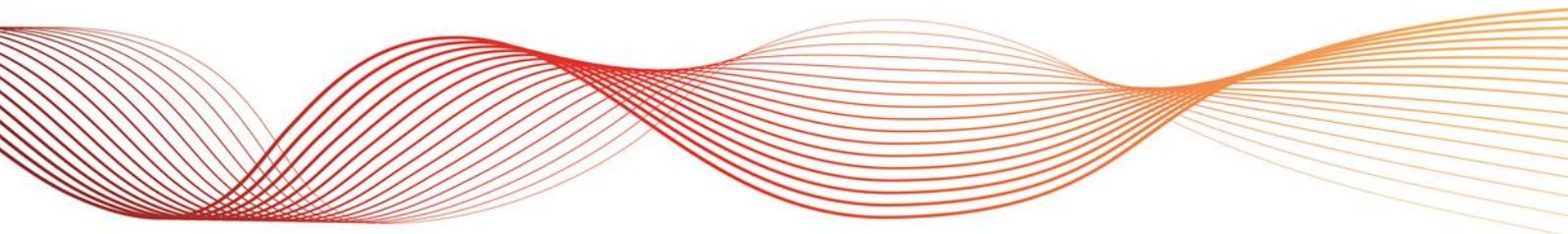




WEM OPERATIONAL CONTINGENCIES

VERSION 3.1

Published: **July 2019**





IMPORTANT NOTICE

Purpose

AEMO has prepared this document to provide information about AEMO's contingency procedures to deal with Market Systems failures impacting the Western Australian Wholesale Electricity Market (WEM), as at the date of publication.

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1. INTRODUCTION

During the daily running of the Western Australian Wholesale Electricity Market (WEM) there are a number of contingent events that may arise due to the failure of the WEM IT systems.

The purpose of this document is to describe for the information of Participants AEMO's contingency procedures to deal with Market Systems failures.

2. CONTINGENT EVENTS

Failures in Market Systems can lead to a number of contingent events arising as described below:

- Market System failures at AEMO can lead to:
 - The Wholesale Electricity Market System (WEMS) not being ready to process daily market activities. This includes issues with: Settlement and Registration functions; FTP servers; the Market Operator Interface (MOI); and Participants accessing the WEMS.
 - AEMO being unable to run the STEM auction – if this is not resolved within the two hour delay enabled by **clause of the WEM Rules 6.4.6** then the STEM will be suspended 5.3.3;
 - STEM results not being published, or manifestly incorrect STEM results being produced. The latter scenario would lead to the STEM being suspended; and
 - AEMO being unable to open the Bilateral and/or STEM windows on time.
- Market Systems Failures at AEMO or at System Management (SM) leading to:
 - Load forecasts, ancillary services and outage data not being received in time to open the Bilateral window.
- Market Systems failures at AEMO or with Participants leading to:
 - Participants being unable to submit their Bilateral and/or STEM submissions.

3. RELATIONSHIP TO WEM RULES

All WEM Rule references in this document refer to the Wholesale Electricity Market Rules as at 1 January 2012.

AEMO's contingency procedures are related to the areas of the Rules as follows:

- Extension of Bilateral and STEM submission windows:
 - **Clause of the WEM Rules 6.4.6** allows AEMO to extend the Bilateral and STEM windows by up to two hours if IT/software failures prevent AEMO from completing relevant processes. AEMO will invoke this rule if IT/software issues prevent the timely opening of the Bilateral and/or STEM windows or if they are unable to run the STEM.
- Market and Dispatch Advisories:
 - Section **6.19** of the WEM Rules addresses Market Advisory notifications and the contingent circumstances under which AEMO must send out Advisories as well as what their content must be.
 - **Clause of the WEM Rules 7.11.9** obliges AEMO to inform SM as soon as practically possible about circumstances that may lead to SM issuing a Dispatch Advisory.

- Suspension of the STEM:
 - Section **6.10** of the WEM Rules addresses AEMO's obligations if and when the STEM is suspended.

Note, references to rules within this Procedure are denoted in bold: **xx.xx.xx**.

4. TIMELINE

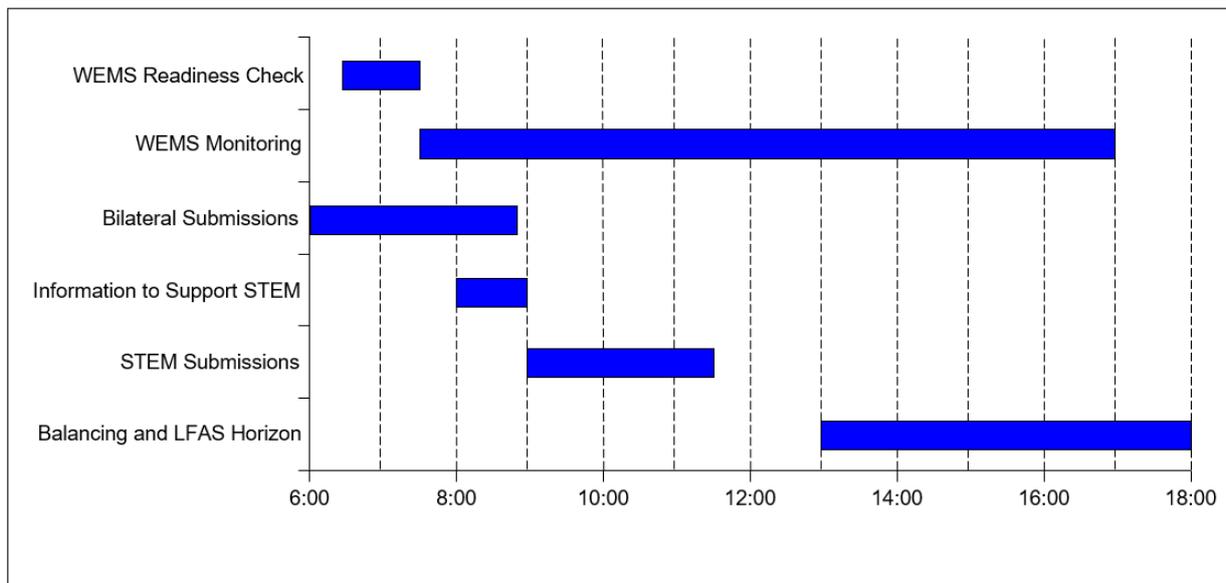
The Daily Operations timeline is relevant to the Contingency Procedures in that it gives us an indication of when various contingent events may arise and what the implication for subsequent daily processes might be.

Figure 1 summarises the Daily Operations timeline. The Operations Contingency Procedures are invoked if there are Market Systems failures affecting the following activities in the timeline:

- WEMS readiness checks;
- Information to support the Bilateral and STEM – receiving and publishing load forecasts from SM, receiving ancillary services and outage data from SM, and publishing market information such as net bilateral positions, facility limits, STEM prices, net contract positions, etc;
- Bilateral Market – receiving submissions, opening the window and running the market;
- STEM – receiving submissions, opening the window and running the STEM auction;
- Dispatch Data and Dispatch Merit Orders – importing ex-post outage files from SM.

Note the WEM Rules allow the Bilateral and STEM windows to be delayed in case of contingent events.

Figure 1 Daily Operations timeline



4.1 Operational Contingency Procedures

This section is structured as follows:



- Section 4.1.1 describes the types of Market Systems failures at AEMO and SM that can give rise to certain contingent events;
- Section 5 describes AEMO's processes for dealing with various contingent events. Particularly:
 - Failures in the daily WEMS readiness checks is covered in Section 5.1;
 - Failure to open the Bilateral and/or STEM and/or windows is addressed in Section 5.2 and 5.3;
 - Issues with running the STEM auctions are addressed in Section 5.3.2;
 - Failure to publish market information such as net bilateral positions, facility limits, STEM prices, net contract positions, etc. is covered in Section 5.3.9;
 - Issues receiving load forecasts, ancillary services and outage data from SM is covered in Section 5.3.6; and
 - Participants being unable to submit their Bilateral and/or STEM submissions are addressed in Section 5.3.8.

4.1.1 Market System Failures

A failure of the Market Systems can result in the inability for AEMO to complete the processes required under chapter 6 of the WEM Rules or in a manifestly incorrect STEM result.

In relation to full system failure, this is a relatively unlikely scenario as there is redundancy built into AEMO market systems. However, unforeseen issues can still arise due to causes such as:

- Low probability hardware issues;
- Backup site failover failure;
- Common mode software issues;
- SM interface issues; and
- Single contingency point issues (such as Web Server failure).

This section deals only with Market Systems failures of AEMO and SM systems or processes, and not individual participants' technical problems.

Note further that this section only deals with system failures **up to the point at which the STEM results are published**. Failures from this point onwards (i.e. failures affecting the submission of resource plans) will not affect market prices and are addressed in Section **Error! Reference source not found.**

The following lists the key operational steps that the systems must perform on a daily basis, **up to and including the publication of the STEM results**:

- Receive and publish load forecast (**clause of the WEM Rules 6.3A.1(a)**);
- Open and close the bilateral contract submission window (**clause of the WEM Rules 6.2.1**);
- Receive and process outages and ancillary services (**clause of the WEM Rules 7.3.4 and 7.2.3A**);
- Publish market information (including net bilateral positions and Facility/Participant limits) (**clause of the WEM Rules 6.3A**);
- Open the STEM submission window, accept submissions and close window (**clause of the WEM Rules 6.3B**);
- Run the STEM auction (**clause of the WEM Rules 6.4**); and
- Publish market information (including STEM price and net contract positions) (**clause of the WEM Rules 6.4.3**).

There are four general modes of failure that may affect these steps:



- Errors with SM systems or communication platforms: This may mean that information required for the above steps is not available. Generally, there will be manual backup steps in place to manage this type of issue;
- Failure of AEMO's systems resulting in the inability to process data and *produce results*: In this case, it is most likely that this will affect all of the steps above rather than any single step;
- Failure of AEMO's systems resulting in an incorrect STEM result without a full *failure of the systems* – this will generally need to be an obvious manifest error for AEMO to detect this and respond accordingly; and
- Failure of AEMO's systems affecting publication of information only – in this case, if the required information is available, the following methods will be used to send the information manually.
 - Using the WEMS;
 - Using the email system; or
 - Using fax and phone systems

Section 5 below addresses failures of each of the steps above and the associated contingency procedures. .

5. AEMO CONTINGENCY PROCEDURES

5.1 Failures in WEM Readiness Checks

The daily operation of the market starts each day at 6:30am, at which time the on duty operator must ensure that all the systems are functional. There are a number of checks performed during this WEMS readiness procedure that may fail. These include establishing that:

Participants can access the WEMS through the Market Participant Interface (MPI) so Participants can fetch reports and make submissions;

- FTP servers are operational;
- Settlements is available so that Participants can retrieve settlement information;
- Registration functions are available so that Participants can update registration details; and
- The Market Operator Interface (MOI) is available.

If any of these readiness checks fail then the operator must invoke internal contingency procedures, which involves escalation to IT support, investigation, and finally a decision to suspend if issues cannot be resolved before the Bilateral submission window closes.

5.2 Failure to open Bilateral window

The Bilateral Contract Submission window is open for 7 days up until the morning of the scheduling day as required **clause of the WEM Rules 6.2.1**.

For Market Participants that have standing bilateral submissions in place, the action of opening the window will see these standing submissions converted to bilateral submissions.

If the Bilateral window has not opened at all (unlikely due to its length) there will be no bilateral submissions in the market at all. If this is the case the market will have been suspended as this would mean that the systems have been inoperative for 7 days (including STEM windows, Resource Plan windows, etc).



A more likely scenario is that the Bilateral window has failed for part of its opening time. In this case there will be standing bilateral submissions converted for those participants that have submitted this standing data.

In the event that the Bilateral window has failed for part of its opening time, **clause of the WEM Rules 6.4.6** allows AEMO to extend the window by up to two hours.

In the event that AEMO is unable to resolve the issue before the end of the extended time frames, AEMO will make a decision on whether to suspend the STEM after discussion with affected Market Participants.

5.3 Failure to open STEM window

The STEM window opens daily at 9:00 AM and closes at 10:50 AM (**clause of the WEM Rules 6.3B**). The following modes of failure can affect the STEM window:

- The window cannot be opened at all in this period;
- The window opens on time, but fails before 10:50AM;
- The window cannot be opened at 09:00 but is opened before 10:50AM; and
- The window cannot be closed.

In the event that one of the above scenarios arises, AEMO will invoke **clause of the WEM Rules 6.4.6** allowing for up to a two hour delay in the timelines as prescribed in **clause of the WEM Rules 6.3A, 6.3B** and **6.4**, while ensuring that any delay maintains the 1 hour 50 minute window between the timelines prescribed in **clause of the WEM Rules 6.3B.1(a)** and **6.3B.1(b)**.

A Market Advisory will be sent to Participants to keep them informed.

5.3.1 STEM window does not open within the two hour extension

If the window does not open within the two hour extension, the STEM will be suspended. This decision to suspend will be made at 11:00AM and Participants will be notified through a Market Advisory. Under no circumstances will the window close time be intentionally extended beyond the two-hour extension permitted in the WEM Rules.

5.3.2 STEM window opens within the two hour extension

If the window can be opened and the Participant and Facility limit process has run successfully, then standing STEM submissions will be converted to valid STEM submissions for the next trading day (provided these meet the STEM validation requirements).

If the window opening is delayed significantly participants may not have an opportunity to update these submissions. **It is therefore vital to have up-to-date standing STEM submissions.**

If the window opens for a partial period and a Participant whose standing submission did not convert, wishes to participate in the STEM but is unable to do so, the STEM will be suspended. Before suspension, AEMO operators will attempt to contact the Participant to resolve the issue.

5.3.3 STEM Suspension

There are two scenarios under which the STEM auction will be suspended if:

- A Market System failure results in an inability to run the STEM auction **clause of the WEM Rules 6.10.1**; or
- The STEM auction produces no or manifestly incorrect results.



Clause of the WEM Rules 6.4 requires that the STEM Auction results be determined no earlier than 11:00 AM and no later than 11:30 AM on the Scheduling Day. If a Market System failure results in the inability to run the STEM Auction and determine the result by 11:30AM on the Scheduling Day, then AEMO will invoke clause of the WEM Rules 6.4.6 and extend the timeline by up to two hours. If after two hours the STEM Auction cannot be run, the STEM will be suspended.

5.3.4 Inability to run STEM auction

The other scenario in which STEM will be suspended is when the STEM has run but there are no results, or the results are manifestly incorrect. This may include:

- Prices outside of energy market caps;
- Excessive amounts of STEM traded quantities.

It should be noted that due to the complexity of the STEM clearing process, the ability of AEMO operators to identify incorrect results in the short timeframes available is generally limited to manifest errors.

5.3.5 Failure to publish STEM information

Where the failure of AEMO systems affects the STEM results publication process only, this will not give rise to STEM suspension. If publication failure occurs, then AEMO will keep Market Participants notified via Market Advisories and would use email, fax or phone to inform Participants of their respective STEM results.

5.3.6 Issues receiving data from System Management (SM)

Clause of the WEM Rules 6.3A.1(a) requires that by 8:00 AM on each day, AEMO publishes the load forecast for the following day. If the forecast does not arrive from SM by a 7:30am, AEMO operators will contact SM staff and attempt to obtain the data by other means (email, fax or phone). The small amount of data means that manual workarounds are feasible.

If the forecast is not available by 8.00 AM the operator will communicate to Market Participants that the forecast is currently unavailable. The operator will continue to attempt to publish the load forecast up until noon of the scheduling day. If successful, another communication will be issued to Market Participants. In any event, if the load forecast cannot be received and published as required under the Rules, this will not result in a STEM suspension (as this is required for information purposes only).

5.3.7 Issues with ancillary services and outages data

Each day SM must provide outage and ancillary service information to AEMO for the following trading day as required under **clause of the WEM Rules 7.3.4** and **7.2.3A**. In the first instance, this information is used to determine the facility and participant limits. These limits are used to validate STEM submissions.

In the event that any of the above cannot be completed, AEMO will invoke **clause of the WEM Rules 6.4.6** allowing for up to a two hour delay in the timelines as prescribed in **6.3A, 6.3B** and **6.4** (while ensuring that any delay maintains the 1 hour 50 minute window between the timelines prescribed in **clause of the WEM Rules 6.3B.1(a)** and **6.3B.1(b)**)

A Market Advisory will be sent to participants to keep them informed of the delays.

If AEMO is able to process the ancillary services and outages data and calculate the appropriate limits, but cannot provide this information to Participants through the Market Systems, AEMO will use alternative means of communications to send the information (i.e. email).



5.3.8 Bilateral and STEM submission failures

If any Market Participant is unable to make their Bilateral or STEM submissions due to issues arising from AEMO IT systems, AEMO can extend the Bilateral and STEM windows by up to two hours under **clause of the WEM Rules 6.4.6**. Participants will be kept informed via Market Advisories.

Please note, individual Participant system failures will not result in a Bilateral or STEM delay or suspension. Please give as much notice to AEMO as possible when encountering issues making submissions. This is to allow for ample time for AEMO to investigate the issue before window closure, and make a decision to take action as necessary.

Market Operations (WA) are unable to enter data on behalf of Participants under any circumstances.

Operators will endeavour to provide all other assistance to participants that are experiencing difficulties in making Bilateral or STEM submissions.

5.3.9 Failure to publish Market Information

The WEM Rules require that AEMO publish certain market information before set times. This information includes:

- Bilateral Positions (**clause of the WEM Rules 6.2.3 and 6.2.8**)
- Facility and Participant Limits (**clause of the WEM Rules 6.3A.2**)
- STEM Auction results (**clause of the WEM Rules 6.4.1**)
- Net Contract Position (**clause of the WEM Rules 6.4.3 (d)**)

In the event that a publication failure occurs, AEMO will keep Market Participants notified via Market Advisories and use email, fax or phone to inform Participants of their respective participant specific market information, as applicable.

It is imperative that Market Participants keep their contact information current in WEMS so that the appropriate people are able to be notified in the event of issues affecting the operation of the market/s.



ABBREVIATIONS

Abbreviations

Abbreviation	Expanded name
FTP	File Transfer Protocol
SM	System Management
STEM	Short Term Energy Market
WEMS	Wholesale Energy Market System

GLOSSARY

Term	Definition
Ancillary Service	A service, including those described in WEM Rules clause 3.9, that is required to maintain Power System Security and Power System Reliability, facilitate orderly trading in electricity and ensure that electricity supplies are of acceptable quality.
Short Term Energy Market	A forward market operated under Chapter 6 in which Market Participants can purchase electricity from, or sell electricity to, AEMO.
Wholesale Energy Market	The market established under section 122 of the Electricity Industry Act.

The master AEMO glossary document is available [on Sharedocs via this link](#).