

ELECTRICITY INDUSTRY ACT 2004

ELECTRICITY INDUSTRY (WHOLESALE ELECTRICITY
MARKET) REGULATIONS 2004

WHOLESALE ELECTRICITY MARKET RULES

Market Procedure for: Reserve Capacity Testing

Version 2

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

Version history

<u>21 September 2006</u>	<u>Market Procedure for Reserve Capacity Testing as at Market Start</u>
<u>XX XXX 2009</u>	<u>Proposed changes - Procedure Change Proposal PC 2009 10</u>

1. Reserve Capacity Testing Procedure

Each year, the Independent Market Operator (IMO) is required to verify and test the operation of Facilities holding Capacity Credits to ensure that the Reserve Capacity Obligations of Market Participants are met. There are two methods by which the IMO may verify the operation of a Facility. In particular the,

- first method is by observation of the Facility using metered schedules; and
- second method of verification is by conducting a test on the Facility **[MR4.25.2]**.

The IMO must verify the operation of each Generation Facility at least twice a year, and each Curtailable Load once a year, within specified time periods, but may also conduct Facility verifications on an as required basis **[MR4.25.1]**.

Following tests, the IMO may reduce the number of Capacity Credits assigned to a Facility and/or may reduce the Reserve Capacity Obligations associated with that Facility. **[MR4.25.4]**

In the event that the IMO reduces the number of Capacity Credits associated with a Facility, the Market Participant may, subject to certain provisions, ask to have the Facility re-tested and have the Capacity Credits reassigned in the case that the Facility performs to the relevant level. Decisions by the IMO in regard to verification by observation, and to tests, are not reviewable decisions under the Market Rules.

1.1. Relationship with the Market Rules

- (a) This procedure has been developed in accordance with, and should be read in conjunction with sections 4.25 of the Wholesale Electricity Market (WEM) Rules (Market Rules).
- (b) References to particular Market Rules within the procedure in bold and square brackets **[MR XX]** are current as at 28 October 2009. These references are included for convenience only and are not part of this procedure.
- (c) This procedure is made in accordance with clause 4.25.14 of the Market Rules.

1.2. Interpretation

In this procedure, unless the contrary intention is expressed:

- (a) terms used in this procedure have the same meaning as those given in the Market Rules (made pursuant to the Electricity Industry (Wholesale Electricity Market) Regulations 2004);
- (b) to the extent that this procedure is contrary or inconsistent with the Market Rules, the Market Rules shall prevail to the extent of the inconsistency;
- (c) a reference to the Market Rules or Market Procedures includes any associated forms required or contemplated by the Market Rules or Market Procedures; and
- (d) words expressed in the singular include the plural or vice versa.

1.3. Purpose

The purpose of this procedure is to describe the steps that:

- (a) the IMO must take in fulfilling the Reserve Capacity Testing functions under the Market Rules; and
- (b) Market Participants must follow in fulfilling the Reserve Capacity Testing functions under the Market Rules.

1.4. Application

This procedure applies to:

- (a) The IMO in conducting Reserve Capacity verifications and tests;
- (b) Market Participants in complying with Reserve Capacity tests; and
- (c) System Management in conducting Reserve Capacity tests.

1.5. Glossary and Defined Terms used in this Procedure

- 1 **Relevant Reserve Capacity Test Level** means, in the case of a generation system, the required Reserve Capacity level, in MW, net of any parasitic or embedded loads and determined by the IMO for the purposes of conducting Reserve Capacity Tests under this Procedure and Section 4.25. of the Wholesale Electricity Market Rules. This level is determined using temperature dependence curves submitted as part of the Certification of Reserve capacity for a generation Facility.

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

Relevant Reserve Capacity Test Level means:

- i. in the case of a generation system, the required Reserve Capacity level, in MW, net of any parasitic or embedded loads and determined by the IMO for the purposes of conducting Reserve Capacity Tests under this Procedure and section 4.25 of the Wholesale Electricity Market Rules. This level is determined using temperature dependence curves submitted under MR 4.10.1 (e)(i) as part of the Certification of Reserve Capacity for a generation Facility; or
- ii. in the case of a Curtailable Load, the reduction required to meet its Maximum Capacity Obligation Quantity.

- 2 **Request to Conduct Temperature Calibration** is the request made by the IMO to conduct a calibration of the Temperature Measurement Systems associated with a Facility.
- 3 **Reserve Capacity Test** means a test conducted in accordance with Clause(s) 4.25 of the Wholesale Electricity Market Rules.
- 4 **Temperature Measurement Consultant** means a consultant or organisation appointed by the IMO to conduct calibrations of the Temperature Measurement Systems.
- 5 **Temperature Measurement Systems** means the sensors, systems and data used to measure ambient temperature at a Facility where the information is provided to System Management through the SCADA system.
- 6 **Temperature Dependence Curve:** refers to the information provided by a Market Participant under clause 4.10.1(e)(i) of the Market Rules. If a Change in Capacity Credits occurs over a Reserve Capacity Year, the Temperature Dependence Curve will be:
- (a) scaled to reflect the change in Capacity Credits at 41°C; or
 - (b) changed to reflect a new temperature dependence curve supplied by the Market Participant which has been determined by an independent engineering firm.
- 7 **Summer Reserve Capacity Testing Cycle:** refers to 1 October to 31 March;
- 8 **Winter Reserve Capacity Testing Cycle:** refers to 1 April to 30 September;

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

- 9 Verification Test:** The Test that is required under clause 4.25A of the Market Rules to be undertaken by a Curtailable Load:
- a) within 20 Business Days of registration; or
 - b) between 1 October and 30 November of each Reserve Capacity Year

1.6. Steps that must be undertaken by the IMO and the Market Participant to calibrate Temperature Measurement Systems used in association with the SCADA system.

- 1 The IMO may require the Temperature Measurement Systems associated with any Facility subject to the testing requirements under Chapter 4 of the Market Rules be calibrated by an IMO appointed Temperature Measurement Consultant.
- 2 The IMO may appoint a Temperature Measurement Consultant each year to calibrate the temperature measurement systems associated with each Generation Facility that nominates to use the SCADA Temperature Method.
- 3 If the IMO requires that the Temperature Measurement Consultant calibrate the Facility's Temperature Measurement System, the IMO must contact relevant Market Participant in writing with a Request to Conduct Temperature Calibration.
- 4 The Request to Conduct Temperature Calibration must include the following information:
 - a) Information detailing the time and location of the proposed calibration; and
 - b) Details of the Temperature Measurement Consultant that will be conducting the calibration.
- 5 Within 2 Business Days of receiving the Request to Conduct Temperature Calibration, the Market Participant must contact the IMO to either:
 - a) accept the proposed time; or
 - b) propose another time, which must be within 10 business days of the original request date.
- 6 The Market Participant must not refuse the Request to Conduct Temperature Calibration as proposed by the IMO unless the Market Participant believes the calibration may endanger person(s) or equipment at the time proposed.

- 7 The IMO must present the results of the temperature calibration to the Market Participant within 5 working days of receiving the results from the Temperature Measurement Consultant.
- 8 The Market Participant will be required to pay all costs associated with calibration of the Temperature Measurement Systems.

1.7. Procedure Steps that must be undertaken by the IMO

- 1 Each year the IMO must take steps to verify that each Facility providing Capacity Credits can,
 - a) In the case of a generation system during the period the Reserve Capacity Obligations apply, operate at its maximum Reserve Capacity Obligation Quantity at least once during each of the 6 month periods listed in procedure step 1.7.2 below. **[MR 4.25.1(a)]**

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

- b) in the case of a Curtailable Load, during the period the Reserve Capacity Obligations apply, operate at its maximum Reserve Capacity Obligation Quantity at least once during the period between 1 October to 31 March each Capacity Year. **[MR 4.25.1(c)]**
- 2 The verification referred to in procedure step 1.7.1(a) must be conducted at least once during each of the following periods **[MR 4.25.1(a)]**:
 - a) 1 October to 31 March (**The Summer Reserve Capacity Testing Cycle**); and
 - b) 1 April to 30 September (**The Winter Reserve Capacity Testing Cycle**).
- 3 The verifications conducted in accordance with procedure steps 1.7.1(a) must be conducted on each type of fuel available to that Facility as notified in the information provided in respect of Certification of Reserve Capacity required under clause 4.10.1(e)(v) of the Market Rules. **[MR 4.25.1]**
- 4 The verification referred to in procedure steps 1.7.1 through 1.7.2 can be achieved:
 - a) by the IMO observing the Facility operating at the required level for at least one interval during the six month period as part of normal operations in Metered Schedules specific to the Facility; or
 - b) by the IMO:
 - (i) in the case of a generation system, requiring System Management in accordance with clause 4.25.7 to test the Facility's ability to operate at the required level for not less than 60 minutes and the Facility successfully passing that test; and

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

- (ii) in the case of Interruptible Loads, Curtailable Loads and Dispatchable Loads, requiring System Management, in accordance with clause 4.25.7, to test the Facility's ability to reduce demand to the required level for not less than one Trading Interval and the Facility successfully passing that test **[MR4.25.2]**.

- 5 For the purposes of Reserve Capacity Testing, the term Relevant Reserve Capacity Test Level will be used to describe the required level referred to in procedure step 1.7.4 above. The Relevant Reserve Capacity Test Level will be determined by the IMO and may be different for different Trading Intervals. For example, the Relevant Reserve Capacity Test Level may vary with ambient temperature at the Facility.
 - a) The Facility will be deemed to have passed a Reserve Capacity Test if the output is above the output specified in the Temperature Dependence Curve for the ambient temperature measures at the site;
 - b) The Facility will be deemed to have passed a Reserve Capacity Test if the output of the Facility is above the output required at the highest point of the temperature dependence curve where the ambient temperature measured at the site exceeds the largest value supplied in the temperature dependence curve.
 - c) The Facility will be deemed to have failed a Reserve Capacity Test if the ambient temperature is below the lower bound of the temperature dependence curves submitted as part of the Certification of Reserve Capacity for the Facility; and
 - d) The Facility will be deemed to have failed a Reserve Capacity Test if the output is below the output specified in the Temperature Dependence Curve for the ambient temperature measures at the site
- 6 A Market Participant may update the Temperature Dependence Curve associated with a Facility at any time before they have been tested by observation in respect of a Reserve Capacity Testing Cycle by submitting a new Temperature Dependence Curve determined by an independent engineering firm.
- 7 The IMO must not subject a Facility to a test of Reserve Capacity if that Facility is **[MR 4.25.3A]**:
 - a) undergoing a Scheduled Outage or Opportunistic Maintenance which has been approved in accordance with clause 3.19 of the Market Rules, or
 - b) if the Facility has advised System Management of a Forced Outage or Consequential Outage in accordance with clause 3.21.4 of the Market Rules; or
 - c) if the Facility is undergoing Commissioning Test approved in accordance with clause 3.21A of the Market Rules.

1.8. Procedures Steps to be undertaken by the IMO to Verify by Observation

- 1 In accordance with procedure step 1.7.6, the IMO may use information gathered through the Wholesale Electricity Market System (WEMS) to observe a generation Facility operating at the required level as part of normal operations.
- 2 To verify by observation, the IMO must use temperature dependence information obtained submitted by the Market Participant under clause 4.10.1(e) (i)of the Market Rules.
- 3 The IMO must refer to the temperature measurement source specified by the Market Participant under clause 4.10.1 (e)(iv) when determining the ambient temperature at the site of the generation Facility. Where no temperature source is specified the Market Participant must notify the IMO of a Temperature source before the start of the Reserve Capacity Year.
- 4 To verify that a generation Facility has operated at its Relevant Reserve Capacity Test Level the IMO must use the information contained in the WEMS, together with the temperature information, to determine the operating output and ambient temperature relationship of the Facility.
- 5 The IMO must assess the results obtained through procedure steps 1.8.1 through 1.8.3 and determine if the generation Facility achieved its Relevant Reserve Capacity Test Level through the temperature range observed.
- 6 The IMO may be required to adjust the results to the equivalent values at a temperature of 41°C.
- 7 Following verification by observation the IMO may request a Reserve Capacity Test if:
 - a) The IMO determines that the Facility failed to operate at its Relevant Reserve Capacity Test Level for part or all of the by observation verification process; or
 - b) The IMO makes the determination that the results of the test were inconclusive.

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

- 8 The IMO must between 1 October and 31 March request a Reserve Capacity Test of each Curtailable Load **[MR4.25.1]**.
- 9 If the IMO requests a Reserve Capacity Test in accordance with procedure step 1.8.7 the IMO must provide the Market Participant with a summary of results obtained procedure step 1.8.4.
- 10 The IMO must compile and maintain a list of Facilities whose operation have been undergone the verification by observation process and must keep records of outcome of the verification process.

1.9. Procedure Steps to be Undertaken by the IMO to Conduct a Reserve Capacity Test

- 1 Reserve Capacity Tests may be conducted by the IMO if:
 - a) The IMO determines the most appropriate course of action is to test the Facility in accordance with clause 4.25.2(b) of the Market Rules;
 - b) The IMO determines that the operation of the Facility failed the Verification by Observation process detailed at procedure step 1.8;
 - c) The IMO believes, or has been made aware of any potentially limiting factors which may impact, or have impacted on the ability of the Facility to meet any or all of its Reserve Capacity Obligations;
 - d) The IMO requires that a Reserve Capacity Test be conducted in respect of any Network Control Service Contract, Ancillary Service Contract as required under the Market Rules;
 - e) The IMO is required to conduct a re-test in accordance with clause 4.25.4 of the Market Rules; or
 - f) A Market Participant requests a re-test in accordance with clause 4.25.5 of the Market Rules.
- 2 In the case that the IMO requires a Reserve Capacity Test to be conducted on a Facility, the IMO must contact System Management requesting that the test be conducted.
- 3 In requesting System Management to conduct a test, the IMO must provide System Management with the following information:
 - a) the Facility to be tested;
 - b) the fuel to be used by the Facility during the test where applicable; and
 - c) the time interval during which the test is proposed to be conducted, where this interval must begin not less than two Business Days after the time the IMO issues the request to System Management **[MR4.25.7]**.
- 4 All information regarding the request for the test must be treated as System Management Confidential.
- 5 If the IMO requests System Management to conduct a test in accordance with this procedure, System Management must conduct the test in accordance with the requirements as outlined in the Market Rules.
- 6 When the IMO receives the results of the test from System Management, the IMO must, within 10 Business Days, determine whether the Facility has operated at the Relevant Reserve Capacity Test Level(s) and make a determination that the Facility has either Passed or Failed the Reserve Capacity Test.

- 7 The IMO must record the results of the test including:
 - a) Information regarding the conduct of the Reserve Capacity Test
 - b) Information regarding the results of the Reserve Capacity Test;
 - c) The determination of the outcome of the Reserve Capacity Test (Passed or Failed)
 - d) Reasons as to why the IMO believes the Facility has Passed or Failed the Reserve Capacity Test
 - e) Information regarding any action taken in accordance with Procedure Steps 1.9.9 and 1.9.11 and 1.9.13 as applicable.
- 8 In the event that the IMO determines the Facility has passed the Reserve Capacity Test, the IMO must inform the Market Participant that the Facility has passed, and provide the Market Participant with a copy of the results produced. This must be completed within 10 Business Days of the date the IMO receives notification of the test from System Management..
- 9 In the event that the IMO determines the Facility has Failed the Reserve Capacity Test, the IMO must
 - a) inform the Market Participant that the Facility has Failed the Reserve Capacity Test;
 - b) provide the Market Participant with a copy of the results produced;
 - c) require System Management re-test the Facility in accordance with Procedure Step 1.9.10 below.
- 10 In the event that a re-test is required in accordance with procedure step 1.9.9(c), System Management must re-test that Facility **[MR 4.25.4]**:
 - a) not earlier than 14 days after the first test; and
 - b) not later than 28 days after the first test.
- 11 The IMO must record the results of the second Reserve Capacity Test and determine if the Facility Passed or Failed the second Reserve Capacity Test in accordance with procedure steps 1.9.6 and 1.9.7 and notify the Market Participant in accordance with procedure steps 1.9.8 and 1.9.9(a) and 1.9.9(b) as appropriate.
- 12 If a Curtailable Load fails a Reserve Capacity test and is activated prior to a second Reserve Capacity test being undertaken then the activation shall be deemed to be the second Reserve Capacity test.
- 13 If a Facility fails the second Reserve Capacity Test (the re-test) outlined in procedure steps 1.9.9 and 1.9.10 then, in accordance with clause 4.25.4, the from the next Trading Day IMO must:
 - a) reduce the number of Capacity Credits held by the relevant Market Participant for that Facility to reflect the maximum capabilities achieved in either test performed (after adjusting these results to the equivalent

values at a temperature of 41°C and allowing for the capability provided by operation on different types of fuels if the test related to a generation system; or

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

b) if the test related to a Dispatchable Load, Curtailable Load or Interruptible Load, reduce the number of Capacity Credits held by the relevant Market Participant for that Facility to the maximum level of reduction achieved in the two tests **[MR4.25.4]**;

- 14 In the case that the Capacity Credits are reduced in accordance with procedure step 1.9.12 a Market Participant may apply to the IMO to have the Facility re-tested (the third test) subject to the following conditions:
- a) The Facility may only be re-tested once in accordance with this procedure step 1.9.13 during the remaining Reserve Capacity Cycle.
 - b) The IMO must request System Management to conduct the re-test within seven days from receiving the request from the Market Participant. **[MR 4.25.5]**
 - c) System Management must undertake the re-test in accordance with these procedures, and in accordance with the Market Rules.
 - d) The IMO must set the number of Capacity Credits held by the relevant Market Participant for that Facility to reflect the maximum capabilities achieved in the re-test (after adjusting these results to the equivalent values at a temperature of 41°C and allowing for the capability provided by operation on different types of fuel), but not to exceed the number of Capacity Credits originally confirmed by the IMO for that Facility under Clause 4.20 of the Market Rules in respect of the relevant Reserve Capacity Cycle. **[MR 4.25.6]**
- 15 If a third Reserve Capacity Test is conducted in accordance with procedure step 1.9.13, the IMO must determine the outcome, record the results and notify the Market Participant in accordance with procedure steps 1.9.6, 1.9.7, 1.9.8, and 1.9.9(a) and 1.9.9(b), as appropriate.
- 16 Where a Facility is tested in accordance with this clause 4.25, the Dispatch Schedule for that Facility during the period of the test is to reflect the energy scheduled in the test. **[MR 4.25.10]**

1.10. Procedure Steps to be undertaken by the Market Participant

- 1 If the Market Participant is contacted by the IMO with results of a Reserve Capacity test that indicate that the IMO determined the Facility to have failed the test, the Market Participant can expect a second test be conducted between 14 and 28 days from the first test **[MR4.25.4]**.

- 2 If the Market Participant is contacted by the IMO with the results of the second Reserve Capacity Test, which indicate that the IMO determined the facility to have failed the Reserve Capacity Test, the Market Participant may also expect notification that the Capacity Credits in respect of that Facility have been reduced.
- 3 In the event that the Market Participant is notified by the IMO that the Capacity Credits in respect of the Facility have been reduced (either in all or in part) as a result of the Reserve Capacity Testing process, then the Market Participant may request that the IMO conduct one further Reserve Capacity Test (the third Test).
- 4 The Market Participant may only request the third Reserve Capacity Test once during the remaining Reserve Capacity Cycle.
- 5 The third Reserve Capacity Test, performed at the request of the Market Participant in accordance with procedure step 1.10.3 and 1.10.4 should be performed by System Management within seven days of the IMO receiving the request, subject to the provisions of this Procedure and subject to the provisions of the Power System Operation Procedure.

1.11. Procedure steps to be undertaken by the IMO to publish the results of Reserve Capacity Tests

- 1 Every three months the IMO must publish details of **[MR 4.25.11]**:
 - a) Facilities tested during the preceding three months; and
 - b) whether any of those tests were delayed by System Management and the reasons for the delay as given by System Management.
- 2 The details published in accordance with procedure step 1.11.2 must be published on the IMO Website (www.imowa.com.au) or in the WEMS as appropriate.

1.12. Procedure Steps to be undertaken by the IMO when setting the level of Certified Reserve Capacity and Reserve Capacity Obligation Quantities in respect of Facilities that have been tested under this Market Procedure

Each year, Market Participants are required to re-certify the capacity of their Facilities (apply for Certification of Reserve Capacity). Under clause 4.11 of the Market Rules and the Market Procedure: Certification of Reserve Capacity, the IMO is required to set the level of Certified Reserve Capacity assigned to a Facility. This decision is not a reviewable decision under the Market Rules.

- 1 Each year, the IMO must use the information, data and results obtained from Reserve Capacity Tests and Verification by Observation when considering the level of Certified Reserve Capacity assigned to a Facility.
- 2 The IMO may reduce, either in part or in total, the level of Certified Reserve Capacity in respect of an application for Certification of Reserve Capacity if the IMO believes the results obtained through the Reserve Capacity Tests in conjunction with the level of Certified Reserve Capacity being applied for: **[MR4.25.12]**:
 - a) constitutes a *Potentially Limiting Factor* in accordance with the Reserve Capacity Procedure: Certification of Reserve Capacity; and/or
 - b) if the IMO believes the level of Certified Reserve Capacity being applied for exceeds the IMO's reasonable expectation that the amount of capacity likely to be available in accordance with clause 4.11.1(a) of the Market Rules.
- 3 The IMO may use the information, data and results obtained from Reserve Capacity Tests and Verification by Observation when setting the Reserve Capacity Obligation Quantities in respect of that Facility in subsequent Reserve Capacity Cycles. **[MR 4.25.12]**.

The following rule will commence on 1 October 2010, for additional information please refer to RC_2008_20:

1.13. Procedure Steps to be undertaken by the IMO for Verification of a Curtailable Load

- 1 A Rule Participant must undertake a Verification Test of each Curtailable Load registered by the Rule Participant:
 - a) within 20 Business Days of registration of the Curtailable Load, or
 - b) between 1 October and 30 November of each Reserve Capacity Year **[MR4.25A.1]**.
- 2 To undertake a Verification Test the Rule Participant will activate the Curtailable Load and advise the IMO of the Trading Intervals during which the Verification Test was conducted **[MR4.25A.2]**.
- 3 The Verification Test is failed if a reduction in demand equal to at least 10% of the Capacity Credits is not identified from the Curtailable Load meter data **[MR4.25A.3]**.
- 4 Where a Verification Test is failed the IMO must reduce the Capacity Credits assigned to the Curtailable Load to zero **[MR4.25A.4]**.
- 5 Where the Verification Test is failed the Rule Participant may request a second Verification Test be undertaken. If the Curtailable Load fails this second Verification Test then the Capacity Credits assigned are to remain at zero until the end of the relevant Reserve Capacity Year **[MR4.25A.5]**.