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# Guide to Information Systems

**Version 4.01**

**April 2021**

Provides information about AEMO's participant-facing market systems



# Important Notice

## PURPOSE

This Guide to Information Systems (Guide), prepared by AEMO, provides guidance for AEMO's participant facing IT systems under the National Energy Rules (Rules).

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# Introduction

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## Purpose

This guide provides guidance for Registered Participants about AEMO's participant electricity market systems. It is relevant to IT decision making during participant onboarding and provides an understanding of the IT systems requiring set up. Because each participant has its own scope of business and operation, this document only outlines the facilities available. Please seek advice for your company's specific business needs.

Registering participants, please read this guide before and while completing your registration application to help you understand your requirements.

## Audience

This document is relevant to:

- Interested parties considering registration with AEMO.
- Interested parties requiring an overview of AEMO's participant IT systems.
- New registrants applying for registration with AEMO.

- New registrants and existing participants setting up interfaces to AEMO's IT systems.
- Participants requiring an understanding of the applications AEMO provides.
- Implementers and maintainers of interfaces to AEMO's systems.

## How to use this guide

- This guide is written in plain language for easy reading.
- Where there is a discrepancy between the Energy Rules, and information or a term in this document, the Energy Rules takes precedence.
- Where there is a discrepancy between the Appropriate procedures, and information or a term in this document, the Appropriate procedures take precedence.
- **Text in this format** indicates there is a resource on [AEMO's website](#).
- [Text in this format](#) indicates a link to a related resource.
- Actions to complete in the Markets Portal interface are **bold and dark grey**.
- Rules terms used throughout this guide are capitalised and defined in the [Energy rules](#).
- Glossary terms are capitalised and have the meanings listed against them in [Industry Terminology](#) on AEMO's website.
- References to time are Australian Eastern Standard Time (AEST).

# About AEMO's Market Systems

AEMO has numerous systems with multiple interfaces to provide for the needs of all participants. Participants are obliged to ensure their systems are kept in line with AEMO's systems.

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## Communications

AEMO's support hub send emails, including:

- **MarketNet password expiry reminder:** An automated password expiry reminder is sent when a MarketNet account password has five or less days to expire. This is directed by default to AEMOexpiry@your\_domain.com.au.



- Release schedules: Sent immediately when a change notice is issued to advise of any changes in AEMO's IT systems. This is directed by default to AEMOHelpDeskComms@your\_domain.com.au. You can also find release schedules and technical specifications on AEMO's website > IT Change and Release Management.
- Technical specifications: Detailed information about the changes affecting participants' IT systems for each six-monthly release.
- AEMO's support hub bulletin: Advises participant of updates, outages, and participant user group meetings. It contains a copy of any issued change notice or technical specification. This is directed by default to AEMOHelpDeskComms@your\_domain.com.au.

Your IT staff can set up and maintain appropriate distribution for the generic email addresses to suit your business needs. If you need to discontinue or change the email address of any of the above communications, advise [AEMO's support hub](#) (note individual email addresses are not accepted).

AEMO systems can also send emails containing reports; some manually initiated by AEMO staff and some automatically generated by specific applications. For example, the energy market systems can notify nominated email addresses of certain settlements-related information, managed by the relevant web application from input by participant ID users.

# Data network connection (MarketNet)

This topic discusses AEMO's private data network connection, MarketNet. Most access to AEMO's market systems requires a data network connection to MarketNet. This is the first step in implementing your access to AEMO's market systems.

Figure 1 understanding MarketNet



## Data network connection decisions

Participants must decide on the physical connection and preferred management approach for their connection to MarketNet. Considerations for each participant include:

- Availability of connection into MarketNet.
- Cost of participant equipment and communications bandwidth (check with supplier).

- Reliability of end-to-end connection (as determined by your business needs).
- Disaster recovery plans for participant connections, equipment, and site(s)—as determined by your business needs. AEMO recommends geographic or technology diversification, or both.

Participants provide details of requirements for network connectivity to MarketNet in the **IT Systems** section of the registration application.

For provision and maintenance of MarketNet, participants must provide details for a suitably qualified IT Technical Network Contact in their registration application.

## Data network connection options

AEMO provides two types of connection options:

- A permanent continuous connection.
- A variable connection, intermittently connected for short durations. For security reasons, the connection is dropped if there is no activity for 30 minutes.

[Table 1](#) explains the choices required for your registration application.

Table 1 MarketNet data network connection options

Connection	Type	Details
Dedicated Link	Permanent	<p>A dedicated connection takes more time to set up. Telstra advise setting up a dedicated connection takes at least 20 business days.</p> <p>A dedicated connection, such as Frame Relay or BDSL, is from the participant router, via the telecommunication provider's Bearer, to AEMO's IPWAN. The participant, with AEMO's assistance, is responsible for arranging the subscription link with their chosen telecommunication provider—including the access costs.</p> <p>Please contact AEMO's Support Hub to find out if AEMO supports your preferred technology for a dedicated link.</p>
VPN LAN to LAN	Permanent	<p>VPN LAN to LAN is quick to set up. VPN connections are set up directly between the participant and AEMO.</p> <p>The connection is from the participant firewall, using the internet, to AEMO's VPN Concentrator. Internet VPN is by use of a firewall, router, or VPN device, which has access to the internet.</p> <p>This connection allows multiple servers at the participant site to establish connections with AEMO servers securely using the internet. This connection type provides a similar service to dedicated links. An IPsec-compliant VPN device is required at the participant site to enable this type of connection.</p>

Connection	Type	Details
VPN variable	Variable	<p>Internet Variable VPN connection from a workstation, using the internet, to VPN Concentrator. Internet Workstation VPN requires installation of a Cisco VPN client software package. For security reasons, the connection drops if there is no activity for 30 minutes.</p> <p>The workstation connection operates like a dial-up MarketNet connection. It allows individual workstations in a participant company to establish connections with AEMO servers.</p> <p>The AEMO preferred method to enable this type of connection is to install Cisco VPN client software, available for Windows and Unix-like systems. AEMO supplies this software, pre-configured for your use, in conjunction with at least one RSA SecurID token.</p>

## Registered participant entitlements

Because it is a resource shared by all participants, the Bandwidth Pricing Model is the method employed by AEMO to fairly manage the usage of MarketNet.

Participant entitlements are based on registration status, and participant fees paid in any combination of the electricity or gas markets.

## Connection entitlements

Each company ABN registered with AEMO is entitled to two permanent connections, and two variable VPN connections (two tokens).

AEMO understands that some participants have legacy arrangements that do not fit these entitlements, therefore considers variations on a case-by-case basis.

Costs associated with the implementation of data communications between the participant company and AEMO are the responsibility of the participant company. Participants are responsible for arranging and maintaining their equipment and software, and any telecommunications infrastructure needed to connect to AEMO's points of presence (POPs).

For more details about fees, see Budget and Fees on [AEMO's website](#).

## Bandwidth entitlements

Each company ABN registered with AEMO is allocated bandwidth according to their total fees paid per year.

[Table 2](#) provides an **indication** of the bandwidth entitlements available for participants.

Table 2 participant bandwidth entitlements

Total fees per year	Entitlement
\$0-\$500,000	2 x 1024k permanent and 2 x 1024k variable connections
\$500,001-\$1,000,000	2 x 1024k permanent and 2 x 1024k variable connections
over \$1,000,000	2 x 4096k permanent and 2 x 1024k variable connections

**AEMO initially provides 1024 kbps bandwidth. This has proven sufficient for new Participant IDs commencing in the market.**

For example, a company with a registered ABN in:

- The National Electricity Market, paying total fees of \$400,000 per year, is entitled to 2 x 1024k permanent and 2 x 1024k variable connections.
- Any gas market combination of, the Declared Wholesale Gas Market, a Retail Gas Market, and the Short Term Trading Market, paying total fees of \$800,000 per year, is entitled to 2 x 512k permanent and 2 x 1024k variable connections.
- The National Electricity Market and any Gas Market combination, paying total fees of \$1,100,000 per year is entitled to 2 x 4096k permanent and 2 x 1024k variable connections.

Participants can apply for additional connections or bandwidth in excess of the entitlements, see [Unregistered participant access requests on the next page](#).

# Unregistered participant access requests

AEMO's Support Hub handles requests for network connections and public data access from unregistered companies, or third parties providing services to registered participants. Third parties who require a MarketNet connection must pay for their network connection and arrange access credentials with the participants they represent.

AEMO considers requests on a case-by-case basis, and, if applicable, provides an access application form and a data access agreement to complete and return.

There is an annual prepayment for this service, payable in advance, see Table 9. Please provide relevant company details, and outline your reason for requiring access in an email. AEMO considers requests on a case-by-case basis, and, if applicable, provides an access application form and a data access agreement to complete and return.

AEMO's website has public data available at no cost, see [Market Data](#).



Figure 2 Annual prepayment options

Option	Bandwidth (kpbs)	Fee per year + GST
Up to 2 permanent connections (plus up to 2 variable VPN connections)	1024	\$17,000
	4096	\$51,000
1 VPN variable connection	1024	\$5,000 (\$300 for each subsequent connection - includes 1 token)
1 VPN variable connection for public researchers to access confidential intermittent generation data only (e.g. wind and solar)	128 (for up to 100 GB per year)	\$1,000 (includes 1 token)

## Additional connection and bandwidth

To provide the connection points with increased capacity, AEMO charges additional service fees on a cost recovery basis.

Table 3 additional connection and bandwidth options

Options	Bandwidth (kbps)	Fee per year + GST
Extra bandwidth on existing connection	1024 kbps	\$17,000
Extra bandwidth on existing connection	4096 kbps	\$51,000
Additional connection	1024 kbps	\$17,000

Options	Bandwidth (kbps)	Fee per year + GST
Additional connection	4096 kbps	\$51,000
Additional variable connection VPN	1024 kbps	\$300 for each variable connection (token)

## Making changes to your MarketNet connection

To make changes to your MarketNet connection, obtain the [MarketNet Connection Request Form](#) from [AEMO's website](#), complete and email to [AEMO's Support Hub](#).

After receiving your request, AEMO's technical network officer contacts your technical network contact to finalise specific details of the connection (such as IP addressing details).

Your request must comply with the [Registered participant entitlements on page 8](#).

## MarketNet access control

The participant ID interface to the MarketNet access control is a web-based application. For more details, [Changing your Participant ID password on page 20](#).

For information regarding acceptable passwords, see [Passwords on page 17](#).

# Market data

AEMO collects and collates a range of data relating to the National Electricity Market (NEM). One of AEMO's goals is to promote greater information transparency and assist the market and general public in understanding how the NEM has evolved and operates. You can find market data on AEMO's website > [Market Data](#).

## Current data

In the same folder as the participant ID's file server folders, AEMO updates the \MarketData\Baseline folder daily with current baseline data conforming to the Data Model.

The baseline data files are in a format suitable for loading to relevant database tables by copying each file into the input folder for the Participant Data Replication Loader.

Use the baseline data for initial population of a new instance of a database conforming to the Data Model or for re-population of existing tables.

For help, see [Data Interchange Online Help > Guide to Participant Data Replication Loader](#).

Baseline data excludes historical data, see [Historical data on the next page](#).

## Historical data

Older files are moved to the Reports Archive and kept for 13 months. The data conforms to the Data Model.

To obtain historical data, see [Data Model > Archive](#)

The archive data is not intended for the historical recovery of public data for a database receiving a data feed using Data Interchange. It is a source for obtaining historical data for analysis of runs and includes:

- Non-confidential historical data for the Data Model in .csv format. Some files are in a format incompatible with the pdrLoader configured for data interchange.
- Other Historical Data - .csv Files. Non-MMS Data Model non-confidential historical data in .csv Files.

## User Rights Management (URM)

The user rights management system (URM) controls access for Participant Users to most applications.

The company's PA is responsible for the management of their participant user's access to AEMO's systems with the exception of the PA right that is set up during registration.

The primary IT security contact (as nominated on the participant ID's registration form) is the initial PA who can set up another Participant User with the same access rights (that is, another PA), unlock accounts, create new temporary passwords, and make participant users inactive.

AEMO's pre-production and production systems are independently controlled, so you can have different credentials for each, even though they may initially be the same.

User interaction with AEMO's systems requires secure (HTTPS) access to AEMO's private network, MarketNet with a login and appropriate access rights, see [Data network connection \(MarketNet\) on page 5](#).

## Set participant function

A company having multiple ABNs may have several participant IDs. The set participant function in AEMO's Markets Portals allows participant users to have a single user ID to perform work for multiple participant IDs without logging out and logging back in again.

AEMO has made the use of single user ID logins available on the understanding that each participant is responsible for the management of the accesses granted to each user. Security is every user's concern and each participant administrator has a role in establishing and maintaining effective control of access to sensitive information.

For help, see [Setting a Participant](#).

# Passwords

## Unlocking your account

To unlock an account, you must call AEMO's support hub and provide your company's "secure code". Your company's PA can tell you the secure code if you do not know it.

Whenever a Participant User account is unlocked or password changed by the Support Hub, you must send an email confirming the request and stating the request was not a security breach. If you suspect a security breach you must report the matter to the Support Hub immediately so they can take action to secure your account.

## Password recommendations

The strength of passwords is dependent on:

- The length of the password (the longer the better).
- The types of characters included in the password (better to include punctuation, special characters, characters, and numbers).
- The combination of characters used (it is easy to guess days of the week, names of people, any real word).

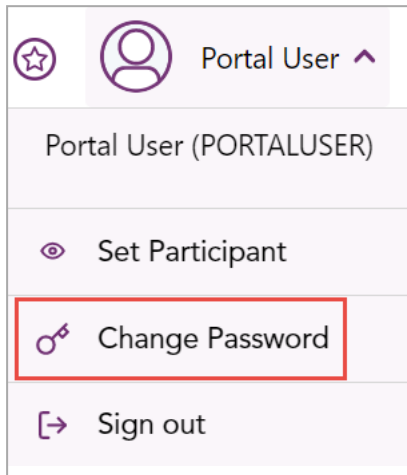
The downside of using a complex password is the potential to forget it. Do not write it down as this clearly reduces security, but you could use a particular pattern of keys, using the shift key or holding the ALT key down select a number every second or third character, and include a special character.

Select a word that is easy for you to remember, then insert numbers and special characters at regular intervals (say every second or third character). As an example a password may be Se1pt2em3be4r. (started off as the word September with a capital at the start, a full stop at the end, and the numbers inserted every two letters). Do not use this example as your password.

## Changing your password

Your user ID and password are the same for MSATS and EMMS, so changing your password in one system, changes it in the other. Participants are responsible for managing their own passwords.

1. In the Markets Portal, click the drop-down arrow next to your name and then click **Change Password**.



The Change Password dialog displays.

The screenshot shows a 'Change Password' dialog box. At the top center is the AEMO logo. Below the logo is the title 'Change Password' in bold. There are three input fields, each with a label above it: 'Current password' with the placeholder 'Old Password', 'New password' with the placeholder 'New Password', and 'Confirm password' with the placeholder 'Confirm New Password'. At the bottom, there are two buttons: a purple 'Change Password' button and a 'Cancel' button.



2. In the **Current password** field, type the password you logged in with.
3. In the **New password** field, type your new password.  
  
For help with the password format, see .
4. In the **Confirm password** field, type your new password again.
5. Click **Change Password**. Your password has now been changed.
6. Use your new password next time you log in to the EMMS or MSATS web portals.

You have six attempts to login before you get locked out.

If you forget your password or you are locked out, contact your company's PA. If you don't know who that is, contact AEMO's support hub.

# Changing your Participant ID password

## Rules for changing your password

The format of the passwords and the rules for changing your password for both the Participant ID and Participant User passwords are as follows:

## Prerequisites

- You must disconnect all mapped drives to the participant server.
- If you connect to MarketNet using an automatic FTP process, you must ensure that you stop the process (well in advance of each expiry date), change the password, modify the process to use the new password then restart the process.

To change your Participant ID password on the participant server, use one of the following password changers:

1. Web-based password changer, [Web-based password changer below](#).
2. Password changer application, [Participant File Server Password Changer on page 24](#).

## Web-based password changer

This section describes the steps for using the web-based password changer only. For help using the Participant File Server Password Changer, see [Participant File Server Password Changer on page 24](#).

## Prerequisites

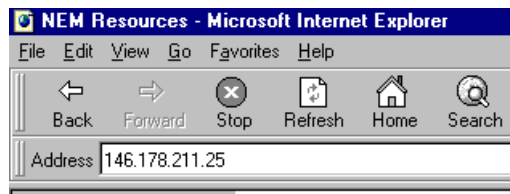
To use the web-based password changer:

- You need a PC with access to see [Data network connection \(MarketNet\) on page 5](#).
- Ensure you have access to the Participant File Server > 146.178.211.25 through your firewall.
- Remove any proxy servers and direct dial-out to your internet service provider (ISP).
- Stop all automatic FTP processes connecting to the Participant File Server for the Participant ID password.

## Instructions

To change your participant ID password using the web-based password changer:

1. On a MarketNet-connected machine, open your web browser.
2. In the **Address** field enter **146.178.211.25**:



3. On your keyboard, press **Enter**. When the web browser connects, the **Enter Network Password** dialog box appears.



4. Enter your FTP access **User Name** and press the **Tab** key.
5. Enter your **Password** and press the **Tab** key.
6. Enter **nemnet** for the **Domain** and then click **OK**.

7. The "MarketNet Password Change Website" displays a form, you must enter all the information in this form. It should look similar to this:



## MarketNet (formerly NEMNet) Password Change Website

NEMNET Username:  (Username only is required)

Old Password:

New Password:

Confirm New Password:

8. In the **NEMNET Username** box, enter your user name and press the **TAB** key Note: Do NOT enter "nemnet" before the username. This is your FTP access user name. It is the same user name you entered in the Enter Network Password dialog box
9. In the **Old Password** box, type your old password and press the TAB key.
10. In the **New Password** box, type the new password and press the TAB key.
11. In the **Confirm New Password** box, type in the new password again.
12. Click **Go** to submit the new password. **Important:** Wait three minutes for the change to take effect on the AEMO server before proceeding.

13. Log off MarketNet and then log back in using the new password.
14. To restart other processes (if any), on all computers connecting to the shared folders on the Participant File Server, modify your automatic FTP processes to use the new password and then restart the processes.

You must log off and log on to set the new password correctly.

## Participant File Server Password Changer

This section describes the steps for using the EMMS File Server Password Changer application. For help using the web-based password changer, see [Web-based password changer on page 21](#).

### Prerequisites

To use the EMMS File Server Password Changer:

- You need an installation of [Participant Data Replication Batch](#) with a standard properties configuration file.
- The latest version of the [File Server Password Changer](#) available from the [Participant File Server > Releases > File Server Password Changer](#). The application requires Oracle JRE 6 or above. You can download it from [Java SE Downloads](#).
- Decompress the .ZIP file to a working folder to create a .JAR file.
- Stop all automatic FTP processes connecting to the Participant File Server for the Participant ID password.

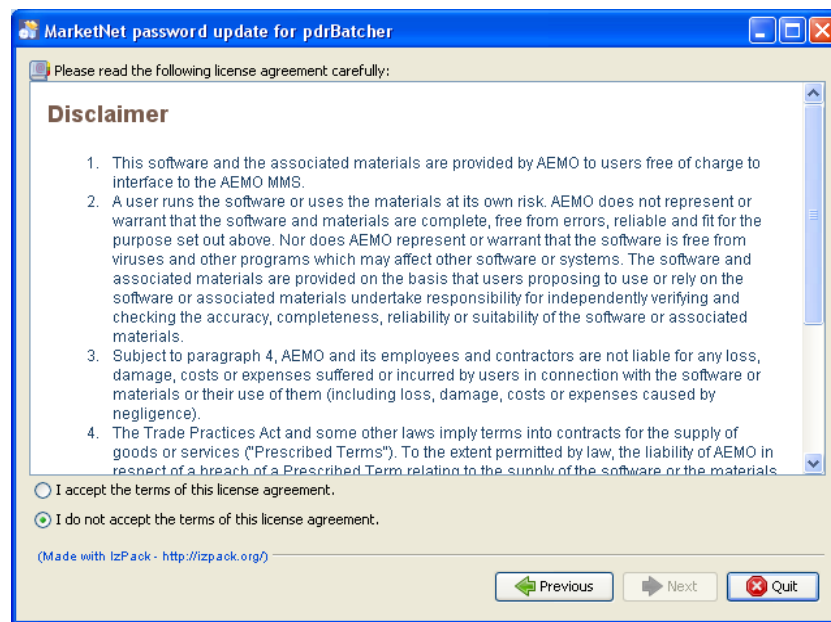
## Instructions

To change your Participant ID password:

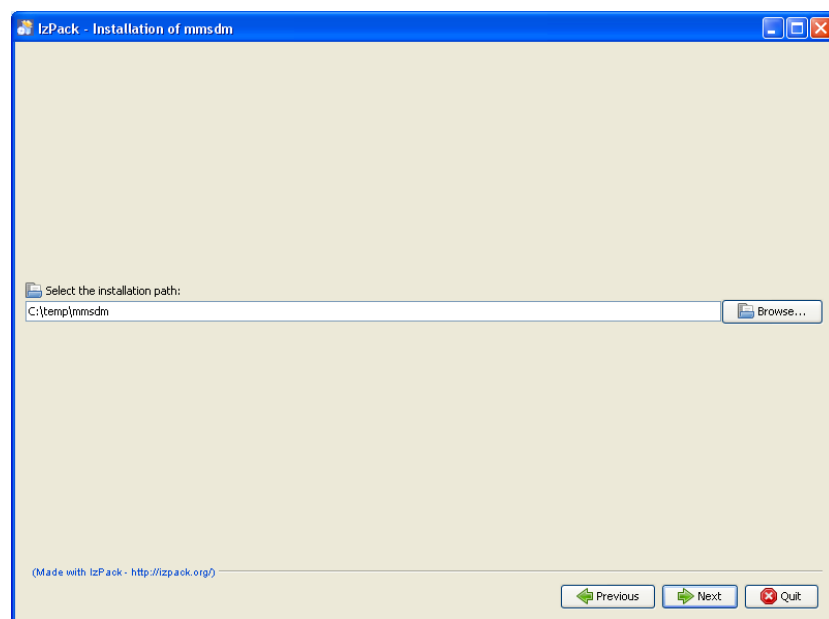
1. Double-click the installation file, FileServerPasswordChanger\_<version>.jar to start the installer. This is the .JAR file decompressed in [Prerequisites on the previous page](#).



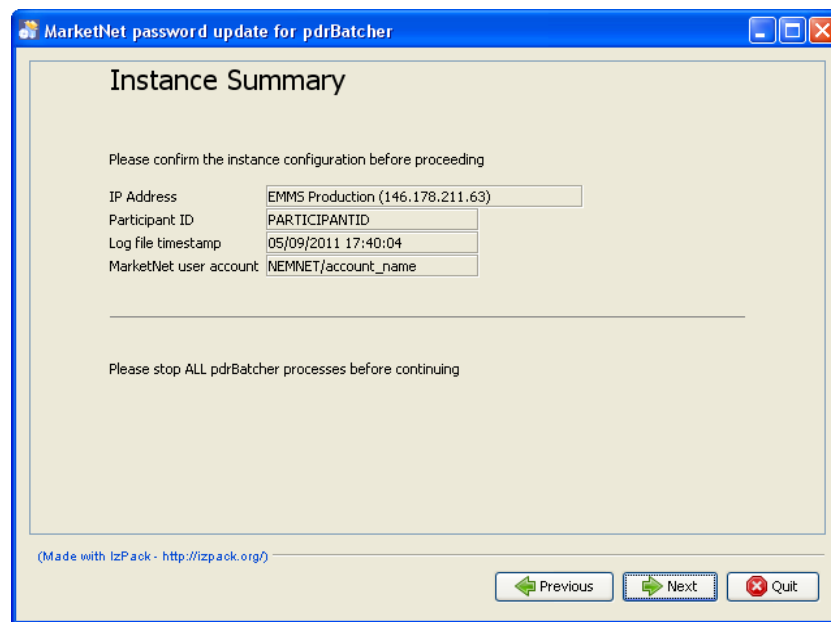
2. Click **Next**, to see the Disclaimer.



3. Select **I accept the terms of this licence agreement.** and click **Next** to see path selection.



4. Click **Browse** to select the location of the pdrBatcher installation for which the password needs to be updated.
5. Click **Next** to see the **Instance Summary** window.

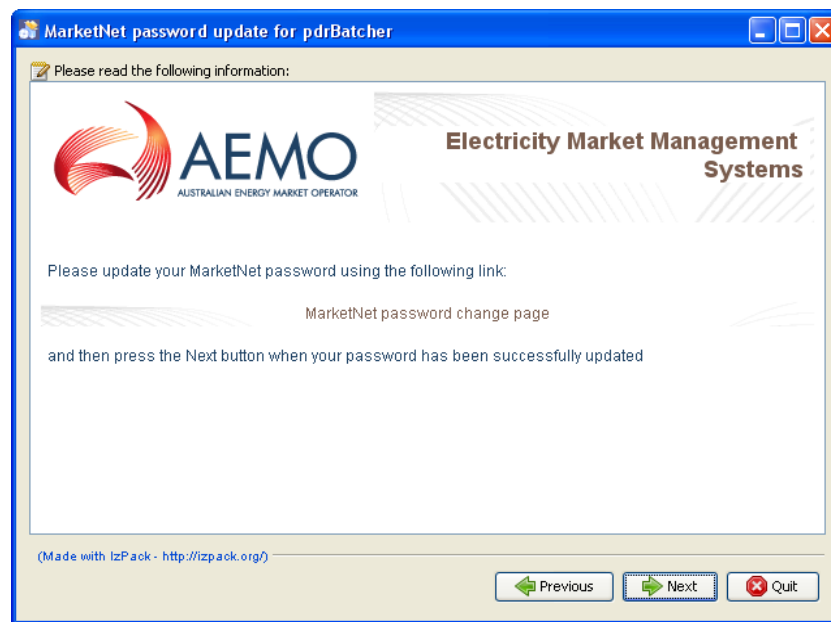


If fields in the **Instance Summary** window show blank values, then a non-standard configuration is in place. This software is only suitable for updating passwords on pdrBatcher installations using a standard configuration.

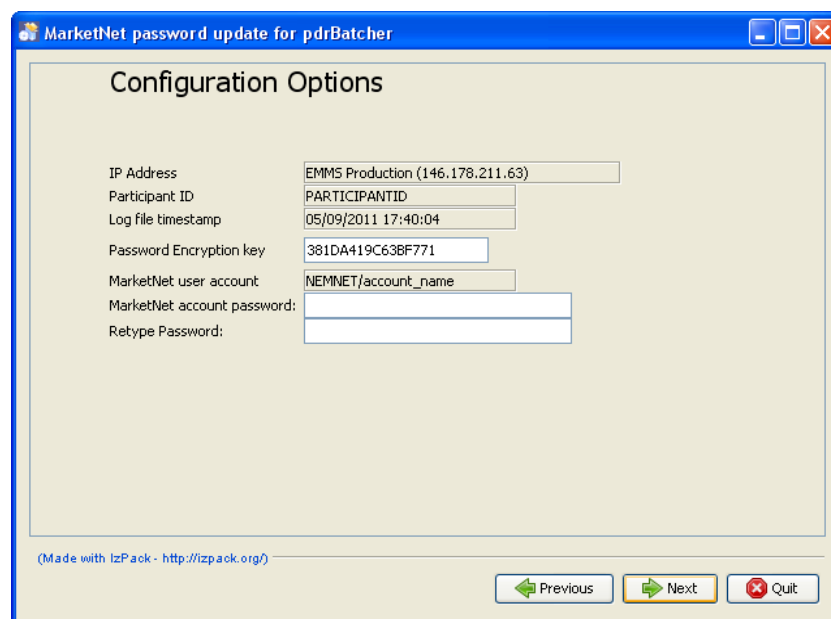
Please ensure ALL pdrBatcher processes are stopped before continuing with this step. Failure to stop all running processes may result in your access to AEMO's file server in MarketNet becoming locked out.

6. Confirm the configuration details of the pdrBatcher installation for which the password needs to be updated and click **Next** to see the MarketNet password change window.



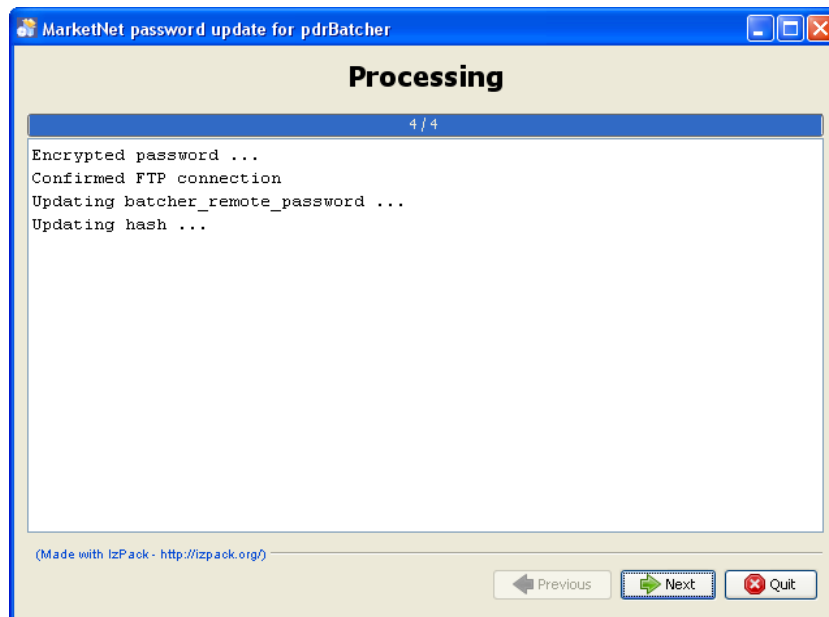


7. Click **MarketNet password change page** to open a new web browser window. The process is the same as described in [Web-based password changer on page 21](#).
8. Click **Next** when the password update step has been completed, to see the **Configuration Options** window.



9. Enter or update the required configuration details:

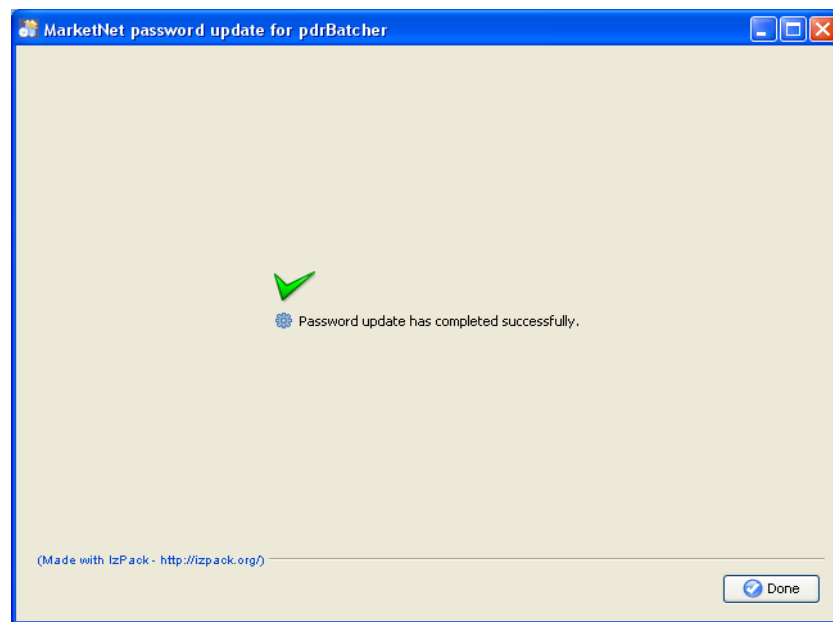
- **Password Encryption key:** the key by which to encrypt the password.
- **MarketNet account password:** the password associated with the MarketNet user account. The password to be entered is the new password.
- **Retype password:** the repeat password of the field above.



10. The **Processing** form displays the log of configuring your software installation according to the selected options and settings.

If an error occurs, click **Previous** and correct the required settings. When the processing completes, click **Next**.

To close the installer, click **Done**



## Testing the password change

When your password change is complete, use the following steps to test if the change worked correctly:

1. Check the new password is in the pdrBatcher .properties file.
2. Start the pdrBatcher process and confirm connectivity by viewing the log file to ensure there are no connection errors.

# ChangePassword API

This chapter explains how to change your password using the ChangePassword API and the password format for AEMO's system security.

Your user ID and password is the same one for all participant IT systems, MSATS, EMMS, NOS, and OPDMS so changing your password in one system, changes it for all.

You can only use the ChangePassword API to reset your password if your Participant User account is active and not locked due to multiple incorrect password attempts.

The ChangePassword API allows Participant Users to reset their password for a specific Participant ID account. Passwords expire every 90 days but you can reset your password any time, even after the expiry date.

For more details about accessing AEMO's e-Hub, see [Guide to AEMO's e-Hub APIs](#).

## Request

Item	Value
Internet URL	<a href="https://apis.prod.aemo.com.au:9319/ws/Common/identityService/v2/ChangePassword">https://apis.prod.aemo.com.au:9319/ws/Common/identityService/v2/ChangePassword</a>
MarketNet URL	<a href="https://apis.prod.marketnet.net.au:9319/ws/Common/identityService/v2/ChangePassword">https://apis.prod.marketnet.net.au:9319/ws/Common/identityService/v2/ChangePassword</a>

Item	Value
Method	POST
Header	<p>Standard request header attributes, be sure to include:</p> <p>Authorisation: Two way SSL and Basic</p> <p>Content-Type: Application/xml</p> <p>Accept-Encoding: Application/xml</p> <p>X-initiatingParticipantID: Mandatory (refers to the Market Participant ID)</p>
Body	<pre>{   "required": ["NewPassword", "OldPassword"],   "properties": {     "OldPassword": {       "type": "string",       "contentEncoding": "base64"     },     "NewPassword": {       "type": "string",       "contentEncoding": "base64"     }   } }</pre>

## Response

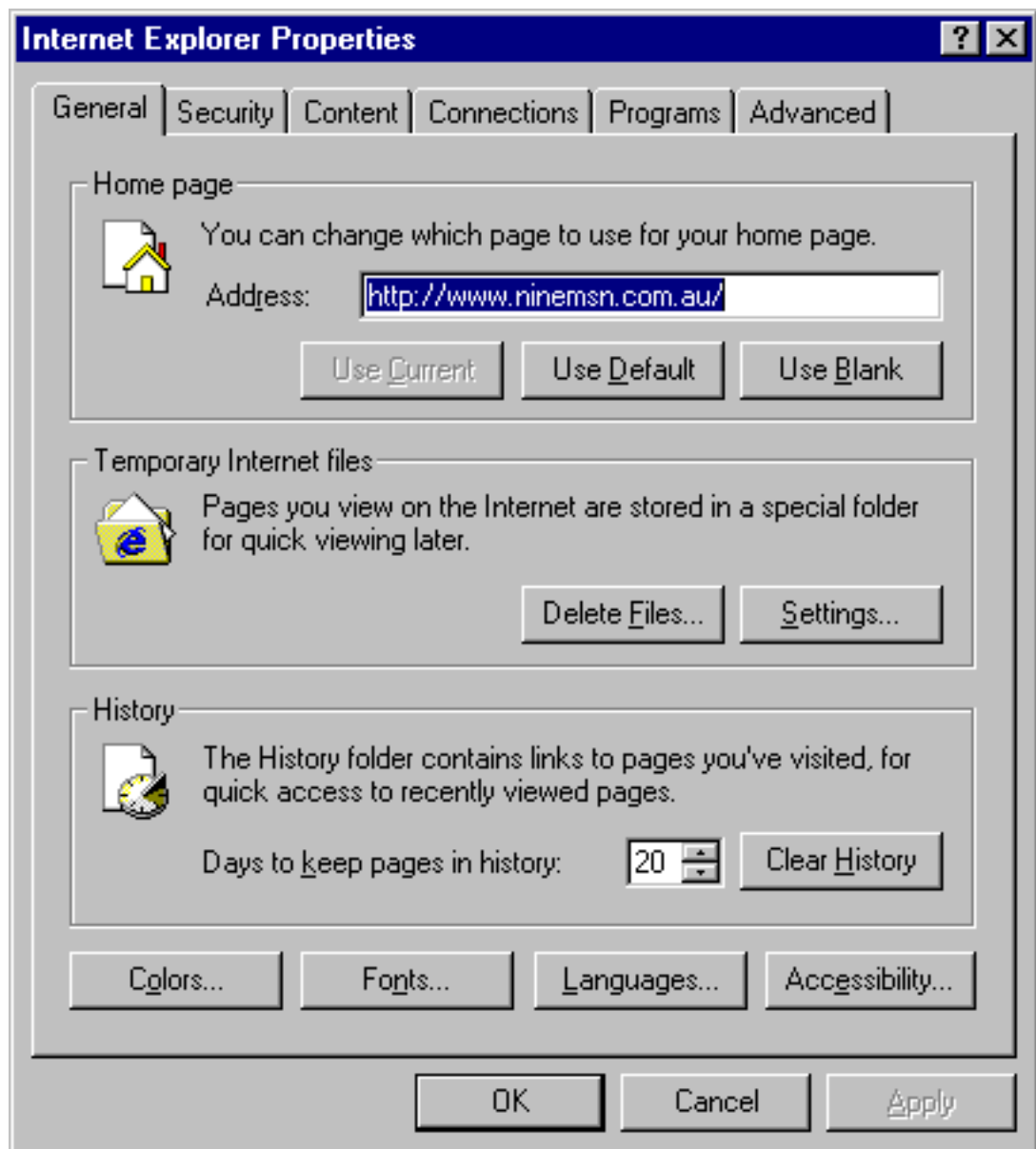
Response	200 OK - Successfully changed password
	401 - Unauthorised

## Security

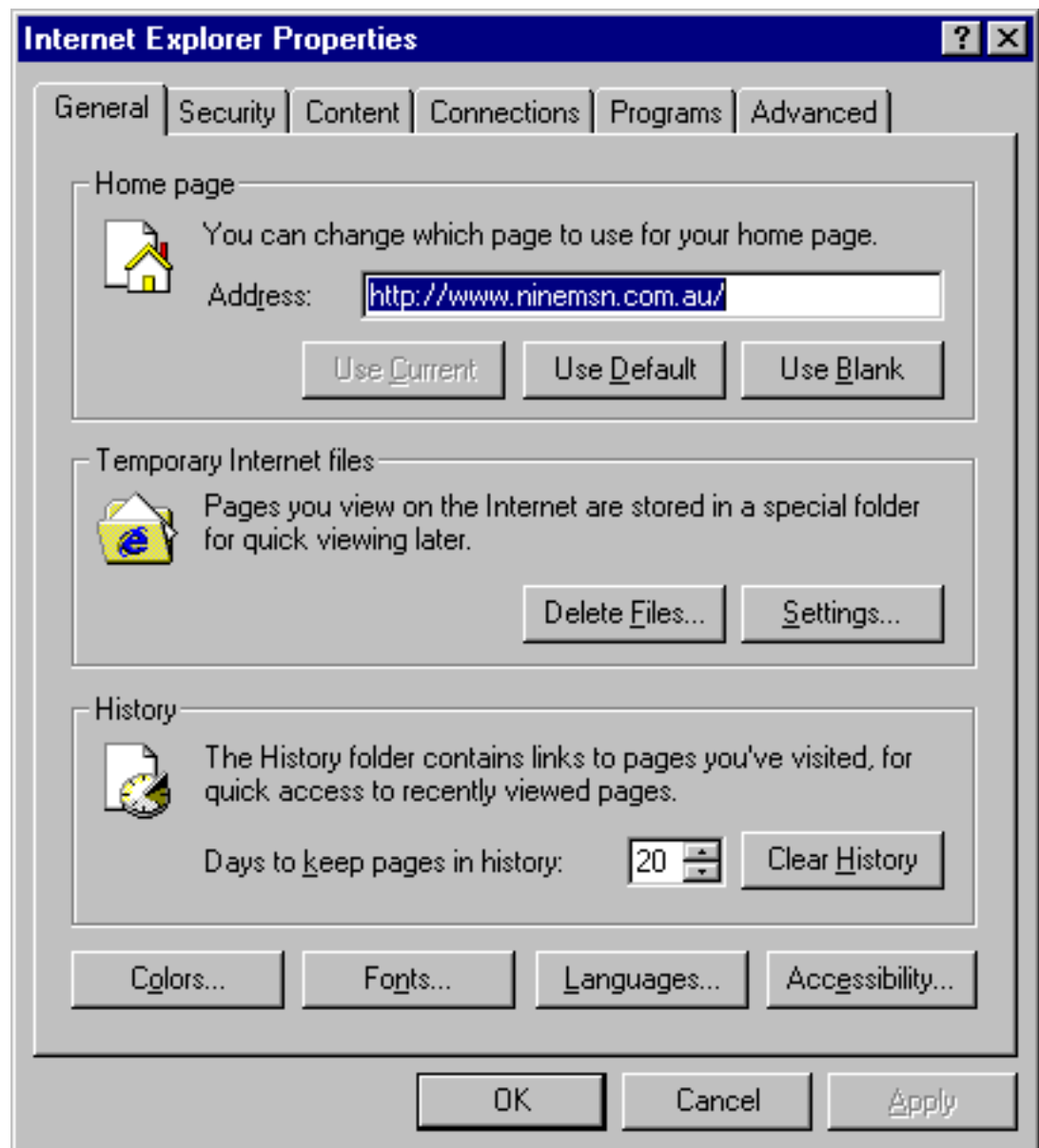
### Excluding IP addresses in Microsoft Internet Explorer

Steps for excluding IP addresses in Microsoft Internet Explorer.

1. Either right-click the Internet Explorer icon then select **Properties** or double-click the icon and select **Tools>Internet Options**.

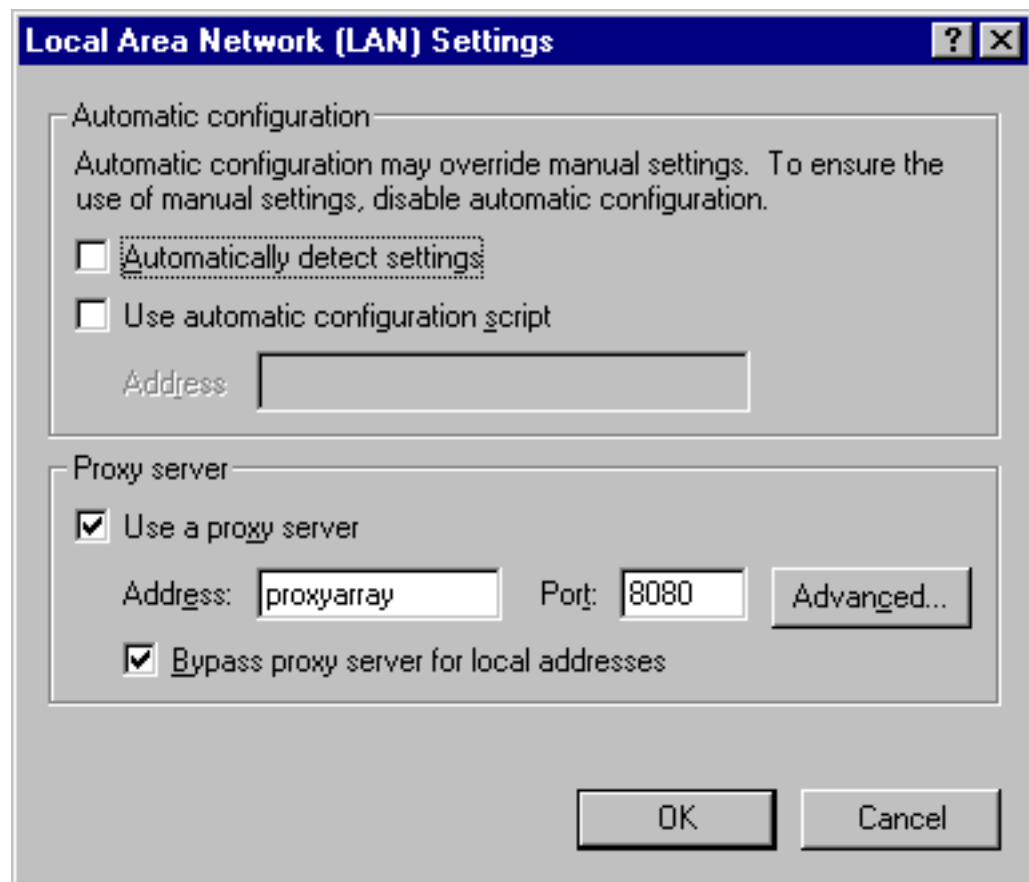


2. Click the **Connections** tab.

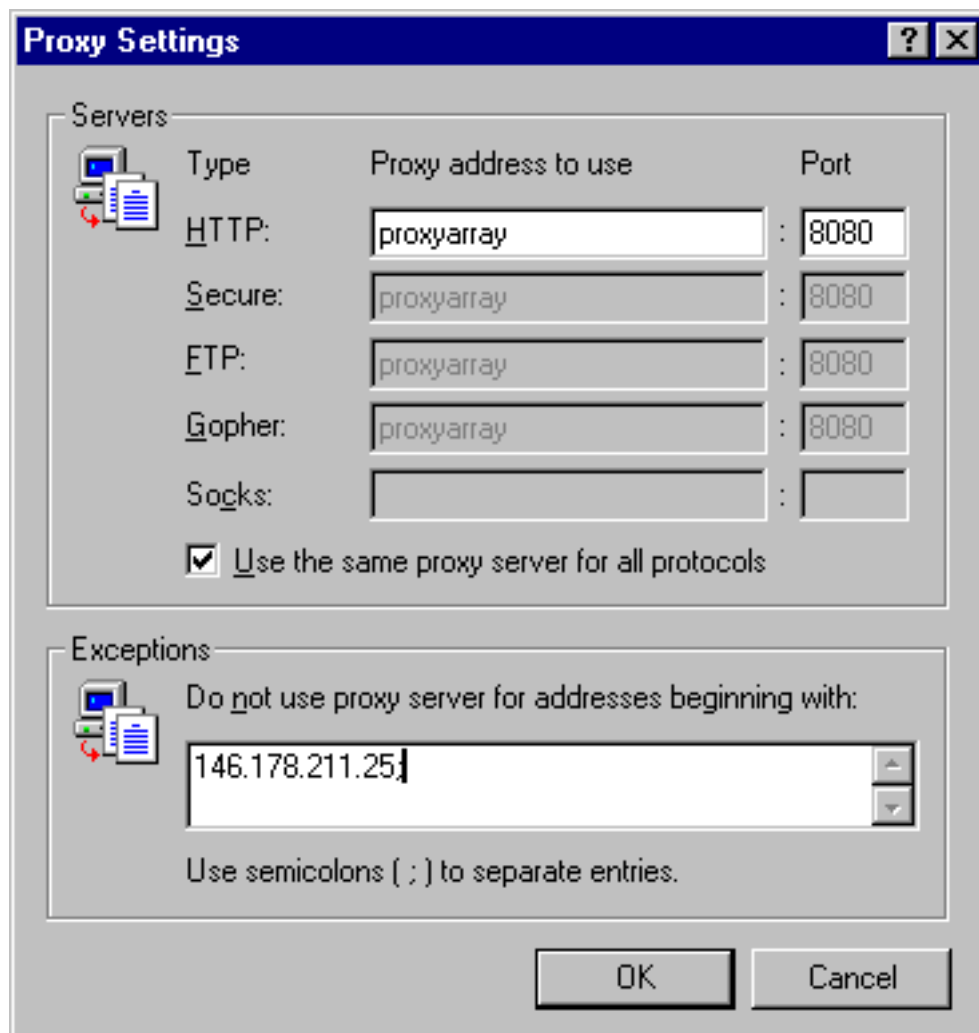


3. Click [LAN settings](#).





4. Click **Advanced**.



5. Add any necessary IP addresses within the **Exceptions** box. Click **OK** to commit the **Proxy Settings**.

## Data sharing

Subject to an authorised request, data sharing is handled using AEMO's Data Interchange (DI) software. A data sharing requirement may emerge, for example, due to a merger with, takeover of, or sale of another participant ID. For details, see Data Sharing in the [Data Interchange Online Help](#).

# System transfers

AEMO operates duplicates of systems. Occasionally, AEMO advises (by email) of a planned changeover from an operational system to an alternative. AEMO performs the changeovers in a way to minimise market impacts. However, there can be times when particular functions are interrupted or are temporarily unavailable, as advised by email. participant ID systems and processes need to cater for such interruptions to AEMO services. Some examples of effects include:

For MSATS, a changeover can result in no connection to AEMO's MSATS file server for up to 10 minutes whilst B2B data synchronises. This impacts both the "Participant Batchter" and B2B. Because applications and web browser sessions can lose connection, they may require a restart from the participant ID end. Any unacknowledged files require resubmission by the participant ID, because, in effect, they have been lost in transit.

For EMMS, any files in participant ID folders are ignored when changing over, except that settlement files are moved to the fresh system. Therefore, it is very important to keep checking for, and moving, participant ID files, either manually or using automated processes.

When there is a planned outage of one of AEMO's internet links by the carrier, AEMO advises alternative arrangements for the duration of the outage.

# Deregistration for IT systems

Deregistration is like a transfer, except there is no transferee see, [Guide to Market Systems - NEM Change of Ownership](#). Effective on the date of deregistration, effects include:

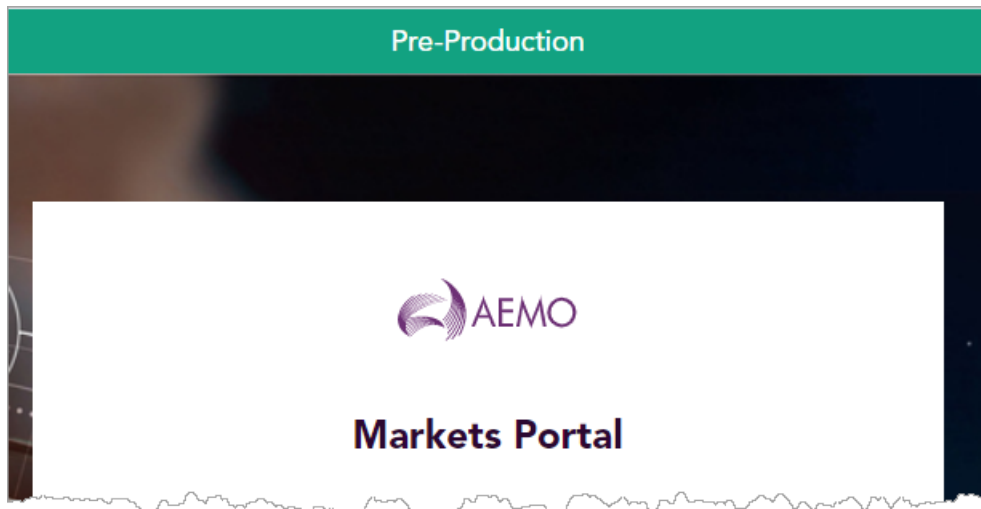
- Data sharing to and from the deregistered participant ID is removed.
- Access to AEMO's file servers by the deregistered participant ID is revoked.
- Any subsequently produced statements and reports are unavailable, because there is no primary delivery point.

## Environments

There are pre-production and production environments, each separately maintained. The pre-production environments are intended for participant testing and training purposes. New features are added to pre-production one month ahead of production with changes announced in release schedules and technical specifications.

So participants know which environment they are working in, the pre-production environments have a different coloured border or menu.

You can find change notices and technical specifications on [AEMO's website](#) > IT Change and Release Management.



# Setting up your IT Systems

This chapter describes who does what and when during registration and the steps required for your IT team to set up your IT systems to interact with AEMO's market systems. Participants are encouraged to commence setting up their IT systems in parallel with participant onboarding.

About setting up your IT .....	41
Who does what when? .....	42
Checklist for setting up your IT systems .....	43

## About setting up your IT

The setting up of IT systems and the processing of registration have steps taking many weeks, and are interdependent. IT systems setup at your end is a complex process and requires careful planning by an experienced IT team.

Time frames for your IT team to set up your IT systems vary according to the market you are registering in, your organisations individual requirements, and the experience of your IT team. Time frames are provided as a guide only. Organisations are encouraged to progress setting up their IT systems in parallel with participant onboarding.

**IT access credentials are sent to your IT security contact during participant onboarding.**

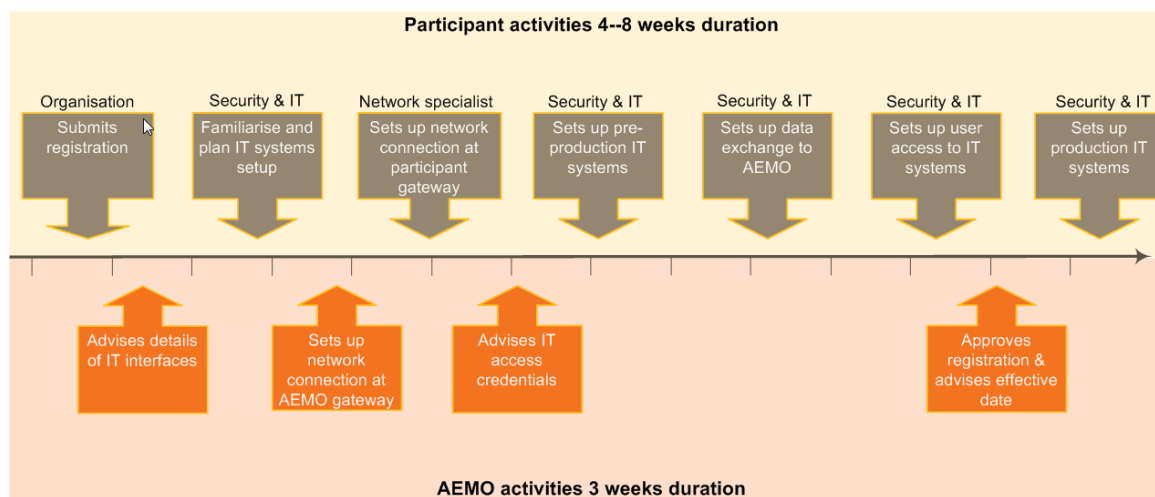
# Who does what when?

AEMO sets up the facilities applicable to the registration such as: domain accounts, folders for batch files, and standing data in the systems, in both the production and pre-production environments.

Participants are responsible for the setting up of infrastructure at their end, including any network, database, and hardware requirements for both the production and pre-production environments.

The time frames provided to set up IT systems vary according to the market you are registering in and are a guide only. They are dependent on your individual IT requirements and the experience of your IT team—please plan accordingly.

Figure 3 setting up IT systems timeline



# Checklist for setting up your IT systems

Use this checklist to help you plan your IT system setup. It is a generic checklist of activities required for setting up your IT systems.

Table 4 checklist for setting up IT systems

	What	Who	How
1	Decide on network connection options	Participant	<p>Identify and plan the networking and IT work at your end with your technical teams. AEMO's default connection bandwidths for new connections are more than adequate for all circumstances, except the most unusual, and can be changed later.</p> <p>Participants arrange the subscription link, hardware, and software with their chosen telecommunication provider—including the access costs.</p>
2	Familiarise and plan IT systems setup	Participant	<p>AEMO has numerous systems with multiple interfaces to provide for the needs of all participants. Careful planning is required to decide what your specific requirements are for interfacing with AEMO's systems, for example:</p> <ul style="list-style-type: none"> <li>How will you replicate data between your systems and AEMO's?</li> </ul>



	What	Who	How
--	------	-----	-----

- Do you have a light demand for data transfer suitable for using the Markets Portal interfaces?
- Do you have a heavy demand for data transfer requiring an IT infrastructure at your end?
- Do you have an experienced IT team that can maintain the IT infrastructure at your end and update it for each six-monthly release cycle?

To familiarise yourself with AEMO's systems for your market, read the relevant market section in this guide.

	What	Who	How
3	Set up data network connection	Participant AEMO	<p>The network connection is set up by the participant's network specialist and AEMO network specialists (and any third parties as organised by the participant) for their respective ends. The implementation time from point of technical network staff contact to implementation depends on such factors as:</p> <ul style="list-style-type: none"> <li>○ Connection type (VPN takes about 7 to 10 business days, Telstra advise a dedicated connection takes at least 20 business days).</li> <li>○ Participant equipment.</li> <li>○ Participant configuration.</li> <li>○ Participant time input.</li> </ul> <p>Note: registered participants with an existing MarketNet connection do not require another one. They can however, make changes to an existing MarketNet connection, see <a href="#">[[[Missing Linked File System.LinkedTitle]]]</a>.</p>
4	Test the data network connection communicates to AEMO	Participant	Testing the network connection demonstrates a successful link to MarketNet without requiring access into the domain or systems (such as a "ping" test).

	What	Who	How
5	Set up access to AEMO's market systems	AEMO	AEMO takes approximately 15 business days to set up your IT systems access concurrently with your registration application, and your data network connection. AEMO contacts the IT security contact provided in the registration application, advising the IT access credentials and other useful information for both pre-production and production (production is not yet activated).
6	Set up pre-production IT systems	Participant	You can now set up your required pre-production IT systems at your end. For more details about AEMO's market systems, see the section in this guide for your market.
7	Set up data exchange to AEMO	Participant	<p>Setting up data exchange to AEMO's systems is complex and requires careful planning by an expert IT team.</p> <p>For more specific details of AEMO's data exchange systems, see the relevant market section in this guide.</p>
8	Set up user access to IT systems	Participant	The IT security contact who becomes the participant administrator identifies and sets up participant user access to AEMO's systems, <a href="#">User Rights Management (URM) on page 15</a> .

	What	Who	How
9	Test pre-production IT systems	Participant	<p>Using a test system connected to AEMO's pre-production is ideal for training and familiarisation. Ensure you can see the folders for your participant ID in each system. Access any other systems relevant to you. Perform all the expected operations for your business needs, such as bidding, uploading files, or reporting.</p> <p>Ensure your pre-production system is separate from your production system.</p>
10	Set up production IT systems	Participant	<p>AEMO approves and activates your production environment after a period in pre-production of at least 5 to 10 business days (and may be much longer). Set up your live systems (production) to be separate from your test systems (pre-production). Adjust your production processes based on your experience with pre-production.</p>
11	Test production IT systems	Participant	<p>You are now "live" and can access and enter data into AEMO's production environment.</p>

# Gas Bulletin Board

This chapter provides an overview of the Natural Gas Services Market Bulletin Board (BB).

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BB website .....	50
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## About the BB

The BB facilitates trade in gas over the relevant pipeline system, by making market information available to registered users and other interested parties as shown on [BB overview diagram on the next page](#).

For more details, on AEMO's website, see:

- About the BB, see [Procedures and Guides](#).
- About registrable capacities, see [Participant information](#).

Figure 4 BB overview diagram



Participants are required to comply with the procedures set out by AEMO, which define the communication interfaces and infrastructure for electronic communications between AEMO and participants to support the operation of the gas market, see the Bulletin Board Procedures.

## BB IT interfaces

Participants can use web portal and file interfaces to interact with the BB, see [Table 5](#).

Table 5 BB interfaces

Interface	Function
Web browser (HTTPS)	Use the web browser interface to view and download information from the BB.
File upload to web browser (HTTPS)	Use the web browser interface to upload files directly to the BB.
File server (FTP)	Use the file interface to upload and download information to the BB.

# BB website

BB functionality below summarises the two areas of functionality available to participants in the BB.

Table 6 BB functionality

Functionality	Interface	Description
A publicly available area	Web browser	Reports available to registered users and any interested members of the public.
A registered users' only area	Web browser File upload File server	Information in this area is for example, the "Emergency Page", providing support for the National Gas Emergency Response Advisory Committee (NGERAC) and jurisdictions, allowing sharing of emergency information amongst registered participants (once the emergency page is activated by NGERAC or a jurisdiction). A participant user must register to access the registered users' only area, or upload information.

Each BB participant has exclusive access to their own transaction log report stating the status of the files provided to the BB operator.

**Participants who are facility operators or shippers on BB pipelines must register to use the BB.**

# BB participant categories

Table 7 describes the mandatory and eligible registrable capacities for the BB.

Table 7 BB mandatory and eligible registrable capacities

Registrable capacity	Mandatory	Eligible
BB Shipper	C	
BB Storage Provider	C	
BB Pipeline Operator	C	
Production Facility Operator	C	
AER/AEMC/ERA		C
Authorised Representatives		C
BB Transmission Pipeline		C
Distribution Pipeline		C
Gas-fired Electricity Generator		C
Gas Network Distributor		C
Gas Retailer		C
Large End User		C
Member of NGERAC		C



Registrable capacity	Mandatory	Eligible
Producer		C
Regulatory Bodies/Government		C
Service Provider of a pipeline connected to a BB Facility		C
Storage Provider		C

## BB coverage

The pipeline systems and facilities covered by the BB include all pipelines identified as BB pipelines, and all production and storage facilities connecting directly or indirectly to those pipelines—other than facilities exempted by the BB operator.

The BB does not cover gas transmission pipelines, and production and storage facilities in Western Australia and the Northern Territory.

## BB operation

BB participants are required to supply the BB operator with supply and demand, capacity information, and other information specified by the Australian Energy Market Commission in Part 18 of the NGR, through transactions as specified in the [Bulletin Board Participant Build Pack](#).

The BB operator processes the transaction files submitted and generates a list of reports—detailed in the **Bulletin Board Participant Build Pack** and the **Bulletin Board Reports List**. The reports are published on the BB website and made available to users, who can either view or download them.

Access to the emergency page and the related reports is restricted to registered BB participants.

In the event of an emergency and on request by NGERAC or a jurisdiction, the BB operator activates the emergency area of the BB. This is a secure area and requires password access to enable BB participants to upload and share information in relation to an emergency event, see [Figure 5](#).

Also available on the Bulletin Board and accessible by BB users is:

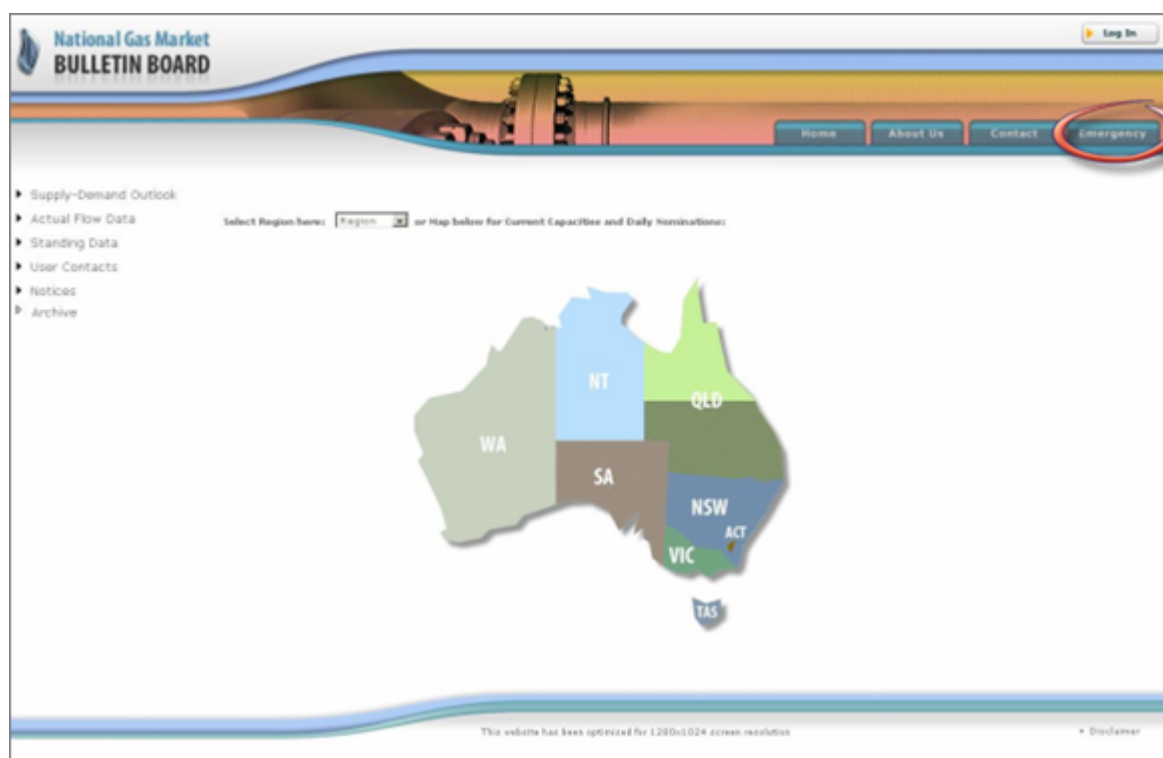
- A BB participants register
- A BB facilities list
- A BB notices section
- Other BB related documents.

## BB user access

The BB is a website, accessed using a web browser and the following URL:  
<http://www.gasbb.com.au>.

The **Emergency** tab, circled in [Figure 5](#) displays on the BB home page only when NGERAC declares an emergency.

Figure 5 BB home page



## BB user access

### Registered user access

Participant users who undertake BB transactions, or require access to the emergency page on behalf of the company must register individually with the BB operator to obtain a username and password for access to the secured section. Registered users can upload and download transactions, one at a time, using the BB web-upload facility, or upload multiple transactions using FTP.

For help using the BB, see the Bulletin Board User Guide.

Each participant user must complete a [Gas Systems User Access Request](#) and attach it to the registration application. The form allows for access to multiple markets and multiple companies for each participant user.

The request is an interactive electronic form that changes according to your selections, it must be completed using Adobe Reader version 9 or above. Please do not print the request and complete it manually.

## Registered user access types

There are two types of access for registered BB users:

1. **Secure access only** is for daily operations such as transaction uploading. This access type can also view the emergency page but cannot write to the emergency page. In the [Gas Systems User Access Request](#), this access type is the default option automatically selected for “I will use this account to login to the Bulletin Board using the website interface to either, upload data or manage my account password.”

The screenshot shows a form titled "National Gas Market Bulletin Board". At the top, there are three buttons for market selection: "STTM", "Retail or VIC Wholesale Gas", and "National Gas Bulletin Board". The "National Gas Bulletin Board" button is highlighted with a red border and a checkmark. Below this, there is a section titled "Please select if you require the following role:" with a checkbox for "BB Authorised Signatory". Underneath, there are two statements with checkboxes: "I will use this account to login to the Bulletin Board using the website interface to either, upload data or manage my account password." (checked "Yes") and "I will use this account to upload information to the Bulletin Board emergency pages." (unchecked "Yes"). A red box highlights the "Your access type is:" field, which contains the text "Secure access only". At the bottom, there is a question "Do you know which GasBB folder you require access to (optional)?" followed by a text input field.

2. **Secure access and emergency page upload** enables users to upload information to the BB and provides access to upload information to the emergency web page. In the **Gas Systems User Access Request**, this access type displays when **Yes** is selected for “I will use this account to upload information to the Bulletin Board emergency pages. The access type depends on whether participant users are required to upload information, or to view the emergency page.

Which market(s)? \*

☐ STTM ☐ Retail or VIC Wholesale Gas ☒ National Gas Bulletin Board

**National Gas Market Bulletin Board**

Please select if you require the following role: ☐ BB Authorised Signatory

I will use this account to login to the Bulletin Board using the website interface to either, upload data or manage my account password. ☒ Yes

I will use this account to upload information to the Bulletin Board emergency pages. ☒ Yes

Select for secure access and emergency page upload.

Your access type is: Secure access and emergency page upload

Do you know which GasBB folder you require access to (optional)?

# Gas Supply Hub

This chapter provides an overview of the IT systems in the Gas Supply Hub (GSH). It is relevant to IT decision making during participant onboarding and provides an understanding of what is required to interface with AEMO's market systems.

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## About the GSH

The GSH consists of a trading exchange for the wholesale trading of natural gas. It also provides Settlement, Prudential, Delivery Quantity, and Reporting services to trading participants.

For more details, on [AEMO's website](#), see:

- About GSH, see [Gas Supply Hub Guides](#).
- About GSH registrable capacities, see [Registration](#).
- About software and guides, see [Market Operations](#).

Participants must comply with the [Gas Supply Hub Exchange Agreement](#) that sets out the terms of participation in the gas supply hub and the terms governing transactions entered into through the exchange. Applicants for membership in the exchange must sign an agreement with AEMO, agreeing to be bound by the exchange agreement.

## GSH IT interfaces

Participants can use several interfaces to interact with GSH IT systems—file, web, and web services, see [Table 8](#).

Table 8 GSH IT interfaces

Interface	Function
Web portal (HTTPS)	The GSH provides web portal interfaces to access the web applications in the GSH.
File upload to web portal (HTTPS)	The GSH allows direct uploading of files to the web portal interface or the participant file server.

Interface	Function
File server (FTP)	<p>Each participant ID has secure read and write access to folders for production and pre-production systems. These folders are for communication between participant IDs and AEMO.</p> <p>AEMO provides a set of software applications called Data Interchange to assist participants with the replication of data to their DBMS.</p> <p>Successfully implementing and managing Data Interchange requires an experienced IT team, planning, networking, database management, batch file management, and disaster recovery.</p> <p>Participants use the Data Interchange web applications in the EMMS web portal to:</p> <ul style="list-style-type: none"> <li>◦ Subscribe to receive files in their participant folder on the EMMS file server.</li> <li>◦ Monitor their Data Interchange, Data Delivery, and Data Sharing statuses.</li> </ul>
Windows application	A locally installed trading application that connects to AEMO over MarketNet.



# GSH IT systems

Table 9 summarises the applications available to participants in the GSH.

Table 9 GSH IT systems

IT system	Interface	Description
Trayport Exchange Trading System (ETS)	Windows application	The ETS allows trading participants to submit orders to buy or sell gas at the various trading locations within the gas supply hub. The ETS matches the orders and forms trades between participants.
GSH Delivered Quantity	Web portal File upload	Used by trading participants to submit new delivered quantity data and confirm existing delivered quantity submissions. Participants can also provide AEMO with delivered quantity data by uploading a .csv file to the participant file server.
GSH Prudential Dashboard	Web portal	Provides participants with their latest prudential information. The dashboard shows exactly the same information that AEMO uses in its prudential assessments and provides participants with useful information about their accrued financial position with AEMO.

IT system	Interface	Description
GSH Publishing Direct	Web portal	Provides participants with access to GSH reports and statements published by AEMO. Participants can subscribe to reports for automated delivery each time a new report is published.
GSH Reallocations	Web portal File upload	Allows participants to create, submit, authorise, and view reallocation requests in accordance with the GSH Reallocation Procedure. At each settlement run, reallocation details are copied from the Reallocations system to the Settlements system. The Settlements system then includes this data in settlements calculations and incorporates the results in participants' weekly settlement statements.

# GSH participant categories

[Table 10](#) describes the relevant functionalities used in GSH for each participant category.

Table 10 GSH functionalities used by each registrable capacity

Registrable capacity	ETS	DI	Delivered Quantity	Prudential Dashboard	Publishing Direct	Reallocations
Trading participant	C	C	C	C	C	
Viewing Participant	C				C	
Reallocation Participant				C	C	C

## GSH systems user access

Available from [AEMO's website](#).

# NEM IT Systems

AEMO has numerous systems with multiple interfaces to provide for the needs of all participants. Participants are obliged to ensure their systems are kept in line with AEMO's systems.

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# About the NEM

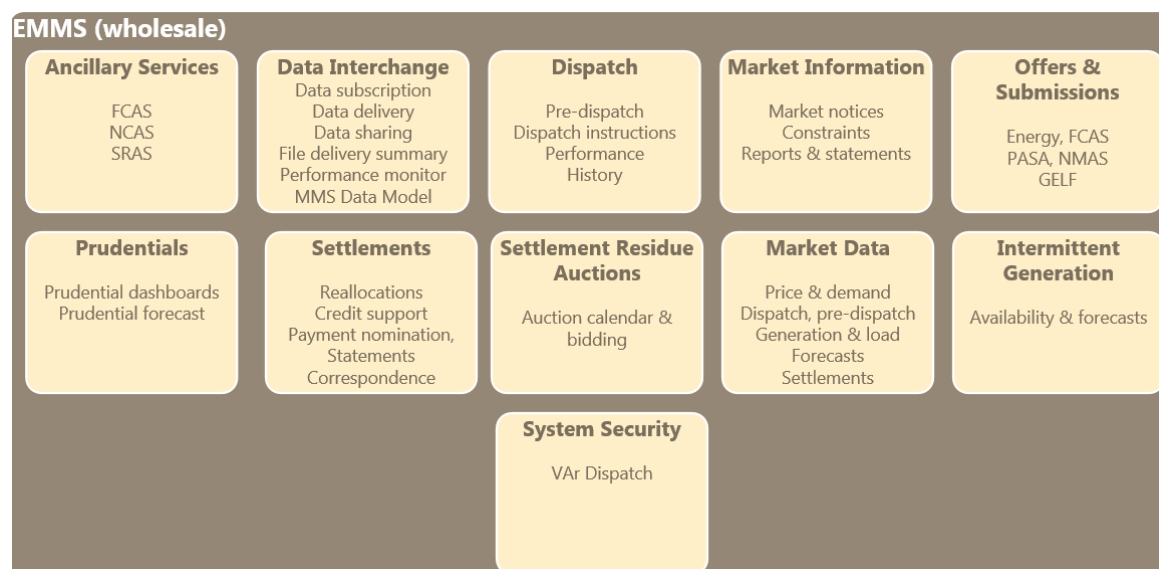
The NEM interconnects five regional market jurisdictions (Queensland, New South Wales, Victoria, South Australia and Tasmania). West Australia and the Northern Territory are not connected to the NEM. It involves both wholesale and retail markets managed in line with the National Electricity Law and the National Electricity Rules (Rules).

The NEM IT systems assist in determining the spot price and facilitate financial settlement of the market. The systems are designed to meet the performance and reliability requirements of the Rules and the expectations of market participants, provide security for sensitive information, and be cost effective for participants.

## Access

Access to some systems is dependent on a participant's registration category. AEMO makes systems available to participants in accordance with the rules and procedures of each energy market with access available 24 hours a day, 7 days a week. Except for notified periods of system maintenance and unplanned outages. AEMO constantly monitors its information systems to ensure performance standards are met.

# NEM wholesale functionality



[EMMS functionality below](#) summarises the functionality available in EMMS. For details about the functionality relevant to each participant category in the wholesale market, see [Wholesale participant categories on page 71](#).

Table 11 EMMS functionality

Functionality	Interface	Description
Constraints	Markets Portal Web Service	Used to convert a constraint equation into plain English format.
Credit Support	Markets Portal	The Credit Support web interface provides registered participants with a numerical and graphical view of their credit support status, and a scenario builder where participants can analyse their bank guarantee structure without saving the changes to the Credit Support system.

Functionality	Interface	Description
Data Delivery	Markets	Use the Data Delivery menu to:
	Portal	<ul style="list-style-type: none"> <li>Access the Data Interchange Status Dashboard. The status dashboard displays: The status of the Data Interchange components within the participant company. A list of filenames, delivery dates and a file re-request count (where a file has been sent to the participant's system more than once). Multiple file deliveries can indicate a problem at the participant's end.</li> <li>Make a File Delivery query and re-request files. The file delivery web interface allows participants to query all the files delivered within a date range, and request selected files delivered again to the file server.</li> <li>View your company's Data Sharing arrangements.</li> </ul>
Data Interchange (DI)	Markets	<p>Data Interchange is a set of cooperating applications used to replicate, manage, and monitor data between AEMO and a participant's database conforming to the MMS Data Model.</p> <p>AEMO provides the Data Interchange applications to participants to assist with the replication of data to their DBMS. Successfully implementing and managing Data Interchange requires an experienced IT team, planning, networking, database management, batch file management, and disaster recovery.</p> <p>AEMO supports data replication to Oracle and SQL Server databases. The licensing of the participant ID's SQL Server or Oracle data store is the responsibility of the participant. Scripts to build the MMS Data Model are available for SQL Server and Oracle database platforms.</p>
	Portal	
	File server	

Functionality	Interface	Description
		<p>Participants use the Data Interchange web applications in the Markets Portal to:</p> <ul style="list-style-type: none"> <li>◦ Subscribe to receive files in their participant folder on the EMMS file server.</li> <li>◦ Monitor their Data Interchange, Data Delivery, and Data Sharing statuses.</li> </ul> <p>For more details, see <a href="#">Data Interchange Online Help</a>.</p>
Data Sharing	Markets Portal File server	<p>Each participant ID can share their data with other participant IDs, subject to an authorised request.</p> <p>Implementing data sharing means the full Data Interchange data set (including private data) for the requesting participant ID is made available to another participant's sets of folders in the EMMS file server, as nominated in the request. The sharing of data is for both pre-production and production. A data sharing requirement may emerge, for example, due to a merger with, takeover of, or sale of another NEM registered participant. The requirement may be to use one company's IT system to manage access, and process the data for two or more participant IDs using just one participant ID's set of folders in the EMMS file server.</p> <p>The Markets Portal interface provides the status of any data sharing agreements you have implemented.</p>
Data Subscription	Markets Portal	<p>Used to subscribe to files for Data Interchange, and obtain the latest MMS Data Model. EMMS generates files continually, based on changes and five-minute dispatch runs, etc. These files are typically csv files that contain public data and participant's private data.</p>



Functionality	Interface	Description
		<p>AEMO recommends participant use of the Data Interchange products, supplied by AEMO, to automate receiving and storage of the files. AEMO provides working sample software for FTP access to MarketNet and working sample software for Data Interchange.</p> <p>For more details, see <a href="#">Data Interchange Online Help</a>.</p>
Dispatch instructions	File server	Dispatch Instructions from AEMO.
Dispatch performance & history	File server	Dispatch performance and history.
Intermittent Generation	Markets Portal File upload File server	<p>AEMO hosts the intermittent generation interfaces and provides data access to the market and to individual intermittent generators. The systems produce various types of forecasts at regular run intervals for each forecast type.</p> <p>Participants input their intermittent generation information (Elements Unavailable and Upper MW Limit) before the start of the relevant trading date. Availability profiles can be updated as frequently as the change occurs, but not retrospectively for historical intervals.</p>
Market Info	Markets Portal File server	A summary of the market in each of the regions for defined forecast types such as dispatch and pre-dispatch.

Functionality	Interface	Description
Market Direct	Markets Portal	Provides access to reports and statements published by AEMO for intermittent generators. Participants can subscribe to reports for automated delivery each time a new report is published.
Offers & Submissions	Markets Portal File server	Allows participants to submit and maintain energy, frequency control ancillary service (FCAS), MTPASA, NMAS, DSP offers and GELF Declarations.
Payment Nomination	Markets Portal	Provides participants with their current and historical payment nomination details for the payment of settlements. Participants can nominate a new payment to take effect in a future settlement, change an existing payment nomination and the billing week it takes effect, or change between normal and early payments.
Performance Monitor	Markets Portal	The performance monitor is a graphical view of the current Data Interchange environment run and managed by AEMO. Participants not receiving data, or experiencing data delays can contrast the data delivery performance of their Data Interchange environment to the AEMO's Data Interchange performance environment.
Prudential Dashboard	Markets Portal	Provides participants with their latest prudential information. The dashboard shows exactly the same information that AEMO uses in its prudential assessments and provides participants with useful information about their accrued financial position with AEMO.

Functionality	Interface	Description
Prudential Forecast	Markets Portal	Provides participants with a forecast of their expected prudential position for the next NEM business day, enabling participants to manage their prudential obligations.
Prudential Margin Offsets	Markets Portal	Allows participants to offset their trading amounts against their reallocation amounts for the determination of the Prudential Margin (PM) for Maximum Credit Limit (MCL) reviews. For more details, see <a href="#">Prudentials and Payments</a> on <a href="#">AEMO's website</a> .
Reallocations	Markets Portal File upload	Allows participants to create, submit, authorise, and view reallocation requests in accordance with the settlements <a href="#">Reallocation Procedures</a> . At each settlement run, reallocation details are copied from the Reallocations system to the Settlements system. The Settlements system then includes this data in settlements calculations and incorporates the results in participants' weekly settlement statements.
Settlements Direct	Markets Portal	Provides participants with access to information published by AEMO, including settlement statements. Participants can subscribe to reports for automated delivery each time a new report is published.

Functionality	Interface	Description
Settlement	Markets	The SRA sells entitlements to settlement residue attributable to inter-regional interconnectors up to three years in advance; with the units auctioned over twelve quarters. The intention is to improve the efficiency of the NEM by promoting inter-regional trade. The risk of trading between regions is better managed by making the settlements residue available to the market place.
Residue	Portal	
Auctions (SRA)	File upload File server	
VAR Dispatch		<p>Used by generator control rooms and network operators (RPOs), to control the reactive power devices. Generator traders may also be interested in viewing VAR Dispatch instructions.</p> <p>VAR Dispatch issues instructions to RPOs to achieve stable voltage control of the electricity grid. These instructions typically request changes to reactive plant (such as, capacitors, reactors, and generating units), to increase or decrease the VAR contribution to the grid.</p>

## Wholesale participant categories

- Non-market Generators may choose to connect to AEMO systems, but have no need to do so.

For more details about participant categories, see Electricity or Gas Participant Information on [AEMO's website](#).

- Intending Participants may choose to connect to AEMO's systems on special request.
- This topic describes the relevant and optional functionalities for each NEM participant category:

Table 12 EMMS functionalities used by each participant category

## Relevant = C | Optional = O

Functionality	Generator	Customer classifying loads & Small Generation Aggregator	Customer	Network Service Provider	Trader	Reallocator
Constraints	C	C				
Credit Support	C	C	C	C	C	C
Data Delivery	C	C	O		O	O
Data Interchange (DI)	C	C	O		O	O
Data Sharing	C	C			O	O
Data Subscription	C	C			O	O
Dispatch Instructions	C	C				

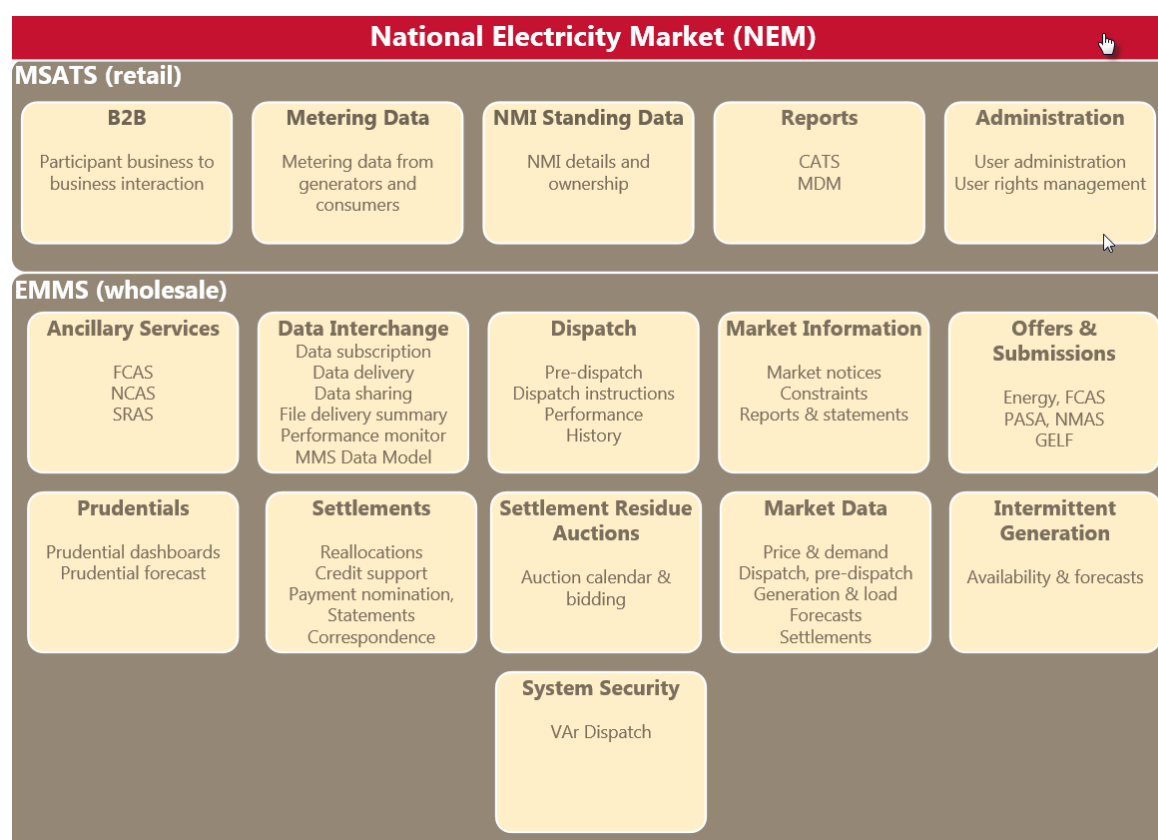
Functionality	Generator	Customer classifying loads & Small Generation Aggregator	Customer	Network Service Provider	Trader	Reallocator
Dispatch Performance & History				C		
Intermittent Generation	C					
Market Info	C	C			O	O
Market Direct	C					
Offers & Submissions	C	C				
Payment Nomination	C	C	C	C	C	C
Performance Monitor	C	C	O		O	O
Prudential Dashboard	C	C	C	C	C	C
Prudential Forecast	C	C	C	C	C	C
Prudential Margin Offsets	C		C			C

Functionality	Generator	Customer classifying loads & Small Generation Aggregator	Customer	Network Service Provider	Trader	Reallocator
Reallocations						C
Settlements Direct	C	C	C	C	C	C
Settlement Residue Auctions (SRA)	C	C			C	
VAr Dispatch	C				C	

# NEM IT systems overview

This diagram is an overview of the electricity market IT systems AEMO provides for *Registered Participants*.

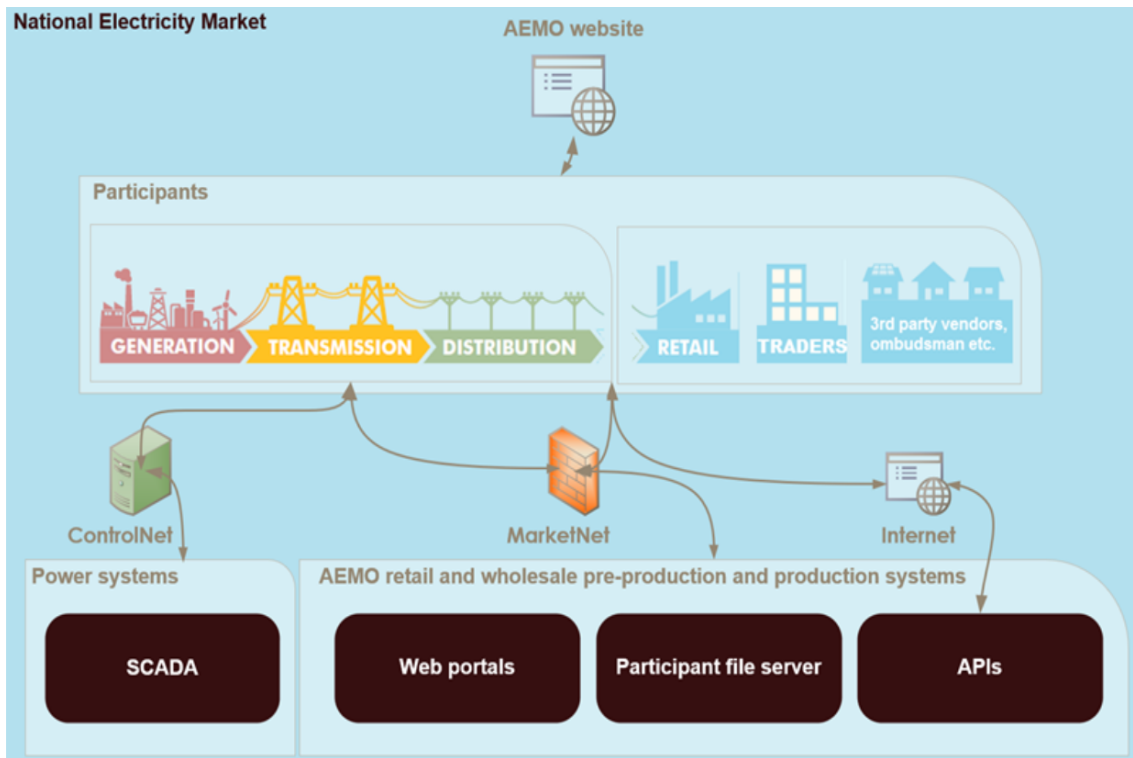
Figure 6 AEMO electricity IT market systems





# NEM IT Interfaces

This chapter explains the IT interfaces available for Registered Participants to access NEM participant IT systems.



This table explains AEMO's IT interfaces, their functions, and their suitability for participants.

Table 13 AEMO's IT interfaces

Interface	Protocol	Function
AEMO's website	HTTP	<p>Suitable as a source for publicly available market data at no cost.</p> <p>The public data published on AEMO's website is the same as distributed through the file interfaces, although file interfaces also contain each participant's private data. The data is in csv format in many files along with some graphical summaries.</p> <p>See <a href="#">Electricity Data</a> on <a href="#">AEMO's website</a>.</p>
API e-Hub	HTTPS	<p>AEMO provides an API e-Hub for retail and wholesale systems. The e-Hub consists of the API Portal and the API Gateway. For details about AEMO's APIs, see <a href="#">API Portal</a>.</p> <p>Participants build their own gateways to interact with AEMO's API Gateway. For details, see <a href="#">Guide to AEMO's e-Hub APIs</a>.</p>
Data network connection (MarketNet)	HTTPS	<p>Most access to AEMO's market systems requires a secure private data network connection to MarketNet. If your company is a Registered Participant, it is likely that you have access to MarketNet. However, if your company does not have access to MarketNet, you must organise this first.</p> <p>For help, see <a href="#">MarketNet Connection Request</a>.</p>
File servers	FTP	<p>AEMO systems to participant systems interaction using batch processing, suitable for:</p> <ul style="list-style-type: none"> <li>Participant systems using database technology.</li> <li>Submission or receipt of high volumes of data.</li> <li>Management of security and data distribution.</li> </ul> <p>AEMO recommends this method to replicate large amounts of data</p>

Interface	Protocol	Function
FTP Gateways	FTP	Uses the Participant File Server.
Internet	HTTPS	Some APIs allow internet access without having MarketNet access. For details about APIs, see <a href="#">API Portal</a> .
Markets Portals	HTTPS	Participants can use a web browser over MarketNet to interact with AEMO's retail and wholesale systems. The web interfaces allow direct data entry and are designed for secure, interactive use. They are suitable for light demand of data transfer. Many web applications allow the upload of files directly to the interface.

Examples of functionality are:

- User administration for participant users.
- Placing bids.
- Retrieving reports.
- Retrieving settlement information.
- Monitoring prudential exposure.

AEMO recommends small operators use the Markets Portal interface to retrieve and upload files.

# Software packages

AEMO provides sample software packages to assist with data validation and replicating data between AEMO's systems and participants' systems. Software versions are updated for each new release. Participants using AEMO's software are responsible for ensuring they are using the current version. Change notices and technical specifications advise participants of software changes for each release.

[Table 14 below](#) describes the sample software packages provided by AEMO.

## Retail software packages

Table 14 Retail software packages provided by AEMO

B2B Validation Module	<p>An application participants can embed in their B2B systems allowing validation of an .XML file before it is deployed to the MSATS B2B Hub.</p> <p>See <a href="#">Guide to Validation Module Software</a>.</p>
MSATS Participant Batchers	<p>A simple batch interface to MSATS and B2B removing the detail of the file handshaking and leaving participants to deal with the raw .ZIP files only. It transfers files using FTP from and to the MSATS hub and does the entire message acknowledgement and file manipulations as required by the MSATS batch file interface.</p> <p>See <a href="#">Guide to Participant Batchers Software</a>.</p>
API services	<p>An additional option to AEMO's Markets Portals, and batch or file interfaces for system-to-system interaction with AEMO's systems. It provides supported and secure API services to participants' systems using the secure MarketNet connection. See <a href="#">Guide to AEMO's e-Hub APIs</a>.</p>

# EMMS wholesale system software

Table 15 Wholesale software packages provided by AEMO

Data Interchange	<p>Data Interchange is a set of cooperating applications used to replicate, manage, and monitor data between AEMO and a participant's database conforming to the Electricity Data Model.</p> <p>See <a href="#">Data Interchange Online Help</a>.</p>
API Services	<p>An additional option to AEMO's Markets Portals, and batch or file interfaces for system-to-system interaction with AEMO's systems. It provides supported and secure web services to participants' systems using the secure MarketNet connection. See <a href="#">Guide to AEMO's e-Hub APIs</a></p>

## NEM Dispatch Engine (NEMDE)

The NEMDE Queue Service is a separately purchasable product from AEMO. It provides an application interface enabling participant company's analysts to model alternative outcomes from AEMO's dispatch engine, the NEMDE Solver. The service allows participants to edit and submit a NEMDE input file and receive the corresponding output file.

For more details, see [NEMDE Queue Service](#) on [AEMO's website](#). Application to purchase is to AEMO's support hub.

# Market solver files

For each dispatch cycle (5 minutes), a generated input file is submitted to the linear program solver (NEMDE), producing two output files. The files for each dispatch cycle are:

- Input file
- Output file
- Price Setter file

Each day AEMO publishes the market solver files in the participant ID's file server \MarketData subfolders.

## Other NEM IT systems

Along with EMMS and MSATS, AEMO has other systems, mainly intended for a limited range of participants, examples include:

- Operations and Planning Data Management System (OPDMS).
- Network Outage Scheduler (NOS).

# Retail Gas Market

This chapter provides an overview of the FRC Hub operating in the retail gas market. It is relevant to IT decision making during participant onboarding and provides an understanding of what is required to interface with AEMO's market systems. [Figure 7](#) provides an overview of the IT systems in the Retail Gas Market.

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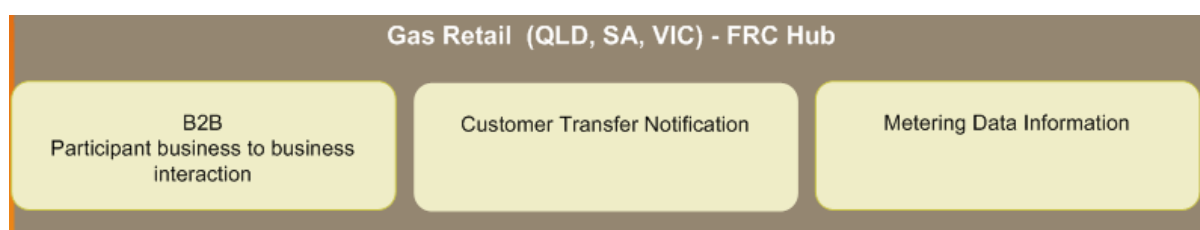
## About the FRC Hub

Successfully implementing and managing an FRC Hub set up requires planning and an experienced IT team. Participants are required to pass a certification process that may take up to 12 weeks. For a smooth FRC implementation, please plan the work at your end accordingly.

For more details, on [AEMO's website](#), see:

- About the gas retail system, see [Gas Retail Markets](#).
- About certification, see [FRC Hub](#).
- About registrable capacities, see [Registration](#).

Figure 7 Retail Gas Market IT systems overview



Participants are required to comply with the procedures set out by AEMO, which define the communication interfaces and infrastructure for electronic communications between AEMO and participants to support the operation of the gas market, see [Retail Gas Market Procedures](#).

## Retail Gas Market IT interfaces

Retail Gas Market participants use the following interfaces to interact with the FRC Hub.

Table 16 Retail Gas Market interfaces

Interface	Function
Web portal (HTTPS)	Participants can access the FRC Hub functionality using a web browser.
Web services (HTTPS)	Participants can connect a gateway to the hub using HTTPS.



# Retail Gas Market IT systems

[Retail Gas Market system functionalities below](#) summarises the FRC Hub operating in the Retail Gas Market.

Table 17 Retail Gas Market system functionalities

System	Interface	Description
FRC Hub	Web portal Web service	Provides the interface for participants to send and receive B2B aseXML transactions. It handles various transactions, such as account creation, customer transfer notification, and meter data information.

## Retail Gas Market participant categories

[Retail Gas Market functionalities used by each registrable capacity on the next page](#) describes the relevant functionalities used in the retail gas market for each participant category.

The ACT and NSW retail gas market does not use the FRC Hub, further details are provided during participant onboarding.

Table 18 Retail Gas Market functionalities used by each registrable capacity

State	Registrable capacity	FRC Hub
QLD	Distributor	C
	Retailer	C
	User	C
SA	Network Operator (including Mildura)	C
	User	C
VIC	Distributor	C
	Market Participant - retailer	C

## Retail Gas Market user access

Each participant user in the QLD, VIC, and SA retail gas markets must complete a [Gas Systems User Access Request](#) and attach it to the registration application. The form allows for access to multiple markets and multiple companies for each participant user.

The request is an interactive electronic form that changes according to your selections, it must be completed using Adobe Reader version 9 or above. Please do not print the request and complete it manually. For help completing the form, see [Figure 8](#).

Participant users for the ACT and NSW are not required to complete the Gas Systems User Access Request.

Figure 8 Retail Gas Market user access request

**Form purpose**  
Complete this form to request gas systems access, modification or removal for your participant. Please complete a separate form for each participant user, you can request access to multiple markets for multiple companies.

Is this request part of an Application for Registration in the Gas Market? \* ☒ Yes ☐ No

User account request type? \* ☒ Create ☐ Modify or Delete

**User Details**  
Complete a request for each participant user and attach it to your registration application.

Last Name \*  First Name \*

Phone \*  E-mail \*

Is there a user ID with similar access? ☐ Yes ☐ No

**Company Details**

Registered Company Name \*

AEMO Company ID  ABN \*  **Select**

Which market(s)? \* ☐ STTM ☒ Retail or VIC Wholesale Gas ☐ National Gas Bulletin Board

**Retail or VIC Wholesale Gas**

Please only make the selections that your company is registered in. If you are not sure, see the "[Participants registered in the VIC, SA, QLD, and NSW/ACT gas markets](#)" document, available on AEMO's website.

☒ QLD Retail Gas ☒ SA Retail Gas ☒ VIC Retail Gas ☐ VIC Declared Wholesale Gas


Please select your environment: ☐ Pre-production / Industry test ☐ Production

Please select if you require the following role: ☐ Authorised MIBB Security Contact

Will this account upload CSV files to your MIBB folder? ☐ Yes ☐ No

Please select at least one required service: ☒ MIBB Reports ☐ Web Exchanger User

Do you know which MIBB folder(s) you require access to (optional)?

 For password resets, contact the AEMO Help Desk: [helpdesk@aemo.com.au](mailto:helpdesk@aemo.com.au).  
Password expiry notifications are sent to your e-mail address, and to your organisation's generic notification address.

**Only select the gas markets that you are registering in**

# Short Term Trading Market

This chapter provides an overview of the participant IT systems operating in the short term trading market (STTM). It is relevant to IT decision making during participant onboarding and provides an understanding of what is required to interface with AEMO's market systems.

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## About STTM

The Short Term Trading Market (STTM) is a market-based wholesale gas balancing mechanism established at defined gas hubs. The market uses bids, offers, and forecasts to determine schedules for deliveries from the pipeline's transmission users and the hubs. The market sets daily market prices and settles each hub based on the schedules and deviations from schedules.

For more details, on [AEMO's website](#), see:

- About STTM, see [Short Term Trading Market](#).

- About registrable capacities, see [Registration](#).

Figure 9 STTM IT systems overview



Participants are required to comply with the procedures set out by AEMO, which define the communication interfaces and infrastructure for electronic communications between AEMO and participants to support the operation of the gas market, see [STTM Rules](#), [STTM Procedures](#) and [STTM Interface Protocol](#).

## STTM IT interfaces

Participants can use several interfaces to interact with STTM IT systems: file, web, and web services.

Table 19 Table 23: STTM interfaces

Interface	Function
Web portal (HTTPS)	Participants can access the processes and functions of the STTM using a web browser.
File upload to web portal (HTTPS)	The SWEX allows direct uploading of files to the browser interface.

Interface	Function
File server (FTP)	SWEX and MIS both provide FTP file interfaces for participant interaction with file servers.
Web services (HTTPS)	The SWEX system allows csv file uploading using HTTPS.

# STTM IT systems

[STTM system functionalities below](#) summarises the IT systems available to participants in the STTM.

Table 20 STTM system functionalities

System	Interface	Description
STTM Web Exchanger (SWEX)	Web portal	<p>The SWEX provides the interface for market participants to submit bid data and other required market information such as:</p> <ul style="list-style-type: none"> <li>◦ Bids and offers</li> <li>◦ Price Taker Bids</li> <li>◦ Contingency bids and offers</li> <li>◦ Price taker bids</li> <li>◦ Registered services and trading rights</li> <li>◦ Market schedule variations</li> </ul>
SWEX Interface Engine (SWEXIE)	File upload Web service	<p>SWEXIE allows the upload of files to the STTM database using FTP, HTTPS, or csv file upload via SWEX. IT is a simplified process of submitting bids, offers, withdrawals, allocations, variations, and transactions.</p>
Market Information System (MIS)	Web portal File	<p>The MIS provides STTM reports for both public access and participant access. The reports detail STTM trading information and general market data.</p>

Details of the form of csv transactions and MIS reports are described in the [STTM Rules](#), [STTM Procedures](#) and [STTM Interface Protocol](#).

# STTM participant categories

[STTM functionalities used by each registrable capacity below](#) describes the relevant functionalities used in STTM for each participant category.

Table 21 STTM functionalities used by each registrable capacity

Registrable capacity	SWEX	SWEXIE	MIS
STTM trading participants (shippers & users)	C	C	C

## STTM user access

Each participant user must complete a [Gas Systems User Access Request](#) and attach it to the registration application. The form allows for access to multiple markets and multiple companies for each participant user.

The request is an interactive electronic form that changes according to your selections, it must be completed using Adobe Reader version 9 or above. Please do not print the request and complete it manually. For help completing the form, see [STTM user access request on the next page](#).



Figure 10 STTM user access request

corner of your screen).

**Form purpose** Select "Yes" to include the request with your registration application

Complete this form to request gas systems access, modification, or removal for your participant users. Complete a separate form for each participant user, you can request access to multiple markets for multiple companies.

Is this request part of an Application for Registration in the Gas Market? \* ☒ Yes ☐ No

User account request type ? \* ☒ Create ☐ Modify or Delete

**User Details** Select to create a new user account

Complete a request for each participant user and attach it to your registration application.

Last Name \*  First Name \*

Phone \*  E-mail \*

Is there a user ID with similar access? ☐ Yes ☐ No

**Company Details**

Registered Company Name \*

AEMO Company ID  ABN \*  Select

Which market(s) ? \* ☒ STTM ☐ Retail or VIC Wholesale Gas ☐ National Gas Bulletin Board

**Short Term Trading Market**

Please only select the hubs that your company is registered in. If you are not sure, see the "[Participants registered in the Short Term Trading Market](#)" document, available on AEMO's website .

Which hub do you require access to ? ☒ Adelaide ☒ Brisbane ☒ Sydney

Please select your environment: ☐ Pre-production / Industry test ☐ Production

Please select if you require the following role: ☐ SWEX/SWEXIE/MIS Authorised Signatory

Will this account submit bids or nominations to the STTM Market, or view using the STTM Web Exchanger? ☐ Yes ☐ No

Will this account upload CSV files to your MIS folders as a SWEXIE transaction? ☐ Yes ☐ No

Do you know which MIS folder you require access to (optional)?


Please select at least one required service: Only select the STTM hubs that you are registering in

**STTM - Facility Operations** ☐ SWEX - Confirm Registered Services

**STTM - All** ☐ MIS User ☐ SWEX - CSV File Upload ☐ SWEXIE

**STTM - Trading Participants** ☐ SWEX - Contingency Gas Bids / Offers ☐ SWEX - Market Schedule Variations

☐ SWEX - Ex Ante Bids / Offers ☐ SWEX - Registered Services / Trading Rights

 For password resets, contact the AEMO Help Desk: [helpdesk@aemo.com.au](mailto:helpdesk@aemo.com.au).  
Password expiry notifications are sent to your e-mail address, and to your organisation's generic notification address.

# Declared Wholesale Gas Market

This chapter provides an overview of the participant Gas Market System (GMS) operating in the Declared Wholesale Gas Market (DWGM). It is relevant to IT decision making during participant onboarding and provides an understanding of what is required to interface with AEMO's market systems. [DWGM IT systems overview on the next page](#) provides an overview of the IT systems in the DWGM.

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## About the DWGM

Each day an "imbalance" exists between the gas supplied by a participant, and the gas consumed by that participant and their customers. The DWGM determines a market price used by all participants to trade their imbalances. In addition to providing a mechanism to trade imbalances, the DWGM also provides the framework for many other essential functions, including:

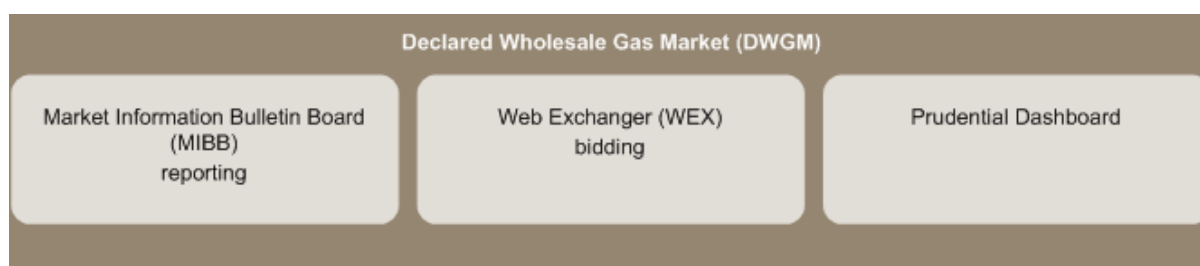
- Gathering information for efficient pipeline operations.
- Maintaining a reliable and secure system for the transportation of gas.

- Management of metering data for operational and market balancing.
- Provision of a market based balancing service that determines price and gas flow quantities.
- Management of market settlement and prudential risk.

More details, on [AEMO's website](#), see:

- About DWGM, see [Declared Wholesale Gas Market Guides, Forms and Templates](#)
- About DWGM registrable capacities, see [Registration](#).
- About DWGM Prudential Dashboard, see [Prudentials](#).

Figure 11 DWGM IT systems overview



Participants are required to comply with the procedures set out by AEMO, which define the communication interfaces and infrastructure for electronic communications between AEMO and participants to support the operation of the gas market, see [Declared Wholesale Gas Market Rules and Procedures](#).

# DWGM IT interfaces

Participants can use several interfaces to interact with DWGM IT systems—file, web, and web services.

Table 22 DWGM IT interfaces

Interface	Function
Web portal (HTTPS)	The WEX and the MIBB both provide web browser interfaces to access the processes and functions of the DWGM.
File upload to web portal (HTTPS)	The WEX allows direct uploading of files to the web portal interface.
File server (FTP)	The MIBB provides an FTP file interface for participant interaction with file servers.
Web services (HTTPS)	The WEX system allows csv file uploading using HTTPS.

## DWGM IT systems

The IT system operating in the DWGM is called the Gas Market System (GMS).

[Table 23](#) summarises the systems available to participants in the GMS.

Table 23 DWGM IT systems

IT system	Interface	Description
Market Information Bulletin Board (MIBB)	Web portal File server	<p>The MIBB is the interface through which AEMO communicates with gas market participants. It performs the following functions:</p> <ul style="list-style-type: none"> <li>◦ Providing transaction interfaces with external market participants.</li> <li>◦ Reporting market information.</li> <li>◦ Publishing system-wide notices to market participants and the public.</li> </ul>

Access to the reports depends on a user's security privileges, which fall into three general classes:

- Public: available to everybody, including members of the public. There is no security control over this information.
- All participants: available to all companies participating in the gas market.
- Participant confidential: available only to an individual or a restricted group of participants.

The generation and publishing of a report can be initiated in three ways:

- Daily at a pre-determined time.
- Triggered by an event.
- Forced to run by the administrator.

AEMO publishes a listing of the market reports on its [website](#), [User Guide to MIBB reports](#). The published details can include (but are not limited to) purpose, format, contents, type of access, frequency of reporting, and specification of the data fields.

IT system	Interface	Description
Web Exchanger (WEX)	Web portal File upload Web service	<p>The WEX provides the interface for market participants to submit:</p> <ul style="list-style-type: none"> <li>Market bids (injections and controllable withdrawals).</li> <li>Demand forecast (uncontrollable withdrawals).</li> <li>Injection hedge nominations.</li> <li>Agency injection hedge nominations.</li> <li>Agency confirmations.</li> </ul> <p>AEMO use the submitted information as input into the MIBB.</p> <p>For more information, see <a href="#">Web Exchanger User Guide</a> on <a href="#">AEMO's website</a>.</p>

## DWGM participant categories

[Table 24](#) describes the relevant functionalities used in DWGM for each participant category.

Table 24 DWGM functionalities used by each registrable capacity

Registrable capacity	WEX	MIBB
Interconnected transmission pipeline service provider	C	C
Storage provider	C	C
Producer	C	C

Registrable capacity	WEX	MIBB
Market participant - producer	C	C
Market participant - storage provider	C	C
Market participant - transmission customer	C	C
Market participant - distribution customer	C	C
Market participant - retailer	C	C
Market participant - trader	C	C

## DWGM systems user access

Each participant user must complete a [Gas Systems User Access Request](#) and attach it to the registration application. The form allows for access to multiple markets and multiple companies for each participant user.

The request is an interactive electronic form that changes according to your selections, it must be completed using Adobe Reader version 9 or above. Please do not print the request and complete it manually. For help completing the form, see [Figure 12](#).



Figure 12 DWGM user access request

**Complete this form to request access to the DWGM systems.**

Complete this form to request access to the DWGM systems. If you are a participant user, you can request access to multiple markets for multiple companies.

Is this request part of an Application for Registration in the Gas Market? \* ☒ Yes ☐ No

User account request type? \* ☒ Create ☐ Modify or Delete

**User Details**

Complete a request for each participant user and attach it to your registration application.

Last Name \*  First Name \*

Phone \*  E-mail \*

Is there a user ID with similar access? ☐ Yes ☐ No

**Company Details**

Registered Company Name \*

AEMO Company ID  ABN \*  **Select**

Which market(s)? \* ☐ STTM ☒ Retail or VIC Wholesale Gas ☐ National Gas Bulletin Board

**Retail or VIC Wholesale Gas**

Please only make the selections that your company is registered in. If you are not sure, see the "[Participant's Guide to the VIC, SA, QLD, and NSW/ACT gas markets](#)" document, available on AEMO's website.

☐ QLD Retail Gas ☐ SA Retail Gas ☐ VIC Retail Gas ☒ VIC Declared Wholesale Gas **Select**

Please select your environment: ☐ Pre-production / Industry test ☐ Production

Please select if you require the following role: ☐ Authorised MIBB Security Contact

Will this account upload CSV files to your MIBB folder? ☐ Yes ☐ No

Please select at least one required service: ☒ MIBB Reports ☐ Web Exchanger User

Will this account submit bids or nominations to the VIC Declared Wholesale Market, or view using the Web Exchanger? ☐ Yes ☐ No

Do you know which MIBB folder(s) you require access to (optional)?

For password resets, contact the AEMO Help Desk: [helpdesk@aemo.com.au](mailto:helpdesk@aemo.com.au).

Password expiry notifications are sent to your e-mail address, and to your organisation's generic notification address.

**All registered participant users have access to MIBB reports**

# Needing Help

## AEMO's support hub

IT assistance is requested through one of the following methods:

- Phone: 1300 AEMO 00 (1300 236 600)

For non-urgent issues, normal coverage is 8:00 AM to 6:00 PM on weekdays, Australian Eastern Standard Time (AEST).

- The [Contact Us](#) form on AEMO's website.

AEMO recommends participants call AEMO's support hub for all urgent issues, whether or not you have logged a call using the contact us form.

## Feedback

Your feedback is important and helps us improve our services and products. To suggest improvements, please contact AEMO's support hub.

# References

You can find resources on AEMO's website.

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