

ELECTRICITY INDUSTRY ACT 2004

ELECTRICITY INDUSTRY (WHOLESALE ELECTRICITY
MARKET) REGULATIONS 2004

WHOLESALE ELECTRICITY MARKET RULES

Reserve Capacity Procedure: 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>
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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:

- (a) first method is by observing the Facility can operate at the required level at least once as part of normal market operations using Metered Schedules; and
- (b) second method is by System Management conducting a test on:
 - i. in the case of a generation system, the Facilities ability to operate at the required level for not less than 60 minutes; or
 - ii. in the case of a Interruptible Load, Curtailable Load or Dispatchable Load, the process and systems to activate a reduction in demand without requiring demand to actually reduce **[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]**.

If the Facility fails the second test the IMO must reduce the number of Capacity Credits assigned to a Facility to:

- (a) in the case of a generation system, reflect the maximum capabilities achieved in either test performed (after an adjustment to the 41 °C temperature equivalent values; or
- (b) in the case of a Dispatchable Load, Curtailable Load or Interruptible Load, to zero **[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 clause 2.17.1 of 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 21 April 2010. 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 follow in performing the Reserve Capacity Testing functions specified under the Market Rules; and
- (b) Market Participants and System Management 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. Associated Market Procedures

1 The following IMO Market Procedures are associated with this procedure:

- (a) Declaration of Bilateral Trades and the Reserve Capacity Auction;
- (b) Capacity Credit Allocation;
- (c) Reserve Capacity Security;
- (d) Reserve Capacity Performance Monitoring; and
- (e) Notices and Communications.

2. The following System Management Power System Operation Procedures are associated with this procedure:
 - (a) Facility Outages.

1.6. Glossary and Defined Terms used in this procedure

- 1 **Invalid Test** is a test the results of which will be disregarded but which for the purposes of settlement will be considered to be a Reserve Capacity Test.
- 2 **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 Market Rules.
- 3 **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.
- 4 **Reserve Capacity Test** means a test conducted in accordance with clause(s) 4.25 of the Market Rules.
- 5 **Temperature Measurement Consultant** means a consultant or organisation appointed by the IMO to conduct calibrations of the Temperature Measurement Systems.
- 6 **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.
- 7 **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.
- 8 **Summer Reserve Capacity Testing Cycle:** refers to 1 October to 31 March.
- 9 **Winter Reserve Capacity Testing Cycle:** refers to 1 April to 30 September.

1.7. Steps for the IMO and Market Participants to calibrate Temperature Measurement Systems used in association with SCADA

- 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 the 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) subject to step 1.7.6, 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.

1.8. Steps for the IMO to verify facility outputs

- 1 Each year the IMO must take steps to verify that each Facility providing Capacity Credits can 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 1.8.2 below **[MR 4.25.1(a)]**.
- 2 The verification referred to in step 1.8.1 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 step 1.8.1 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 steps 1.8.1 through 1.8.2 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
 - (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 process and systems to activate a reduction in demand without requiring demand to actually reduce, and the Facility successfully passing that test.
- 5 Relevant Reserve Capacity Test Level will be set:
- (a) in the case of a generation system, to the output required to meet the Reserve Capacity Obligation Quantity at 41°C using the Temperature Dependence Curve and the temperature measurement method specified in Standing Data.
- 6 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 step 1.8.5 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. The Facility will be deemed to have:
- a) 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) passed a Reserve Capacity Test if the output of the Facility is at or 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) 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) 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.
- 7 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.

- 8 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.
- 9 If a Facility fails a Reserve Capacity Test when the temperature measured by the temperature method specified in the relevant facilities standing data is outside of the range 0 -45 °C, then the IMO will consider that test to be invalid.
- 10 If a test is deemed invalid under step 1.8.9 then the IMO must request System Management re-conduct the test as soon as is practicable, with consideration to the timelines in clause 4.25.1, 4.25.4, 4.25.5 and 4.25.6 of the Market Rules.
- 11 If a test is deemed to be invalid under step 1.8.9 and another test has already been completed in accordance with 1.10.12 or 1.10.16, then the IMO must:
- a) use the results of the latest test in place of the invalid test, if the invalid test is still required; or
 - b) ignore the results of the latest test, if the invalid test is no longer required.
- 12 If a Facility cannot be tested due to restrictions imposed by the timelines in clauses 4.25.1, 4.25.4, 4.25.5 and 4.25.6 of the Market Rules, the IMO will:
- a) in the case of the first Reserve Capacity Test not being able to be completed within the relevant Reserve Capacity Testing cycle, conduct the tests as soon as practicable in the next Reserve Capacity Testing cycle;
 - b) in the case of the second Reserve Capacity Test not being able to be completed within 14-28 days after the first test, request System Management to re-conduct the first test, in accordance with steps 1.9 and 1.10; or
 - c) in the case of the third Reserve Capacity Test not being able to be completed within 7 days, liaise with the Market Participant to determine a period during which the third Reserve Capacity Test can be conducted.

1.9. Steps for the IMO to Verify by Observation

- 1 In accordance with step 1.8.1, 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 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 steps 1.9.1 through 1.9.3 and determine if the generation Facility achieved its Relevant Reserve Capacity Test Level through the temperature range observed.
- 6 Following verification by observation the IMO may request a Reserve Capacity Test if the IMO is unable to determine in accordance with this Procedure that the Facility was able to operate at its Relevant Reserve Capacity Test Level for part or all of the by observation verification process.
- 7 If the IMO requests a Reserve Capacity Test in accordance with step 1.9.6 the IMO must provide the Market Participant with a summary of results obtained in step 1.9.4.
- 8 The IMO must compile and maintain a list of Facilities whose operation have undergone the verification by observation process and must keep records of outcome of the verification process.

1.10. Steps for the IMO and System Management to Conduct a Reserve Capacity Test

- 1 Reserve Capacity Tests may be conducted if:
 - a) The IMO determines the most appropriate course of action is to request System Management 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 has not passed the Verification by Observation process detailed at step 1.9;
 - c) The IMO requires that a Reserve Capacity Test be conducted by System Management in respect of any Network Control Service Contract, Ancillary Service Contract as required under the Market Rules;
 - d) The IMO requires System Management to conduct a re-test in accordance with clause 4.25.4 of the Market Rules; or
 - e) 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 by System Management as Confidential.
- 5 If the IMO requests System Management to conduct a Reserve Capacity Test, System Management must conduct the test in accordance with the requirements as outlined in clause 4.25.9 of the Market Rules.
- 6 System Management must notify the IMO within one Business Day as to whether it is possible to conduct a test requested under step 1.10.5 with out endangering Power System Security and Power System Reliability. **[MR4.25.8]**
- 7 System Management must provide the IMO with:
- (a) justification as to why the test cannot be conducted; and
 - (b) an alternative time interval during which the test will be conducted, where this must be the earliest time that the test can be performed without endangering Power System Security and Power System Reliability. **[MR4.25.8]**
- 8 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 in accordance with clause 4.25.3A.
- 9 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); and
 - d) Information regarding any action taken in accordance with steps 1.10.11, 1.10.13 and 1.10.15, as applicable.
- 10 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 results from System Management.
- 11 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 step 1.10.12 below.
- 12 In the event that a re-test is required in accordance with step 1.10.11(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.
- 13 If a Facility fails the second Reserve Capacity Test (the re-test) outlined in steps 1.10.11 and 1.10.12 then, from the next Trading Day the IMO must:
- a) if the test related to a generation system, reduce the number of Capacity Credits held by the relevant Market Participant for that Facility to reflect the maximum capability achieved in either of the tests 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
 - 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 zero. **[MR4.25.4]**
- 14 In the case that the Capacity Credits are reduced in accordance with step 1.10.13 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 step 1.10.12 during the remaining Reserve Capacity Cycle **[MR 4.25.5]**.
 - 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 this procedure and 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 Reserve Capacity re-test is conducted in accordance with step 1.10.12, the IMO must determine the outcome (step 1.10.8), record the results (step 1.10.9) and notify the Market Participant in accordance with steps 1.10.11(a) and 1.10.11(b), as appropriate.
- 16 Where a Facility is tested, 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]**.
- 17 The IMO will deem a Reserve Capacity Test invalid if:

- a) a Facility fails a Reserve Capacity Test when the temperature measured by the temperature method specified in the standing data for the Facility is outside of the range 0 -45 °C; or
 - b) the IMO considers that an error was made in the determination of the results of any Reserve Capacity Test
- 18 If a test is deemed to be invalid under step 1.10.17 then the IMO must request System Management to conduct the test again as soon as is practicable, taking into account the timelines in clauses 4.25.1, 4.25.4, 4.25.5 and 4.25.6 of the Market Rules.
- 19 If a test is deemed to be invalid under step 1.10.17 and another test has already been completed in accordance with steps 1.10.12 or 1.10.16 then the IMO must:
- a) use the results of the latest test in place of the invalid test results; or
 - b) if the invalid test is no longer required, ignore the results of the latest test.
- 20 If a Facility cannot be tested due to restrictions imposed by the timelines in clauses 4.25.1, 4.25.4, 4.25.5 and 4.25.6 of the Market Rules, the IMO will:
- a) in the case of the first Reserve Capacity Test not being able to be completed within the relevant Reserve Capacity Testing cycle, conduct the tests as soon as practicable in the next Reserve Capacity Testing cycle;
 - b) in the case of the second Reserve Capacity Test not being able to be completed within 14-28 days after the first test, request System Management to re-conduct the first test, in accordance with steps 1.9 and 1.10; or
 - c) in the case of the third Reserve Capacity Test not being able to be completed within 7 days, liaise with the Market Participant to determine a period during which the third Reserve Capacity Test can be repeated.

1.11. Steps for 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 a Facility to have failed a 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 a Facility to have failed a 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 a Facility has been reduced as a result of the Reserve Capacity Testing process, then the Market Participant may request that the IMO conduct a re-test **[MR 4.25.5]**.
- 4 The Market Participant may only request a re-test once during the remaining Reserve Capacity Cycle. **[MR4.25.5]**

- 5 The re-test is performed at the request of the Market Participant in accordance with step 1.111.3 and 1.11.4 should be performed by System Management within seven days of the IMO receiving the request, subject to the provisions of this Procedure
- 6 If the Market Participant considers an error has been made by the IMO in the calculation of the Relevant Reserve Capacity test level of a Facility in either a test or by observation, it can request the IMO to review the results of the test. If the IMO determines that an error has been made then the test will be deemed to be an Invalid Test.

1.12. Steps for 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 step 1.12.1 must be published on the IMO Website (www.imowa.com.au) or in the WEMS as appropriate.

1.13. Steps for the IMO when setting the level of Certified Reserve Capacity and Reserve Capacity Obligation Quantities

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 for facilities that have been tested in accordance with this Market Procedure. 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, 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
 - 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]**.

