

MARKET PROCEDURE: DATA AND IT INTERFACE REQUIREMENTS

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VERSION RELEASE HISTORY

| Version | Effective Date | Summary of Changes |
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| 1.0 | 21 September 2006 | Market Procedure for Data and IT Interface Requirements |
| 2.0 | 1 July 2011 | Amendments to Market Procedure resulting from PC_2011_02 |
| 3.0 | 13 August 2012 | Amendments to align procedure with the new Balancing Market requirements |
| 4.0 | 30 November 2015 | Changes resulting from the transfer of functions from the IMO to AEMO |
| <u>5.0</u> | <u>TBC18 April 2017</u> | <u>Changes resulting from the transfer of System Management functions to AEMO</u> |

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CHAPTER 1. PROCEDURE OVERVIEW

1.1. Relationship with the Market Rules

- 1.1.1. This Data and IT Interface Requirements Market Procedure (Procedure) should be read in conjunction with clause 2.36.5 of the Wholesale Electricity Market (WEM) Rules (Market Rules).
- 1.1.2. Reference to particular Market Rules within the Procedure in bold and square brackets **[MR XX]** are current as of Balancing Market Commencement Day. These references are included for convenience only, and are not part of this Procedure.

1.2. Purpose

- 1.2.1. The Procedure specifies the necessary technical details and standards, software and hardware specifications, and security standards required for Market Participants to operate in the WEM.

1.3. Application

- 1.3.1. This Procedure applies to AEMO and Market Participants.

1.4. Associated Market Procedures and User Guides

- 1.4.1. The following AEMO Market Procedures are associated with this Procedure:
 - (a) Notices and Communications;
 - (b) Participant Registration and De-Registration;
 - (c) Facility Registration, De-Registration and Transfer;
 - ~~(d) Facility Registration, De-Registration and Transfer;~~
 - ~~(e)~~(d) Settlement; and
 - ~~(f)~~(e) Meter Data Submissions.
- 1.4.2. The following User Guides are available on AEMO website (www.aemo.com.au) to assist Market Participant in setting up a user interface with WEMS and navigating the system:
 - (a) User Interface Setup;
 - (b) WEMS Registration Technical Guide~~Market Participant Registration;~~

- (c) WEMS Market Participant Interface (MPI) User Guide;
- ~~(d) Settlement:~~
 - ~~(i) Volume 1 – POMAX Settlement;~~
 - ~~(ii) Volume 2 – Weblink;~~
 - ~~(iii) Volume 3 – Dispute Resolution.~~

1.5. Interpretation

1.5.1. In this Procedure the conventions specified in clauses 1.3- 1.5 of the Market Rules apply.

CHAPTER 2. SYSTEM OVERVIEW

2.1.1. Generally the Wholesale Electricity Market Systems (WEMS) provides the following functions in support of the administration of the WEM:

- (a) Market Participant and Facility registration;
- (b) to receive information on bilateral contracts, bids, resource plans;
- (c) to clear the STEM;
- (d) to facilitate the Balancing Market;
- (e) to facilitate the Load Following Ancillary Services (LFAS) Market;
- (f) to interface with ~~System Management~~ Network Operators;
- (g) to interface with Metering Systems;
- (h) Settlements and commercial reconciliations;
- (i) to publish reports and information as required;
- (j) to facilitate the Reserve Capacity Mechanism.

CHAPTER 3. WEMS COMPONENT

The following summarises the main components of the WEMS, including the relevant interfaces for Market Participants.

3.1. Market Infrastructure

3.1.1. Market Infrastructure comprises three main user interfaces, Market Participant Registration, Market Participant Interface and Market Operator Interface. In addition, the system contains modules that perform requisite data collection, calculations and report management.

- (a) Market Participant Registration (MPR): It is through MPR that registration of Market Participants and facilities occurs. Further information on the process of:
 - (i) registering as a Market Participant can be found in the separate Participant Registration and De-Registration Procedure; and
 - (ii) registering Facilities can be found in the separate Facility Registration, De-Registration and Transfer Procedure.
- (b) Market Participant Interface (MPI): The MPI provides the online communication mechanism between Market Participants and AEMO. It provides web forms for data submission and review, and also supports the upload and download of data in files. The interface includes the following webpages:
 - (i) Market Trading, web forms for Market Participants submit, query and cancel data;

- (ii) Market Reports, for Market Participants to review market information;
 - (iii) File Exchange, for Market Participants to upload and download files; and
 - (iv) Message Displays, displays current market information.
- (c) Market Operator Interface (MOI): Through MOI, AEMO's operators and staff can monitor and administer market functions.
- (d) Additional Modules: Other Market Infrastructure Modules include:
- (i) Markets module, supports data submission and preliminary validation functions;
 - (ii) Publishing module, generates standard reports pertaining to market infrastructure components;
 - (iii) Prudential Risk Management, collects and computes prudential risk indicators;
 - (iv) Data storage; and
 - (v) Event Manager.

3.2. Market Application

- 3.2.1. The Market Applications function provides support to the energy and Reserve Capacity Mechanism, with computational modules including:
- (a) Reserve Capacity Auction and Trade;
 - (b) Individual Reserve Capacity Requirements (IRCR). For further information on IRCR see the separate Initial IRCR Market Procedure;
 - (c) STEM;
 - (d) Balancing Market;
 - (e) LFAS Market.

3.3. Settlements

- 3.3.1. The settlement function supports the financial settlement of trading through the WEM, including:
- (a) Importing the information to be used in performing settlement obligations; and
 - (b) Calculating the determinants outlined in the Market Rules.
- 3.3.2. Settlement involves three main processes:
- (a) STEM transactions, settled on a weekly basis;
 - (b) Non-STEM transactions, settled on a monthly basis;
 - (c) Adjustment to settlement, at least once every three months.
- 3.3.3. For more information on AEMO's settlement process please refer to the Settlement Market Procedure.

3.4. Metering:

- 3.4.1. The metering function obtains metering data from Metering Data Agents and provides settlement ready data for the settlement function.
- 3.4.2. For more information on the submission of metering data please refer to the Meter Data Submission Market Procedure.

3.5. Accounting and Billing:

- 3.5.1. The accounting and billing function aggregates payments and charges and generates invoices for Market Participants. It also tracks the status of invoices and payments.
- 3.5.2. Market Participants are able to view and download invoices using the WebLink web-interface application.
- 3.5.3. For more information on billing and invoice processes please refer to the Settlement Market Procedure.

CHAPTER 4. MARKET PARTICIPANT REQUIREMENTS

The WEMS is used by Market Participants to provide, collect and review information. The WEMS is the primary communication tool for several functions. It is essential that adequate computer systems are used to support the relevant WEMS functions.

4.1. Redundancy

- 4.1.1. Market Participants must ensure that they have suitable IT Infrastructure to support their obligations under the Market Rules and their participation in the Wholesale Electricity Market. Market Participants should have one or more primary workstations and one or more secondary workstations configured for access to the WEMS.
- 4.1.2. Market Participant's primary and secondary workstations should not use the same IT infrastructure, this includes and is not limited to:
 - (a) Uninterruptible power supply;
 - (b) Patch panel;
 - (c) Network switch;
 - (d) Network router;
 - (e) Proxy server;
 - (f) DNS server;
 - (g) Internet connection; or
 - (h) Internet service provider.

4.2. Hardware Requirements

- 4.2.1. The following workstation requirements are recommended:
 - (a) Intel Pentium 4 3 GHz Processor or equivalent;
 - (b) 1 GB Memory;
 - (c) 160 GB hard disk;
 - (d) Graphics card set to a resolution of 1280 x 1024 or better;
 - (e) Reliable high-speed (broad speed 2Mb/s+) connection to the Internet, with HTTP access to TCP port 80 and HTTPS access to TCP ports 443 and 563 on the Market Web Site;
 - (f) 19"+ LCD TFT Monitor with a native resolution of 1280 x 1024 or better; and
 - (g) Keyboard and wheel mouse.

4.2.2. It is recommended that a high resolution colour print be used that supports multiple fonts.

4.3. Software Requirements

4.3.1. To access the MPI, a Market Participant must use either:

- (a) Microsoft Internet Explorer 8 with "Silverlight", or
- (b) Microsoft Internet Explorer 9.

4.3.2. A Market Participant must ensure that it has appropriate anti-virus software, with regular definition updates that are always running on its operating systems when accessing the WEMS.

4.4. Network Requirements

4.4.1. AEMO must provide Market Participants with access to the WEMS via the Internet. To facilitate this, Market Participants will require an internet connection to allow for browser access to the WEMS.

4.4.2. Market Participants must use an appropriate high speed (broadband speed, 512 Kb/s or more) Internet connection as a minimum to ensure adequate service for the WEMS.

4.4.3. Market Participants are required to ensure the security and availability of their own network connections.

4.4.4. Market Participants must implement an appropriate firewall technology to ensure the security of Market Participants networks.

4.5. Time Synchronisation

4.5.1. Market Participants workstations must be synchronised with a Network Time Server.

4.5.2. AEMO recommends that Market Participants use the Microsoft network time server, due to ease of configuration with Windows XP.

4.6. WEMS Security Policy

4.6.1. AEMO must implement appropriate access controls to protect unauthorised access and disclosure of confidential information transmitted through electronic communications.

4.6.2. Digital Certificates and RSA Token access are the current mechanisms used to meet security access requirements to the WEMS. AEMO may replace these mechanisms with suitable technology that provides appropriate security measures.

4.6.3. While Digital Certificates and RSA Tokens are in use:

- (a) Market Participants must use the distributed Digital Certificate and/or RSA tokens to access WEMS; and
- (b) Market Participants must protect their Digital Certificate and RSA Tokens from inappropriate or unauthorised use.

4.7. Market Connectivity

- 4.7.1. The primary mechanism for the conveyance of data between Market Participant and the WEMS is XML. XML is an industry standard text based protocol that can be manipulated, viewed and processed by participants using a simple text editor application or any other suitable application of choice.
- 4.7.2. Where a Market Participant does not wish to manipulate or process XML, they may use the Graphical User Interfaces provided in the WEMS for the submission and retrieval of all data.