value~~

~~of the Medium Term Reserve Margin, the data set out in the MarketWEM Rules,
and other data relevant to the medium term security assessment of the SWIS.~~

~~0. Where practical, the which requires information should to be presented aggregated
or provided in graphical a form in SMMITS and cover each period of a three year
MT PASA planning horizon.~~

~~4.20.54.5.1.3. Aggregate forecast which does not disclose confidential information on MT PASA.~~

~~System Management must include in the MT PASA report the information set out in the Market Rules [MR 3.16.9] and the additional information listed in table 1 below for each day of the MT PASA planning horizon.~~

	MT PASA REPORTING PARAMETERS	DESCRIPTION
4	MT Reserve Margin	The quantity defined in Market Rule [MR 3.16.9(d)] and being for each study period, the mean plus 2 standard deviation peak load forecast, minus the total forecast available generation capacity.
2.	Peak Load Forecasts	The peak load estimate for the SWIS for the following scenarios: i. mean; ii. mean plus one standard deviation; and iii mean plus two standard deviations.
3.	Forecast total available Generation Capacity	The total available Generation Capacity forecast to be available over the planning horizon, after taking account of planned outages.
4.	Forecast total available Demand Side Management Capacity	The total available Demand Side Management capacity available at the time of the daily peak.
5.	Transmission Constrained Capacity	Any generation capacity output constrained at the time of peak SWIS demand as a consequence of transmission limitations.
6.	Provision for unplanned loss of Generation Facilities	The provision for unplanned un-availability of generation facilities (forced outages).
7.	Ancillary Services	The quantity of generation capacity diverted to serve as an ancillary service, and not available for energy supply purposes.
8.	Negative Capacity Planning Margin	Highlighting of periods when the MT Capacity Planning Margin is negative.

8.1 Explanatory Information to be included with MT PASA

- ~~1. System Management may include as an attachment to the MT PASA report additional information to assist Participants in understanding and utilising the information in MT PASA.~~
- ~~2. System Management 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.~~

~~2.11. AGGREGATION OF INFORMATION~~

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