

# WEM Reform Program Industry Testing and Transition Strategy – DRAFT

December 2022

## Consultation version

Describes key elements of the proposed approach to managing preparations for WEM Reform Go Live between AEMO and Rule Participants.





# Important notice

## Purpose

This publication has been prepared by AEMO to provide guidance as to how AEMO will work with Rule Participants to test interconnecting systems, drill in key business processes and transition and go-live activities and schedules as they test their new and modified systems and processes and transition their operations from current market arrangements to the New WEM.

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## Version control

Version	Release date	Remarks / Changes
#0.1	20/12/2022	First draft for external consultation

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# 1. Introduction

This chapter provides background information on AEMO's WEM Reform program, and sets out the purpose, scope and approach to the development of this Industry Testing and Transition Strategy.

## 1.1 AEMO's WEM Reform program

The WEM Reform is AEMO's Program of work to deliver the Foundation Regulatory Framework part of the WA Government's broader Energy Transformation Strategy. The Program will deliver a new WEM that addresses today's security and market effectiveness challenges to shape a better energy future for Western Australia.

The WEM Reform Program implements a suite of new obligations on AEMO under the WEM Rules relating to:

- Security Constrained Economic Dispatch (SCED);
- Changes to the Reserve Capacity Mechanism to align with the introduction of constrained network access;
- Updated system planning processes; and
- Updated market administration and financial processes.

The Program is implementing these changes by means of a wide range of activities including:

- System enhancements and integration, including associated requirements analysis, design, build and testing activities.
- Developing and revising business processes
- Developing WEM Procedures and other documentation to elaborate new obligations and processes and support the use of new and modified systems.
- Testing, educating and practicing in these new systems and processes both internally and externally.

The SCED market will commence on the New WEM Commencement Day (NWCD, 1 October 2023)<sup>1</sup>.

## 1.2 Purpose of the Industry Testing and Transition Strategy

The purpose of the Industry Testing and Transition Strategy is to set out a plan for managing, coordinating, monitoring and reporting on critical elements required for:

- Industry testing of standalone systems – Market Participant Test
- Industry scenario testing of integrated systems –referred to here as “Coordinated Market Trial”
- Evaluating market readiness to inform a Go-Live decision; and
- A safe and effective transition and cutover from existing to future systems and processes in the lead up to and immediately following the NWCD.

It is a high-level document that describes the external testing and transition approach for the entire WEM Reform Program. It will be supported by additional artifacts to be prepared in the lead up to the NWCD.

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<sup>1</sup> The term New WEM Commencement Day (NWCD) defines the date when AEMO will cut-over from current Balancing Market to the new SCED Market, supported by the commencement of various regulatory provisions, at the same time. On 30 September 2021, the State Government announced that it will set the NWCD for 1 October 2023. The Minister is expected to Gazette this date around the same time as the Tranche 6 WEM Amending Rules (late 2022).

### 1.3 Related artifacts and activities

The Industry Testing and Transition Strategy is one of two strategy documents that support market readiness for the introduction of WEM Reform. Beneath each sits multiple activities and artifacts as illustrated by Figure 1 below.

Figure 1 Artifacts and activities supporting market readiness for WEM Reform

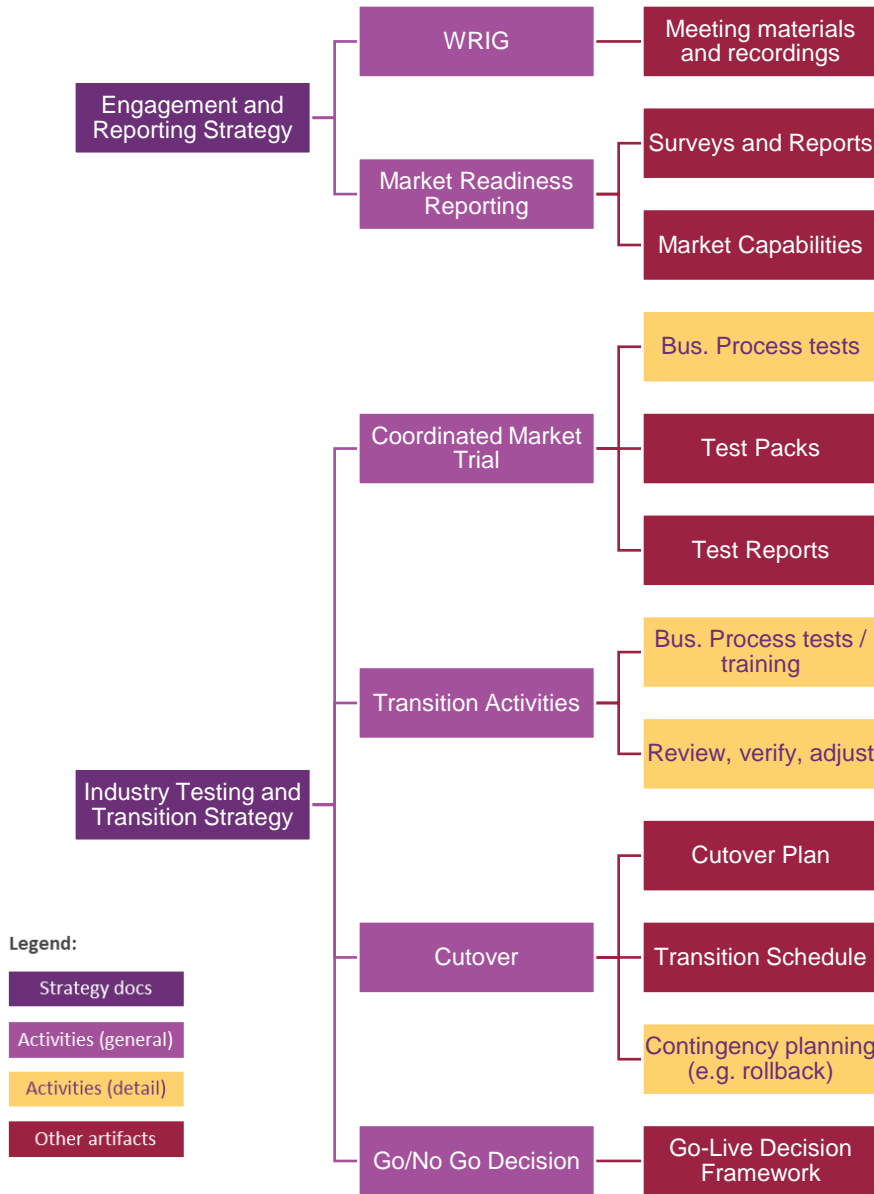


Table 1 shows how the Industry testing and transition strategy interrelates with other key WEM Reform market readiness documents.

Table 1 Summary of related documents

Related document	Description of relationship
Market Readiness Engagement And Reporting Strategy	Sets out how Market Readiness is to be measured, progress against the Market go-live will be regularly reported and how stakeholders will understand how they will be engaged during the readiness process. The Market Readiness Engagement and Reporting Strategy has

Related document	Description of relationship
	undergone consultation with Market Participants and the current version is also published on our public website <a href="#">here</a> .
Market Capabilities	Market capabilities describe what a given entity needs to know and/or be ready to do to successfully operate, support or participate in the new WEM at go-live and thereby meet their obligations under the revised WEM Rules. The Market Capabilities are a key reference used to standardise readiness reporting and to evaluate risks to readiness. The WEM Reform market capabilities are explained in this public consultation document <a href="#">here</a> and dynamic lists of market capabilities are maintained on the Reformer SharePoint site <a href="#">here</a> .
Test packs	Prior to the beginning of each phase of Coordinated Market Trial, AEMO will publish a Test Pack that will provide Rule Participants with a detailed plan and schedule for that phase, instructions for participation and one or more templates for reporting results. See Section 6.2.1
Test reports	Test reports take a variety of forms for the purposes of this strategy. Participants will report status and outcomes from test events held during Coordinated Market Trial. AEMO will prepare a Test Summary Report that will report key outcomes and findings from the testing carried out during each Coordinated Market Trial phase. See Sections 6.2.3 and 6.4.2
Transition Schedule	WEM Rules clause 1.56 requires AEMO to publish a Transition Schedule, subject to the approval from the Coordinator of Energy (clause partially reproduced below). The matters required to be covered in the Transition Schedule fall within the scope of this Industry Testing and Transition Strategy – namely the key operational activities required to transition to the New WEM. AEMO will prepare, seek approval for and publish this instrument in accordance with the WEM Rules. See Section 8.3.4
Cutover Plan	The WEM Reform Cutover plan will lay out timings and dependencies for tasks associated with switching between current and future state systems and processes. It will also establish rules and guidance regarding completion, escalation and communication of cutover events. See Section 8.3.3.
Go Live Decision Framework	The Go-live decision framework set out how key Go-live decisions will be made, including the information inputs, evaluation principles, accountabilities and key contingencies. See Section 8.4.

## 1.4 Audience

This Industry Testing and Transition Strategy is primarily intended for all WEM Rule Participants – including market participants and Western Power, as well as the Economic Regulation Authority (ERA)<sup>2</sup>. These are the entities that will be directly affected by the changes implemented under the WEM Reform Program and each group has its own obligations to implement changes pursuant to amendments to the WEM Rules.

Unless explicitly limited, the obligations owed by and to “Rule Participants” in this Strategy, will also be owed by and to the ERA.

The intended audience for this document is particularly focussed on the following specialists within the above organisations:

- Developers and business and functional SMEs.
- Delivery managers.
- Test managers, leads and analysts.
- Project managers.
- Change controllers and managers.
- IT operations teams.
- Operations teams.

<sup>2</sup> Under the WEM Rules, the term “Rule Participants” encompasses Market Participants, Western Power as the Network Operator and AEMO as the Market and System Operator. All Rule Participants will be impacted by the WEM Reform Program and, hence, the readiness of all Rule Participants is within the scope of this Strategy. In addition, the Economic Regulation Authority (ERA) has important regulatory functions that will change as part of these reforms and the ERA’s readiness is also a matter of interest under this Strategy. The term Rule Participant will be used here for convenience, although it does not encompass the ERA for the purposes of the WEM Rules.



## 1.5 Living document

The Industry Testing and Transition Strategy will be a living document and AEMO anticipates issuing several updates as the industry approaches the NWCD. These updates will be issued by amending relevant chapters of this document and by publishing subordinate artifacts.

Stakeholders should note that the Industry Testing and Transition Strategy is advisory in nature. AEMO's approach to planning, coordinating and executing all elements of this Strategy are, and will remain, subject to change in light of considerations including:

- Hard constraints like the timely completion of systems or provision of data essential to carry out certain activities;
- AEMO's reprioritisation of activities in light of time or resource constraints;
- The availability and/or interest of other Rule Participants to take part in certain activities; and
- Flow-on implications of risk or issues identified by AEMO or other Rule Participants.

While AEMO reserves the right to adjust its approach as required, it intends to adhere to this Strategy as closely as possible and to communicate in a clear and timely way to other Rule Participants any changes in approach.

## 1.6 Consultation

This version of the Industry Testing and Transition Strategy is an initial draft for consultation. AEMO welcomes comment on the approach presented here, particularly in relation to the planning, coordination and execution of Coordinated Market Trial.

Please email your comments, markups or suggestions to: [wa.ets@aemo.com.au](mailto:wa.ets@aemo.com.au), subject: Industry Testing and Transition Strategy.

To ensure your feedback is considered for the next version of the Strategy, please submit by **18 January 2023**.

## 2. Framework

This chapter establishes the framework for the Industry Testing and Transition Strategy by setting out the strategy's objective, scope and principles.

### 2.1 Industry Testing and Transition Strategy objective

"Industry testing and transition" refers to the processes by which AEMO and Rule Participants work together to ensure:

- new and modified systems developed for the New WEM are demonstrated to interface correctly;
- each has established aligned and appropriate, internal processes; and
- a systematic transition towards applying these new systems and processes in operation within the New WEM.

Accordingly, the objectives for this Industry Testing and Transition Strategy are to:

- describe how AEMO will work with Rule Participants to:
  - test interfacing systems;
  - practice key business processes; and
- plan, schedule and coordinate key transition and cutover activities required to transition from current market arrangements to the New WEM.

These objectives support, and are consistent with, the market readiness objective set out in the WEM Reform Market Readiness Reporting and Engagement Strategy<sup>3</sup>.

### 2.2 Industry Testing and Transition Strategy scope

The scope of the Industry Testing and Transition Strategy includes:

- AEMO and Rule Participant IT system implementations required to operate the NEW WEM.
- B2B processes that are directly impacted by WEM Reform, such as coordination and communication protocols and processes between AEMO and Western Power.
- Registration and standing data updates required as a result of the New WEM Rules, such as facility class, FCESS accreditation status.
- Data migration of existing data from legacy to upgraded market platforms<sup>4</sup>.
- Development of Cutover Plans and cutover migrations.
- Contingency planning.

Please refer to the hierarchy of artifacts and list of related documents set out in the previous chapter (Section 1.3)

<sup>3</sup> AEMO (2022) Reform Market Readiness Reporting and Engagement Strategy, available online at <https://aemo.com.au/-/media/files/initiatives/wem-reform-program/wem-reform-market-readiness-engagement--reporting-strategy.pdf?la=en&hash=47D42069138181C1ED4AF54BE9773DA0>

<sup>4</sup> Note that this may not apply to many of the systems being deployed, which are both completely new systems and implement novel constructs.

## 2.3 Industry testing and transition principles

The following principles will underpin this strategy and support its objective. They will also support the overarching market readiness objective.

### 1. Mandated NWCD should be met

Transition activities should be planned and executed in a way that supports AEMO and Rule Participants meeting the mandated NWCD (1/10/2023). This includes providing market systems capability sufficiently far ahead that essential activities can be completed by the commencement date. Applying this principle may require some individual entities to adjust their transition approaches to ensure that all are able to meet key obligations.

### 2. WEM operations should be uninterrupted during periods of transition and go-live

The Industry Testing and Transition Strategy should be designed and implemented in a way that minimises risks to the operation of the WEM and the SWIS during implementation and transition.

### 3. Rule participants to have opportunity to test interfaces ahead of External Integrated Scenario Testing

The Industry Testing and Transition Strategy must provide opportunities for Rule Participants to test user and system interfaces for standalone applications in a test environment. This opportunity should be afforded to Rule Participants prior to the commencement of integrated scenario testing, where the particular user or system interfaces will feature in the scenarios to be tested.

### 4. Rule participants to be able to test their systems across multiple interfaces and drill in critical business processes

The Industry Testing and Transition Strategy must coordinate testing event in which Rule Participants perform realistic operations as part of integrated testing scenarios. These events will see multiple new integrated systems receiving inputs from AEMO and Rule Participants in a coordinated way to simulate a range of critical business processes under a range of scenarios. These events should support both system testing and practising operational processes.

### 5. AEMO and Rule participants to be transparent about testing participation and results

Due to the mutual dependency of AEMO and all Rule Participants for a successful outcome from WEM Reform, all entities should be transparent regarding what testing activities they have participated in, what functionalities and internal processes have been confirmed and what remains in doubt. This transparency should be reflected in all parties faithfully reporting progress and status against relevant Market Capabilities and completing test reports where requested. It also requires AEMO to provide the market with timely information on the outcome of performance tests related to market-interfacing systems.

### 6. Participants and AEMO are responsible for their own readiness

AEMO cannot and does not assume responsibility for participant readiness, including participant testing, cutover and transition activities. The Industry Testing and Transition Strategy provides an opportunity for all Rule Participants, including AEMO, to align their efforts and approaches to test systems and processes and to plan and execute their respective cutovers and transition activities. Aligning their own readiness work programs to this strategy should afford rules participants increased confidence in their own preparedness for WEM Reform.

# 3. Scope of Industry Testing

## 3.1 Testing basic interfaces

WEM Reform is creating new user interfaces, new APIs and will be publishing new reports to the Public Data Site. Rule participants need to test and confirm their ability to use these methods for providing and receiving information to/from AEMO. AEMO will continue to provide opportunities for participants to test new interfaces as early as possible and without waiting for the systems providing these interfaces to be integrated with other systems (see Section 5). AEMO wants Rule Participants to test and confirm their ability to use these interfaces before they participate in testing business processes – discussed in the following section.

## 3.2 Testing Business Processes

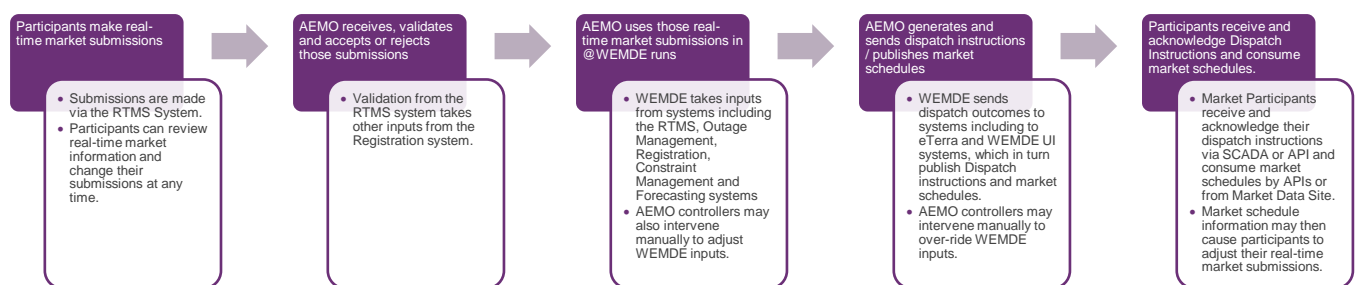
The suite of new systems to be deployed as part of WEM Reform provide functionalities that support broader business processes. Ultimately, it is the ability of AEMO and Rule Participants to effectively carry out these business processes that must be tested and confirmed prior to going live.

### 3.2.1 Integrated testing to be based on business processes

This Strategy approaches system testing from the starting point that systems form part of broader business processes that involve some combination of systems and human judgement/actions to achieve a particular outcome. That is, testing during Coordinated Market Trial (and during the Transition Period that follows) should encompass integrated systems and the human interactions with those systems that complete those processes. It must also encompass both internal and external interactions to the extent necessary and feasible.

For example, a basic version of the dispatch business process may involve the following operations. AEMO will design scenarios for Coordinated Market Trial that encompass and simulate as many of these operations as possible.

Figure 2 Simplified steps in the dispatch business process.



AEMO has identified a set of business processes that it considers must be tested with Rule Participants during the Coordinated Market Trial phase. AEMO's intention is that this will simultaneously provide opportunities for Rule Participants and AEMO to test integrated systems as well as have staff train and practice in using those systems to carry out their respective roles for a given business process.

### 3.2.2 Proposed set of business processes to be tested

AEMO proposes to test seven business processes with Rule Participants during Coordinated Market Trial (see Section 6), with multiple scenarios to be defined for each business process, reflecting different combinations of conditions, events and actions. Table 2 below summarises the 7 business processes, the objectives for testing each process and an indication of the scenarios that AEMO proposes for testing each business process.

Table 2 Business processes to be tested during Coordinated Market Trial

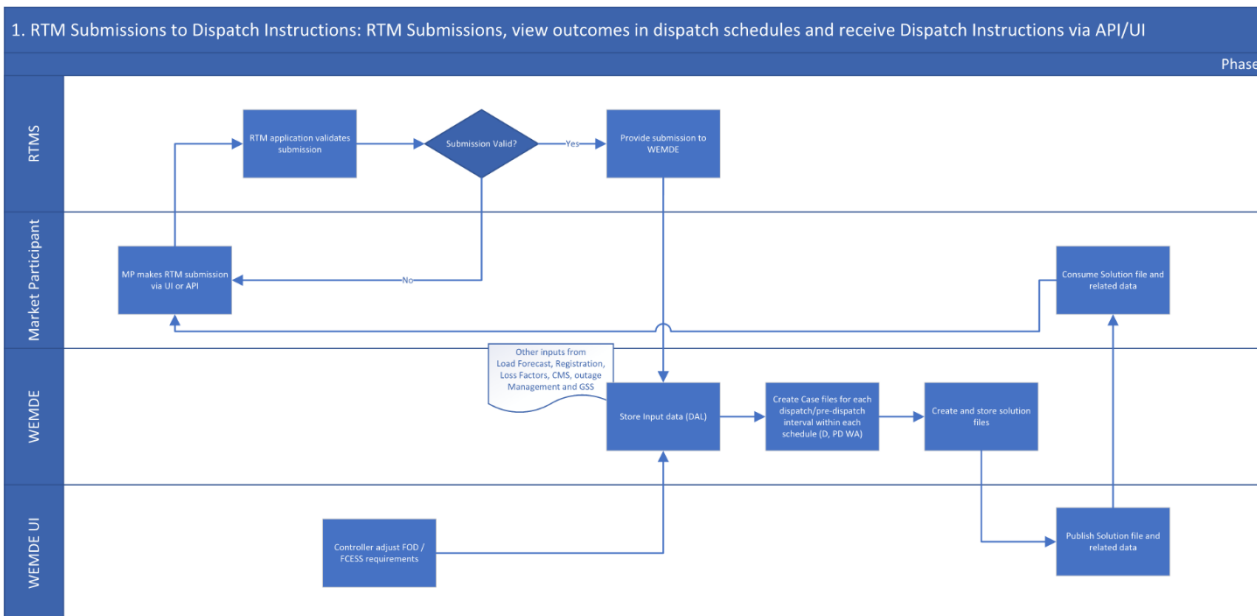
Ref	Summary	Testing Objectives	Scenarios
BP 1	RTM Submissions to Dispatch Instructions: RTM Submissions, view outcomes in dispatch schedules and receive Dispatch Instructions	<ul style="list-style-type: none"> <li>Confirm consumption of information within dispatch schedules to inform RTM Submission.</li> <li>Validate Market Participants' capability to make and adjust its RTM submission while keeping several variables mostly static as an introduction to how SCED differs from Balancing</li> <li>Ensure AEMO can collect, process and use RTM submissions in WEMDE runs</li> <li>Develop an understanding of how quantities and prices in RTM submissions affect dispatch outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>Varying the load profile (FOD)</li> <li>Varying FCESS requirements</li> <li>Varying facility's FCESS accreditation values</li> <li>Introduction of new Facilities entering the market and existing facilities exiting the market</li> </ul>
BP 2	Facility and Network Outages: RTM Submissions, Facility & Network Outages, view outcomes in dispatch schedules and receive Dispatch Instructions	<ul style="list-style-type: none"> <li>Validate Market Participant and Network operator capability to submit Outage Plan.</li> <li>Consumption of Outage data and dispatch outcomes to inform RTM Submission</li> <li>Validate Market Participants' capability to adjust its RTM submission to reflect available capacity</li> <li>Ensure AEMO can collect, process and use RTM submissions in WEMDE runs</li> <li>Develop an understanding of how available capacity impacts dispatch outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>Understanding RTM Submission obligations after Generator Outage Plan Submission, Withdrawal and Revision</li> <li>Network Operator Submits, Withdraw and Revise Network outage</li> <li>Network Outage starts early, starts late, finishes early, finishes late</li> </ul>
BP 3	Other Network Constraints: RTM Submissions, Network constraints (manually invoked), view outcomes in dispatch schedules and receive Dispatch Instructions	<ul style="list-style-type: none"> <li>Validate Market Participants' capability to make its RTM submission following invocation of network constraint</li> <li>Simulate Credible Contingency Events (inc credible contingency reclassification)</li> <li>Ensure AEMO can collect, process and use RTM submissions in WEMDE runs</li> <li>Develop an understanding of the impacts which network constraints can have on dispatch outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>Likely contingency events</li> <li>Credible Contingency Reclassification events</li> </ul>
BP 4	Commissioning Test Plans: Submit commissioning test plan, update RTM Submissions, view outcomes dispatch schedules and receive Dispatch Instructions	<ul style="list-style-type: none"> <li>Validate Market Participants' capability to reflect an approved Commissioning Test Plan in a RTM submission</li> <li>Consumption of CTP data by other participants to inform RTM Submission</li> <li>Ensure AEMO can collect, process and use RTM submissions in WEMDE runs</li> <li>Develop an understanding of expected dispatch outcomes where a facility is undergoing commissioning.</li> </ul>	<ul style="list-style-type: none"> <li>Submit, Withdraw and modify CTP</li> </ul>
BP 5	Low Reserve Condition (LRC) Declarations and Intervention Events: LRC Declarations to elicit MP response and Intervention events to direct MP responses	<ul style="list-style-type: none"> <li>Familiarise consumption of Dispatch Advisory updates to outages in real time</li> <li>Validate expected behaviour by Market Participants after AEMO issues a LRC notification or AEMO Direction following an AEMO Intervention Event via Market Advisory</li> <li>Validate Market Participants' capability to adjust its RTM submission to address shortfall (energy and/or ESS) or other issue identified in LRC Notification / AEMO Direction</li> <li>AEMO to issue Intervention Constraint to manage the AEMO Intervention Event</li> <li>Ensure AEMO can collect, process and use RTM submissions in WEMDE runs</li> <li>Develop an understanding LRC Declaration / AEMO Intervention processes and related dispatch outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>LRC notification: FOD / ESS Shortage</li> <li>AEMO Intervention Process</li> <li>Directions to synchronise</li> <li>Outage Recall / Rejection</li> </ul>
BP 6	STEM and the RTM: Understand PD dispatch outcomes to inform STEM submission. Reflect STEM outcomes in RTM submission	<ul style="list-style-type: none"> <li>Familiarise with changes to STEM submission content and timelines</li> <li>Simulate process to align STEM submissions with PD outcomes</li> <li>Simulate process to align STEM outcomes in RTM Submissions.</li> </ul>	<ul style="list-style-type: none"> <li>TBC</li> </ul>

Ref	Summary	Testing Objectives	Scenarios
BP 7	DSP Dispatch: Manual Dispatch of DSPs, Offset FOD, view outcomes dispatch schedules and receive Dispatch Instructions	<ul style="list-style-type: none"> <li>Simulate AEMO dispatching DSPs and FOD adjustment.</li> <li>Simulate DSPs responding to Market Advisory and updating RTM Submission</li> <li>Ensure AEMO can collect, process and use RTM submissions in WEMDE runs</li> <li>Develop an understanding of how DSP dispatch affects dispatch outcomes.</li> </ul>	<ul style="list-style-type: none"> <li>Dispatched DSP follows DI</li> <li>Dispatched DSP doesn't follow DI</li> </ul>

Source: [Coordinated Market Trial Business Processes - Detailed scenarios](#)

To support its own testing and readiness activities AEMO is developing business process diagrams to elaborate system to system and tease apart different role interactions across each business process – see example in Figure 3. AEMO will include a complete set of business process diagrams as part of the test packs we publish in advance of each phase of Coordinated Market Trial.

Figure 3 Example process swim lane diagram for Business Process 1.



Source: [Business Process - Process Maps.vsd](#)

### 3.3 Testing Non-Functional Requirements

#### 3.3.1 Security testing

AEMO will carry out appropriate penetration testing prior to releasing systems into externally exposed environments. This shouldn't affect other Rule Participants, but it is a necessary step that must be accommodated within AEMO's release schedules.

All Rule Participants are responsible for their own cyber security and special obligations accrue to all participants in the electricity sector under the Security Legislation Amendment (Critical Infrastructure Protection) Act 2022. Rule Participants should ensure they understand their obligations under this legislation and consider its implications for any system changes they are implementing in response to the WEM Reform Program. AEMO delivered a short presentation in May 2022 to the WRIG-IT group explaining the relationship between the Framework and WEM Reform<sup>5</sup>. Further information and tools are provided under the [Australian Energy Sector Cyber Security Framework \(AESCSF\)](#).

<sup>5</sup> WRIG-IT No.13, 12 May 2022, available via the Reformer SharePoint site here: <https://aemocloud.sharepoint.com/sites/EXT-COM-REF/SitePages/WRIG-IT.aspx>.

### 3.3.2 Performance testing

#### Giving participants confidence in system performance

Participants need to be confident that the new systems will meet reasonable performance standards in terms of availability and response times.

In addition to performance testing systems, as appropriate, during development, AEMO will performance test systems prior to releasing them into Coordinated Market Trial. This performance testing will include capacity testing external interfaces with simulated high-traffic levels occurring simultaneously across multiple API endpoints. AEMO will share the parameters of any capacity tests carried out (or which we propose to carry out) as part of non-functional testing and share with participants the results of our capacity tests.

AEMO considers that the Coordinated Market Trial format will not be well-suited to certain types of capacity testing. For instance, it will be difficult to coordinate simultaneous API calls from many participants. In such cases, AEMO considers that this type of capacity testing is best achieved by AEMO itself simulating participant loads. However, there may be other types of capacity tests that participants can and should perform themselves. Among other benefits, confidence in system performance would be most effectively established by means of tests in which Rule Participants themselves take part. AEMO welcomes suggestions for how participants should be engaged and involved in system capacity testing and how this should be coordinated to minimise the potential to disrupt other Coordinated Market Trial activities.

#### Rate limits

Our performance testing may identify changes that AEMO must implement to improve performance (such as scaling up system resources) and it will also inform how we configure API rate limits. AEMO will commence Coordinated Market Trial with preliminary API rate limit configurations and will seek feedback from participants on these as part of participant reporting during Coordinated Market Trial. AEMO may adjust API rate limit configurations following Coordinated Market Trial and will advise participants and update our documentation accordingly.

# 4. Industry Testing Overview

AEMO and Rule Participants are responsible for testing their own systems and processes to ensure these meet their respective regulatory and business requirements. However, AEMO's systems provide the platform for Rule Participants to carry out many of their functions and thus it is essential that AEMO provide the means for Rule Participants to test their ability to interface with this platform. This Section sets out the critical elements of the proposed framework for Rule Participants to test and demonstrate their systems against AEMO's.

## 4.1 Summary of industry testing obligations

The following obligations or commitments underpin AEMO's proposed approach to industry testing.

- AEMO will provide and maintain three environments which will be used for the various stages of testing by Rule Participants – these environments are:
  - MPT – the environment used for Market Participant Test, used to test standalone applications only;
  - MKT – the environment used for Coordinated Market Trial to be used to test integrated applications; and
  - PPD – a pre-production environment hosting a complete suite<sup>6</sup> of integrated systems to be used during the Transition Period.
- Relevant procedures and technical specification changes will be documented and published via the Reformer or AEMO's public website prior to the commencement of external test windows.
- AEMO will use production-like data wherever possible and will provide information on relevant data states as part of briefings provided prior to running scenarios in Coordinated Market Trial phases.
- AEMO will perform the appropriate level of testing prior to new releases into the above environments, but this level of testing will differ, depending on the environment and application in question. Specifically, AEMO plans to:
  - perform functional testing
    - of standalone systems, prior to releasing to MPT
    - of integrated systems, prior to releasing to MKT or PPD
  - perform non-functional testing:
    - only partially, prior to releasing to MPT (e.g. penetration testing is essential, performance testing may not be)
    - to the fullest extent possible, prior to releasing to MKT (e.g. allowing for timing constraints)
    - completely, prior to releasing to PPD.
- Rule Participants will inform themselves about relevant participation requirements as detailed in the communications provided prior to test events.
- Rule Participants will perform internal testing and testing against relevant system interfaces in the MPT environment, prior to participating in Coordinated Market Trial and prior to performing operations in either MKT or PPD environments.
- Rule Participants will have appropriately skilled resource capability for execution and support requirements during all stages of market testing.

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<sup>6</sup> There will not be pre-production versions of certain elements such as the SCADA system, consistent with the scope of AEMO's pre-production WEM environment today.

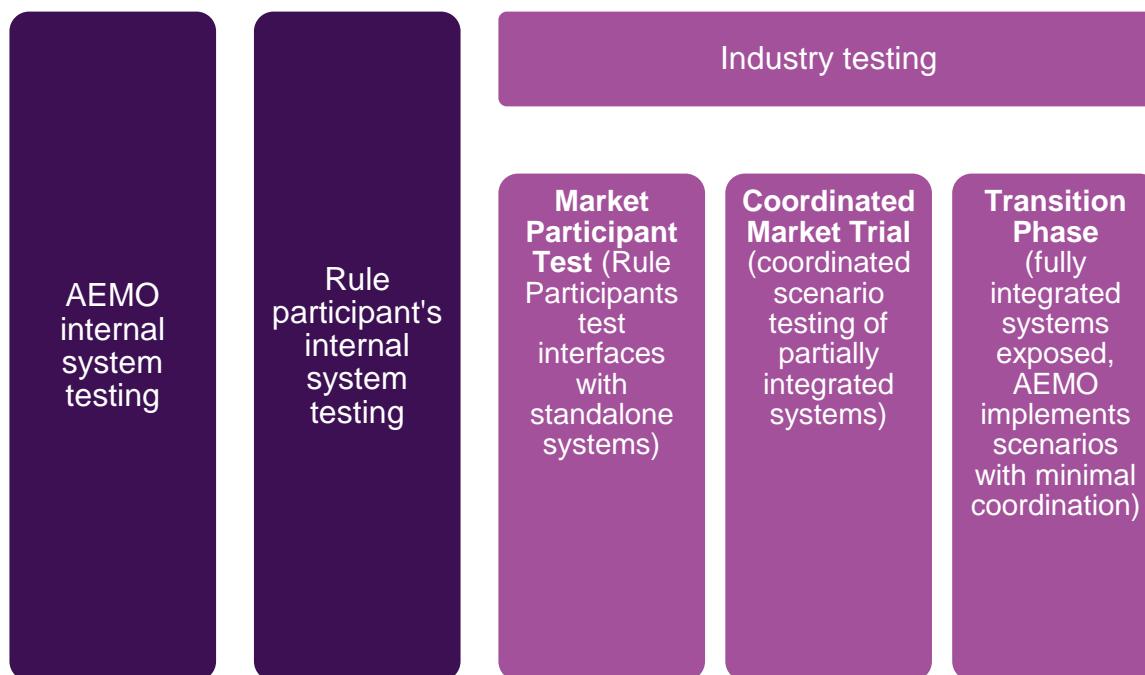


- Rule Participants will ensure that the appropriate access to AEMO’s three testing environment is in place to support their testing requirements. AEMO will support participants resolve issues in getting access to these environments.
- Rule Participants will ensure that defined test data is prepared and available within their test environments for market testing and that this data is appropriately baselined and backed up.
- All parties participating in Coordinated Market Trials will use PractiTest<sup>7</sup> to:
  - execute test cases and log results
  - undertake defect management
  - view testing results.

## 4.2 Stages of Industry Testing

This strategy contemplates three categories of testing: testing AEMO’s internal system, testing participants internal systems and finally industry testing – which contemplates testing the interactions between AEMO and participants systems. We further identify three stages of industry testing, involving progressively more complete systems and focussed increasingly on the demonstration that integrated systems and processes work correctly together smoothly and predictably executing business processes and market outcomes (see Figure 4). Shown in Figure 4 are the internal testing activities of both AEMO and other Rule Participants, as well as the three stages of industry testing, that are a focus of this Strategy.

Figure 4 Categories of testing and the three stages of Industry testing



The industry testing stages and AEMO’s preliminary view on how Rule Participants are to be coordinated at each stage are summarised in Table 3.

<sup>7</sup> See Section 6.4 for more detail on the proposed use of PractiTest.

Table 3 Industry testing stages

Industry testing Stage	Description	Coordination of Rule Participants
Market Participant Test	Unintegrated, standalone applications available for Rule Participants to test isolated business processes and support system builds.	<b>Minimal</b> – provision access; provide information and support.
Coordinated Market Trial	Partially integrated applications (building progressively) where AEMO facilitates co-ordinated testing of defined business processes with Rule Participants to confirm applications meet participant requirements and support system builds	<b>Extensive</b> – provision access; impose entry requirements; issue playbooks; tightly schedule; brief; debrief; monitor.
Transition period	AEMO to establish a fully integrated suite of systems, that will be used to simulate partial “parallel operations” <sup>8</sup> and thus support drills and practice business processes as well per AEMO-identified priorities, prior to go-live. During this Transition period, Rule Participants would be able to perform realistic operations and observe results. Details of how AEMO proposes to use this time and the limited system resource available remain to be determined	<b>Moderate</b> - provision access; impose entry requirements; issue guidelines (potential); schedule; brief; monitor.

See Appendix A2 for details of the environments associated with each stage.

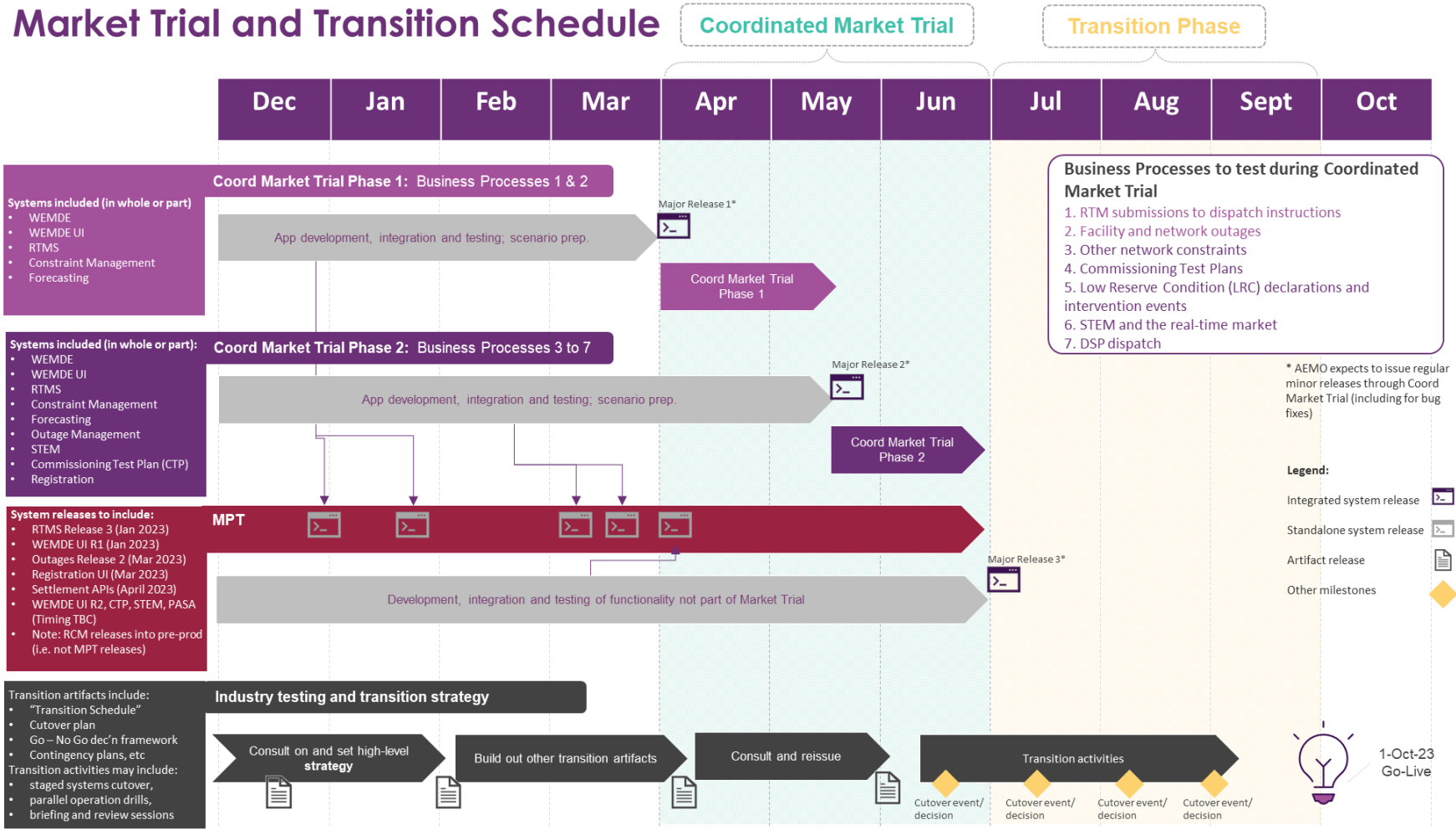
### 4.3 High-level schedule

The high-level schedule proposed for all industry testing and transition activities is shown below.

<sup>8</sup> It may not be possible to establish full parallel operations in practice due to the complexity of certain key elements, such as: mocking the SCADA system and facility dispatch, mocking metering data and the resources required to emulate full control room and other operational functions.

Section heading

Figure 5 High-Level schedule for industry testing and transition



Footnote [Diagrams - Coordinated Market Trial and Transition Strategy.pptx](#)

# 5. Industry Testing: Market Participant Test

## 5.1 Overview

Several Market Participant Tests have already been carried out in – namely Releases 1 and 2 of the Real-Time Market Submission system (February and Sept 2022, respectively) and Release 1 of the Outage Management system (June 2022). AEMO will continue to run these test events in much the same way as participants will have observed for the previous instances. The key features of Market Participant Test releases are summarised in the table below.

**Table 4 Key aspects of industry testing for Market Participant Test releases**

Attribute	Details
Purpose	Market Participant Test releases provide an opportunity for Rule Participants to test their ability to interact with key market-facing systems as standalone applications.
Scope	The scope of functionalities to be tested with each Market Participant Test release is defined by each project, but may include interacting with UIs and/or APIs as well as other methods of publishing or communication.
Timing	For systems that will be required for Coordinated Market Trial, Market Participant Test releases (and participant testing against those releases) must occur well before the commencement of Coordinated Market Trial. For other externally-facing systems, the timing of Market Participant Test releases can be more flexible and may occur in parallel with Coordinated Market Trial.
Coordination	The tests are not coordinated, meaning participants can test the functionalities of interest to them at their own pace.
Communication	Tests are communicated to Rule Participants by means of: <ul style="list-style-type: none"> <li>• Announcements and testing overviews provided at WRIG;</li> <li>• News items posted on the Reformer and news digests circulated by email to anyone on the WRIG mailing list.</li> </ul>
Link to Coordinated Market Trial entry criteria	<ul style="list-style-type: none"> <li>• Coordinated Market Trial participants will need to have demonstrated the ability to use each participant-facing system involved in the relevant Coordinated Market Trial phase.</li> <li>• AEMO is investigating options for validating compliance with that requirement.</li> </ul>
Environment	For more information regarding our testing environment, see Appendix A2

## 5.2 Scheduled Releases

AEMO's preliminary plans for MPT releases are shown below. Table 5 shows the approximate date for each MPT release and indicates the high-level scope of each test opportunity, which may include testing:

- the user interface;
- one or more submission endpoints;
- one or more reporting endpoints; and/or
- the ability to view reports published to a test instance of the market data site.

**Table 5 MPT releases**

Project	Approx Date	Functionalities to be tested			
		UI	API Sub'n	API report	Web publish
RTMS (R.1)	Feb 2022	✓	✓	✓	⊗
RTMS (R.2)	Sept 2022	✓	✓	✓	⊗
RTMS (R.3)	Jan 2023	✓	✓	✓	⊗
Outage Management (R.1)	Feb 2023	✓	⊗	⊗	⊗
Outage Management (R.2)	Feb 2023	✓	✓	✓	⊗
Registration	Feb 2023	✓	⊗	⊗	⊗
WEMDE UI (R.1)	Dec 2023	⊗	✓	✓	⊗
Commissioning Test Plan	TBC	✓	⊗	⊗	⊗
STEM	TBC	✓	✓	✓	⊗
Settlements	April 2023	✓	✓	✓	⊗
ST PASA and MT PASA Reports	Unconfirmed – not before May 2023	⊗	⊗	⊗	TBC

These releases will be supported with briefing session where possible and news articles on the Reformer and emails circulated from the [wa.ets@aemo.com.au](mailto:wa.ets@aemo.com.au) inbox.

### 5.3 The meaning of “Market Trial”

The term Market Trial has long been used in the WEM wherever AEMO makes system changes that require testing by Market Participants. Whenever a new release was placed into a pre-production environment for Market Participants to try out a user interface or test an API – this was referred to as a Market Trial. This is different to the concept described in this Strategy with the phrase “Coordinated Market Trial” – see Section 6.

Some of the system changes being implemented under the WEM Reform Program are not tightly coupled to the 1 October 2023 go-live date and are not dependent on other systems being developed under the Program. The system changes required for RCM Phase 1 and the new Generator Performance Standards (GPS) system changes are the main examples to date. In these instances, the first and only opportunity for participants to test the new releases was when they were deployed to AEMO's pre-production environment for the WEM. These releases did not require coordinated participant testing – rather participants were simply provided with release notes and other documentation and left to make their own judgements as to whether and how they would test those releases in pre-production. In these instances, the phrase “Market Trial” has been used.

Looking ahead, the system changes required for RCM Phases 2 and 3 are similar to those past releases for RCM Phase 1 and GPS. Consequently, AEMO is only planning a single stage of participant testing for these system changes. For these releases, AEMO will continue to use the phrase “Market Trial” to refer to the pre-production testing window for these releases.

# 6. Industry Testing: Coordinated Market Trial

## 6.1 Overview

**Table 6** Key aspects of industry testing during Coordinated Market Trial

Attribute	Details
Purpose	To provide for coordinated testing of defined business processes with Rule Participants to confirm applications meet participant requirements and to support participants testing their own systems and processes.
Scope	The seven business processes previously described in Table 2 and all associated scenarios. AEMO plans for Coordinated Market Trial to involve testing interconnected systems, as well as the human-executed steps required to complete a given business process.
Timing	April to June 2023
Coordination	Extensively coordinated, with each testing event involving participants following a playbook according to a prior arranged schedule with reporting obligations in respect of each testing event.
Communication	Test information to be communicated to Rule Participants by means of test packs, frequent briefings and debriefings and dedicated Reformer resources.
Link to pre-production and Go-Live	AEMO cannot mandate participation in Coordinated Market Trial. Prior participation in Coordinated Market Trial will not be a pre-condition for Rule Participants to obtain access to the Pre-Production or Production environments. All Rule Participants will be strongly encouraged to take part in Coordinated Market Trial to ensure they are aware and informed of the changes that are being introduced through the New WEM.
Environment	For more information regarding our testing environment, see Appendix A2

## 6.2 Communication and coordination

AEMO and participants will need to carry out particular operations at defined times throughout the Coordinated Market Trial phase and special arrangements will be necessary to coordinate all parties reliably and efficiently.

### 6.2.1 Test packs

The primary resource for briefing and advising participants on how to participate in each Coordinated Market Trial event will be test packs. Test packs will be finalised two weeks prior to Coordinated Market Trial phases and will include materials addressing the requirements listed in the table below. AEMO envisages sharing elements of a test pack progressively – rather than issuing all elements simultaneously.

**Table 7 Key requirements for Test Packs**

Context	testing objectives and summaries of the business processes to be tested
	process charts making individual roles within the business processes explicit
	scenario descriptions and parameters
Schedule	a schedule of testing events within that phase
	each testing "event" involves testing a business processes for a specific set of parameters (scenario)
	schedule will be subject to change with the Reformer providing a dynamic schedule
Meetings	meeting cadence and format should be responsive to the business processes being tested
	AEMO to include meeting information in the schedule and provide a standing agenda
	requirements of attendees/participants to be articulated (who, preparatory tasks etc)
Playbook	a set of scripts for participants to follow in each testing event
	scripts will indicate parameters and timings for participant operations
	AEMO considering options to document through PractiTest or Word
Registration	participants to register to take part in each phase of Market Trial
	confirm they satisfy entry criteria or "pre-requisites" for participation in the Market Trial phase
	pack may also list exit criteria for a participant to consider in self-evaluating readiness
Reporting	packs will list the test outcomes to be reported by each participant for each testing event
	AEMO considering options to manage through Excel template or PractiTest
	summary of results shared and discussed at the next meeting

Each test pack is likely to be published as a hybrid artifact comprising items created or published using different media, including:

- PDF documents,
- SharePoint pages on the Reformer and
- content included within PractiTest (a test management tool discussed in Section 6.4).

### 6.2.2 Meeting Forum

#### Matters to be covered

A suitable forum must be identified to enable AEMO and Rule Participants to meet regularly for pre-test briefings and post-test debriefings. Whatever forum is identified for this purpose, that forum's agenda should include the following:

- Feedback on the scope and form of test packs, including reporting templates.
- Walk through of test packs once published for Coordinated Market Trial releases 1 and 2.
- Addressing questions regarding Coordinated Market Trial administrative matters including
  - test registration requests,
  - entry and exit criteria checklists,
  - use of PractiTest
  - software or access requests to AEMO.
- Reviewing the status of test defects / issues
- Reviewing scenario playbooks ahead of time to ensure common understanding of:
  - Scenario timelines
  - acceptable parameters for participant submissions
  - expected returns / results

- Coordinating the test execution process as prescribed in this Industry Testing and Transition Strategy and the industry test packs including:
  - Scheduling and chairing regular and ad-hoc meetings.
  - Communicating test readiness
  - Communicating status reports and updates to the relevant forum.
- Addressing participant non-compliance in test execution such as running behind test schedule, submitting outside guidelines, not reporting results.

#### WRIG or a different forum?

The WRIG is an established and effective forum that could be used for this purpose, though a different cadence will be needed. The 5MS project established a separate Industry Testing Working Group to engage in detail on 5MS industry testing matters and inform the development of detailed testing plans. AEMO does not have a fixed view as to whether a separate working group is preferable. However we note that the WEM is a smaller market, with a single network operator and that WEM market participants tend to be smaller and have fewer officers directly involved in implementing WEM Reform compared to 5MS. This suggests to AEMO that the drivers for creating specialised working groups were stronger in the case of 5MS.

Whatever forum is used for this purpose, it should:

- Meet as frequently as required to support effective briefing and de-briefing around test scenarios
- Have an agenda defined sufficiently far in advance such that the right officers can attend the sessions of interest and importance to them;
- By exception, allow for meetings to be called at short notice, should circumstances demand it;
- Be attended by staff from AEMO and Rule Participants that are suitably experienced and well-informed about system testing activities, needs and issues within their respective organisations.
- Impose a minimal administrative burden on all parties and apply reusable and efficient presentation formats to convey information.

### 6.2.3 Reporting

#### Test outcomes to be reported by participants

After participating in each test event, participants will be asked to report the status of their testing of particular capabilities/ outcomes, selecting from a pre-defined menu, such as:

- Unexecuted
- In progress
- Blocked
- Failed
- Passed
- Not Applicable

See Section 6.4.2 discusses the question of what tools participants will be asked to use to report these results.

#### Metrics

Test measurement during Coordinated Market Trial will result in a limited number of simple metrics such as:

- Number of test scenarios executed versus the number planned
- Number of passed test scenarios versus test scenarios executed
- Number of failed test scenarios versus test scenarios executed
- Number of test scenarios deferred/not applicable versus number planned



AEMO will also consider options to scale results based on the facility capacity affected.

### Test Summary Report

AEMO will produce an internal Test Summary Report at the end of each Coordinated Market Trial phase to be used for the purposes of determining whether to proceed to the next phase. This artefact could be shared directly with Coordinated Market Trial participants. As this approach would likely introduce additional review and approval steps (with impacts on timeliness and resourcing), AEMO favours sharing a targeted extract of the report, in order to convey the most relevant information as quickly as possible.

### Linkage to Market Readiness Reporting

The results of participant testing within Coordinated Market Trial will provide valuable indications of participant readiness. The resulting insights will be narrower than the range of matters addressed in the Market Readiness Surveys, but more concrete and verifiable.

The information sought will generally be binary in nature – that is a participant will report whether a particular combination of system functionalities and human actions was tested and confirmed to work for a given scenario. This should make the results be less susceptible to subjective judgement and more reliable.

In addition to sharing results with Coordinated Market Trial participants via subsequent meetings and/or publishing aggregated data on the Reformer, AEMO will incorporate results into our Market Readiness Reports. We will also consider how this information should be considered within the Go-Live Decision Framework (see Section 8.4).

## 6.3 Entry and Exit Criteria

The entry and exit criteria for each Coordinated Market Trial phase will be defined in the relevant Test packs. Depending on the testing defined, the criteria are likely to be based on those listed below.

### 6.3.1 Entry criteria

AEMO and participants will be asked to complete and submit entry criteria checklists when registering for each Coordinated Market Trial phase. This may include, but is not limited to the following criteria:

- Interface testing of relevant systems has been completed in MPT (see Table 11).
- Participants internal testing completed.
- Test data (if required) will be prepared by the participant in time for start of each testing event (in line with playbook)
- Participant has set up PractiTest and been issued the necessary project/entity identifiers to connect their PractiTest instances to the AEMO test project(s) in PractiTest.
- Appropriately skilled resource is nominated and available to execute and support testing.

### 6.3.2 Exit criteria

AEMO will retain some flexibility in determining whether a given Coordinated Market Trial phase should be closed or be extended. AEMO is likely to consider the following criteria and reserves the right to consider other factors to be determined closer to the time.

- Successful completion of all high-priority test scenarios by sufficient Rule Participants.
- Whether any Priority 1 or Priority 2 defects have been identified but not resolved.
- The nature of other open defects (Priority 3 or 4) and any agreed resolutions or work arounds.

## 6.4 Test management tool

Internally, AEMO will be using the proprietary tool Practitest to manage the market testing, including test scenarios, test script development, test execution, test results and the recording and tracking of test defects during all cycles. We propose to also have participants use PractiTest for at least one of these same purposes and are considering using it for another.

### 6.4.1 PractiTest for defect management

AEMO has decided to use PractiTest as the exclusive platform by which participants in Coordinated Market Trial will be able to participate in defect management. Practitest will be configured by AEMO and details shared with participants to allow participants to log defects and track their resolution.

### 6.4.2 PractiTest for reporting

AEMO is considering specifying PractiTest as the primary mechanism for participants to report outcomes from testing events. Experience with this approach in the NEM suggests that this offers an efficient way to capture and report results, with advantages for both AEMO and participants. However, particularly in the case of smaller and less sophisticated market participants, AEMO is uncertain whether this would present a further barrier to participants meeting their reporting obligations.

AEMO also notes that reporting via PractiTest may make it necessary to document test scenarios within PractiTest itself, which may introduce its own overhead on both AEMO and participants.

AEMO aims to evaluate and resolve these issues early in the first quarter of 2023.

### 6.4.3 Provisioning and supporting PractiTest

AEMO will provide one free dedicated licence to each organisation. If any organisation requires additional licences, AEMO will purchase on the organisations' behalf at a cost charged back to the organisation.

This tool is available over the internet and the link will be provided closer to the test commencement date. AEMO will support participants by:

- running a short introductory session for Rule Participants to illustrate the tool and how it will be used; and
- publishing notes on how to use the tool for the purposes of the WEM Reform Program and links to training materials, via the Reformer.

While AEMO will provide the support above, ultimately it will be the responsibility of each Rule Participant to ensure that they can use the PractiTest tool.

## 6.5 Risk and Issues Register

AEMO established an industry risk register for WEM Reform, which is available on the [Reformer](#). The Program created the register to assist the Readiness Working Group (RWG) to identify and track industry-wide risks. However, AEMO discontinued separate RWG meetings in April 2022, as the forum generated limited feedback and engagement from most participants.

AEMO continues to maintain a risk and issues management process focussed on AEMO-controlled risks and mitigations and encourages participants to do likewise. Collectively managed risks will continue to be dealt with on a case by case basis – for instance through continued bi and tri-lateral coordination between Western Power, Synergy and AEMO.

## 6.6 Test data

### 6.6.1 Data required from participants

AEMO will be primarily responsible for generating test data in advance of Coordinated Market Trials. However, there will be some standing data that may need to be provided by participants in advance of each Coordinated Market Trial phase, such as:

- Registration standing data (must have); and
- RTM standing submissions (should have).

It is highly desirable to have all such data fully pre-populated prior to Coordinated Market Trial using data supplied by participants. However, AEMO may need to provision some systems with its own mock data where participants fail to provide it.

The balance of data required to be supplied by participants will be submitted “live” by participants during each test event. The test packs will provide guidance on the timing and form that such submissions should take (for instance guidelines on the RTMS price range or on the type of outage to submit, etc).

Data requirements will be developed in the first quarter of 2023. At a high-level:

- Data requirements will be identified for each test scenario as part of the test scenario development. These data requirements will be detailed in the test packs
- Where data is required to be supplied by participants, this responsibility will be clearly called out in the test packs.
- Participants will be responsible for ensuring that any required data is available within their test environments for test execution.

### 6.6.2 Data refresh

AEMO anticipates that it may undertake a data refresh at various times during the Coordinated Market Trial – for instance as part of a major release. The details of these will be discussed and communicated to participants in the lead up to each go live. Participants are encouraged to backup any data they maintain within that environment to avoid data loss and to maintain their own systems of version control, to the extent that their test data has any enduring value for them.

## 6.7 Test event execution

After it determines whether to use PractiTest for reporting, AEMO will include additional detail on how each test event is to be executed. This guidance will advise the general sequencing of steps within a test event and what tools or methods are to be applied at which point.

## 6.8 Defect management

### Defect management approach

The objective of defect management is to resolve all defects within the project lifecycle. However, this objective must be balanced against other project objectives, such as achieving the schedule and the system impact and priority of the defect (discussed below). The acceptable level of defects within each stage of testing is typically defined as part of the ‘exit criteria’ for that stage.

AEMO will manage and report on defects identified during test execution. Where it is determined that it is not an AEMO defect, AEMO will coordinate with market participants to obtain the status of the defect.

### Raising defects

Defects raised during Coordinated Market Trial will be captured in Practitest. AEMO will provide guidance on the information required to be submitted by a Rule Participant when raising a defect. The term “defect” is used broadly to include defects that would ordinarily fall outside of a narrow “IT” definition. For example.

- Information could be captured regarding lack of required support. This affects test execution from a timing perspective; and
- Testing may indicate that an automated business process needs manual intervention to work correctly and given constrained timings an automated fix cannot be developed and tested in time for go-live. Information such as this can feed into the deployment\Cutover Planning for go-live.

### Defect triage

AEMO will perform a basic triage process once a defect is raised. Where it identifies that the defect rests with itself, it will rate the defect severity and will external advise timeframes to address critical and high priority defects (see Table 9). During Coordinated Market Trial other Rule Participants may identify high severity defects that require resolution prior to Go-Live. AEMO expects that participants will also use PractiTest to log defects.

### Defect escalation

AEMO will establish an internal process for escalating critical and high priority defects (see Table 9). The process won’t be directly observable to participants, but they will be able to track the progress of defect management (and assess its timeliness) by following the issue in PractiTest.

### Defect prioritisation

Defects will first be classified according to severity (Table 8) and then assigned a priority classification, with a corresponding target timeframe for resolving the defect (Table 9). Severity reflects the significance of potential impacts on the system capability, Coordinated Market Trial execution and/or business processes in production. Priority will be determined by considering the value to AEMO and the market of a rapid resolution. Each priority classification will, of necessity, consider the relative significance of other defects and the resources and time remaining to address the defect.

**Table 8 Defect severity classification**

Severity	Definition
1 - Showstopper	Defect is considered critical to business operations and/or testing. Core business and project impact.
2 - Major	Defect is considered high impact to the business operations and/or testing. However, core business processes are still able to be completed (possibly via workarounds, etc.) and testing is still able to continue.
3 - Moderate	Defect is considered moderate impact to the business operations and/or testing. Core business processes are unaffected, and testing is still able to continue.
4 - Minor	Defect is considered low impact to the business operations and/or testing. Core business processes are unaffected, and testing is still able to continue.

**Table 9 Defect priority classification**

Priority	Target Resolution Time	Definition
1 - Critical	24 Hours	Total loss of the system, infrastructure, or connectivity. Requires urgent fix. No testing can be performed without the defect being resolved
2 - High	48 Hours	Partial loss of the system, infrastructure, connectivity, or functionality. Requires urgent fix. Testing is severely impacted, and the system or infrastructure is prevented from moving to the production stage without the defect being fixed.
3 - Moderate	72 Hours	Minimal impacts (cosmetic) to the system function. Loss of the system but there is manual work around and has no business impact. Testing can proceed but an acceptable business work around must be documented and approved

Priority	Target Resolution Time	Definition
4 - Low	As advised	Minimal impacts (cosmetic) to the system function. No loss of the system and has no business impact. Testing can proceed but defect must be documented and approved

Post triage and acceptance of a defect, a resolution date will be added in PractiTest.

### Defect management status

AEMO will determine a set of defect management status values to be use in PractiTest, such as:

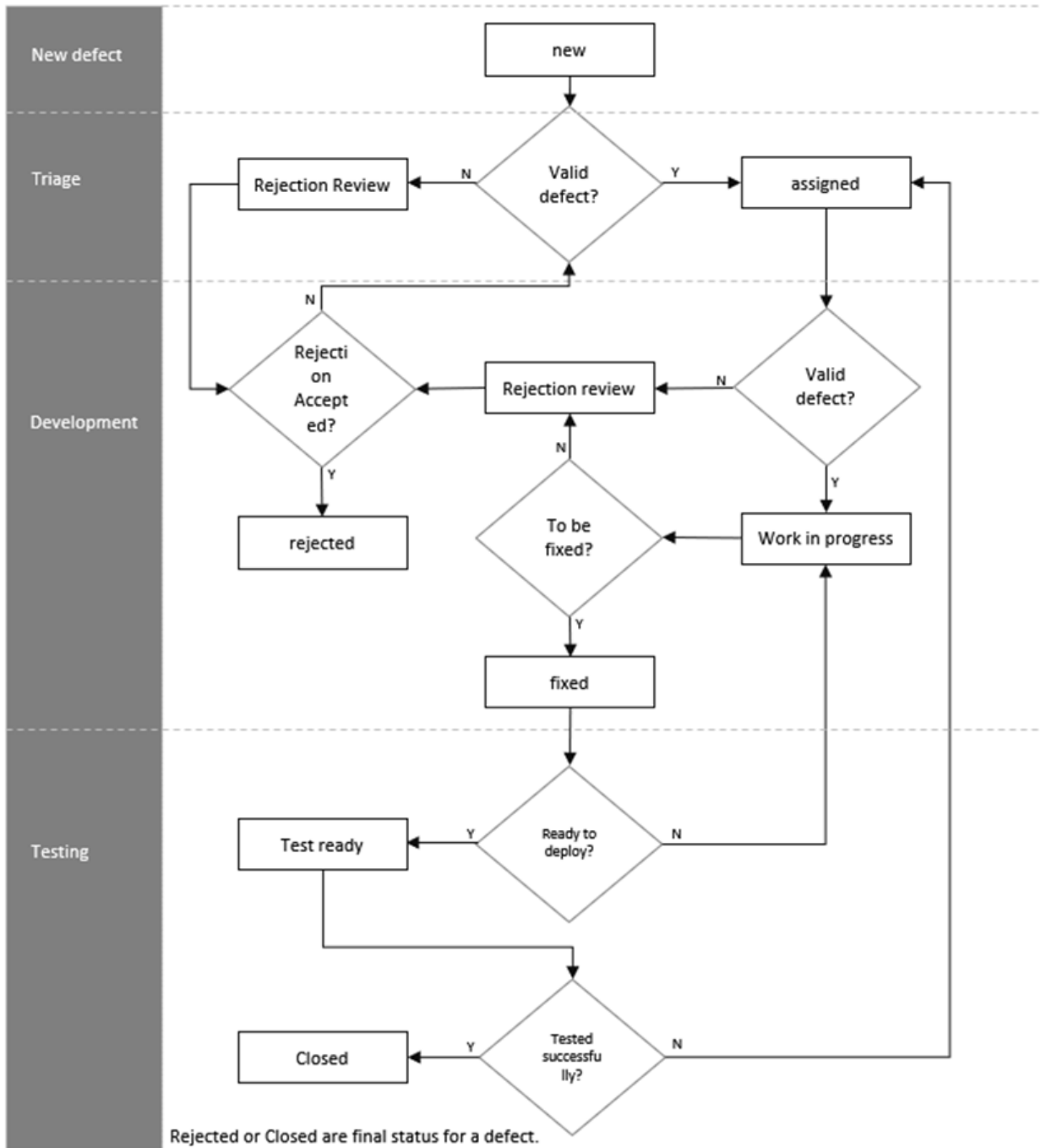
- New
- Assigned
- Work in Progress
- Rejected
- Fixed
- Test Ready
- Closed.

These will allow participants and AEMO alike to track the progress of defects within PractiTest. The adopted status values will be advised and defined in a future revision of this Strategy.

### Defect process flow

Figure 6 below shows the defect management process throughout the various defect management statuses of the defect lifecycle from its inception through to its closure.

Figure 6 Defect life cycle



Defect root cause

Defect root cause will be updated in Practitest once the defect cause is identified. This will help with the defect metrics to identify the impacted area of the issues/defects identified in the testing. Table 10 defines the defect root cause values that can be assigned in PractiTest.

Table 10 Defect root cause values assignable within PractiTest

Root Cause	Definition
Design	The design of the process does not meet the requirements specified. Defect may include examples, algorithm (incorrect calculation), error handling, creation/release of object or memory, decision logic error, loop control, procedure call, failing to validate data values before being used.

Root Cause	Definition
Configuration	The intended outcome of the configuration is not meet.
Data	There are system data issues for the process that may prevent test completion.
Requirements	Unclear or incorrect requirement, Functional and Business specification documentation.
Infrastructure/Hardware	Defect is not in the object being tested but, in the test, set up, for example the wrong configuration or version control of platform, operating system, browser, hardware or networking, system is down, or the environment is down.

## 6.9 Suspension of Coordinated Market Trial

During Coordinated Market Trial, AEMO may determine that scenario testing should be suspended and then determine when testing will continue. AEMO will make these judgements in consultation with participants. Suspension and resumption criteria and actions are described below.

### 6.9.1 Suspension criteria

Complete or partial suspension of testing may be required if:

- High volume of defects is open impacting the scenarios that can be executed
- High severity (i.e. showstopper) or combination of defects open
- Significant delay in the release of software (including defect fixes) to the MKT environment

### 6.9.2 Suspension decision and actions

If these circumstances arise, the following actions will be taken:

- AEMO will advise participants that it believes a suspension is appropriate, canvas their views and rapidly confirm whether to proceed with the suspension.
- AEMO will advise Rule Participants of the potential delays due to the test suspension, and the impact of defect / defects concerned
- AEMO will undertake and coordinate development and test efforts to resolve the defects raised and Rule Participants will support same.

### 6.9.3 Resumption criteria

Coordinated Market Trial will resume after the issues that caused the suspension have been resolved and/or suitable workarounds have been identified and put in place. At this point AEMO will:

- inform testing participants of:
  - the successful deployment of the defect fix(s); or
  - the nature of any workarounds and any actions required of participants
- inform testing participants of the new schedule for the resumption of scenario testing
- advise testing participants of the impact(s) of the defect fix on the previously executed test cases and suggest if any re-testing should be done.

## 6.10 Scheduled Releases

During Coordinated Market Trial AEMO plans two major integrated system releases into the Coordinated Market Trial environment, covering Phase 1 and Phase 2. AEMO also anticipates several minor releases (primarily to deploy defect fixes) and these will occur between major releases. AEMO's preliminary view of the timing of the major releases is shown below. Table 11 also shows which systems participants in a given Coordinated Market

Trial phase would be expected to be ready to interface with. Interface in this context could mean either by UI or API, according to each participant's planned interface methods once in production.

**Table 11 Planned Coordinated Market Trial releases and required system interfaces**

Coordinated Market Trial Release	Coordinated Market Trial Phase	Release date	Systems participants required to interface with						
			Registration	Outages (Participant UI)	Outages (APIs, including Net. Op.)	CTP interface	RTMS	STEM	WEMDE UI
1	Phase 1 (Wk1 April to Wk3 May)	3/04/2023	⊗#	✓*	⊗	⊗	✓	⊗	✓
2	Phase 2 (Wk4 May to Wk4 June)	22/05/2023	⊗#	✓	✓	✓	✓	✓	✓

Note all dates are provided as estimates. More up to date information will be maintained on the Reformer site.

# The actual modified registration system is not expected to be completed, tested and integrated in time. Participants will need to provide suitable data in another form – similar to the approach for the RTMS system in MPT.

\* In Phase 1 of Coordinated Market Trial, AEMO proposes to have participants (generators) submit outages via the Outages UI and AEMO would mock network outages. The use of the APIs would not be incorporated until Phase 2 of Coordinated Market Trial.

Major releases will be supported with briefing sessions (section 6.2.2) and the issue of Test Packs (section 6.2.1). Minor releases will be advised to participants.

## 6.11 Release management

AEMO will maintain an internal Release Management Plan to cover all system releases into all our environments. This ensures appropriate testing, approval and communication processes are followed for all releases. Participants should note that more stringent processes apply to major releases into the Coordinated Market Trial environment compared to releases into the Market Participant Test environment.

More information on our external facing environments can be found in Appendix A2.

## 6.12 Support

**Table 12 Support issues – AEMO's approach**

Issue requiring support	Information
Accessing AEMO's testing environments	Refer to the Reformer for more information on how AEMO provisions access to its testing environments. <a href="https://aemcloud.sharepoint.com/sites/EXT-COM-REF/SitePages/Accessing-our-Test-Environments.aspx">https://aemcloud.sharepoint.com/sites/EXT-COM-REF/SitePages/Accessing-our-Test-Environments.aspx</a>
Using PractiTest Tool	AEMO will provide the information for participants to link PractiTest accounts to AEMO's test releases closer to the Coordinated Market Trial commencement date. AEMO will support participants by: <ul style="list-style-type: none"> <li>• running a short introductory session for Rule Participants to illustrate the tool and how it will be used; and</li> <li>• publishing notes on how to use the tool for the purposes of the WEM Reform Program and links to training materials, via the Reformer</li> </ul>
Logging defects / issues	<ul style="list-style-type: none"> <li>• AEMO will provide guidance on how to log defects / issues using PractiTest</li> </ul>
Interpretation of scenario outcomes	<ul style="list-style-type: none"> <li>• At the regular meetings of the relevant forum during Coordinated Market Trial following each test event, AEMO anticipates some participants will have questions about the interpretation of scenario outcomes. Rule participants are also expected to submit questions to <a href="mailto:wa.ets@aemo.com.au">wa.ets@aemo.com.au</a> during this period.</li> <li>• AEMO aims to provide scenario interpretation in response to participant questions. However, AEMO's ability to provide rapid interpretation will be contingent on the availability of suitable SMEs and the development of internal tools to support their ex post analysis of scenario data.</li> </ul>



Issue requiring support	Information
	<ul style="list-style-type: none"> <li>AEMO anticipates that during the course of Coordinated Market Trial, its capacity to address scenario interpretation questions will progressively improve as some of its SMEs are freed up from tasks related to system development.</li> </ul>
Questions regarding Coordinated Market Trial – e.g. interpretation of Test Packs.	<ul style="list-style-type: none"> <li>AEMO will provide opportunities for group Q&amp;A in the lead up to Coordinated Market Trial</li> <li>Rule participants can submit questions to <a href="mailto:wa.ets@aemo.com.au">wa.ets@aemo.com.au</a> at any time.</li> </ul>

## 6.13 Outstanding details

Matters to be addressed in future revisions of this Strategy or in other related artifacts or communications are listed in Table 13, along with estimates for when these details are to be addressed.

**Table 13** Elements to be addressed later (as at December 2022)

Element to be addressed at a later date	Details	Est completion date
PractiTest provisioning and support	AEMO must develop and communicate its approach to provisioning participants with PractiTest and providing initial training and support	Late Feb 2023
Test packs detailed content	AEMO must develop test pack templates and proposes to share illustrative examples of test packs with participants for feedback	Mid-March 2023
Confirming process for setting API rate limits	API rate limits, including both the quantitative limits and the manner in which rate limits are applied, will be refined in parallel with Coordinated Market Trial – note that all non-functional testing of AEMO's systems is proposed as an internal activity for AEMO conducted in a parallel environment.	July 2023
Coordinated Market Trial Registration administration	Registration requirements and forms. Define dependencies, if any, between Coordinated Market Trial registration and provisioning access to the MKT environment.	March 2023
Test Event Execution (Section 6.7)	Add details on Test Event Execution c.f. Section 6.2 of Five-minute settlement and global settlement Industry testing and Coordinated Market Trials strategy, September 2020 v1.2	March 2023

# 7. Industry Testing: Transition Period

## 7.1 Overview

By the beginning of the transition period (July to Sept 2023), AEMO aims to have established a fully integrated suite of systems in a pre-production environment, which it can then use to simulate partial “parallel operations”. In planning the transition period, AEMO will allocate this limited systems resource to testing and training activities that are prioritised according to their importance for a successful go-live. As detailed in Section 7.2, below, these key priorities are likely to heavily weighted towards AEMO’s own readiness. Nonetheless, AEMO proposes to advance these priorities in ways that facilitate continued industry testing during the transition period. Key aspects of industry testing during the transition period are summarised in Table 14.

**Table 14 Key aspects of industry testing during transition period**

Attribute	Details
Purpose	To confirm AEMO market capabilities through continued testing, training and review activities by leveraging a complete set of production-ready systems and exposing our systems and processes to the market.
Scope	All systems and processes to the extent they can be included and/or mocked. Note that this will not include end-to-end settlement runs due to the limitations associated with mocking metering data.
Timing	July to September 2023
Communication	Details to be confirmed, but likely to be slightly less frequent compared to during Coordinated Market Trial and to include: <ul style="list-style-type: none"> <li>Reformer updates on scenarios</li> <li>regular review sessions</li> </ul>
Coordination	Moderate coordinated, details to be confirmed.
Link to Go-Live	<ul style="list-style-type: none"> <li>Participants meeting all registration requirements will be entitled to access our systems in production</li> <li>AEMO will publish updated market capabilities to ensure participants understand and can meet requirements for participating in the new WEM.</li> </ul>
Environment	For more information regarding our testing environment, see Appendix A2

## 7.2 AEMO priorities for test systems during transition phase

The suite of systems in pre-production by the beginning of July 2023 will be a valuable and constrained resource. AEMO will prioritise testing and training activities that employ this resource during the transition period that allow AEMO to confirm the readiness of its own systems, processes and people. It will do so in a way that affords Rule Participants additional opportunities to do the same. However, AEMO does not intend to plan out and pre-advise the industry to the same extent as it will for Coordinated Market Trial. Instead, it will retain the flexibility to prioritise test activities closer to the event and to communicate test activities in a more limited manner.

AEMO will use the integrated systems to run multiple scenarios of business processes that include, but are not limited to, the business processes tested during Coordinated Market Trial. AEMO may extend these business processes to include additional steps that AEMO will perform with new systems or processes. For example, AEMO may produce a PASA report and simulating the internal processes that would precede a notice of a Low Reserve Condition (see Table 2 – Business Process 5).

## 7.3 Key differences from Coordinated Market Trial

During the Transition period, Rule Participants will continue to be able to perform realistic operations and observe results, much as they will have done in Coordinated Market Trial. However, there will be some important differences between the two stages.

During the transition period, AEMO will **not**:

- issue test packs,
- define and communicate scenarios for testing weeks in advance of the relevant test event
- hold test briefing meetings at the same high frequency anticipated for Coordinated Market Trial
- request participants to report test results
- formally report test results to the market

## 7.4 Communication and coordination

### 7.4.1 Communication

AEMO has not yet determined in any detail what communication arrangements are necessary and sufficient to support participants during the transition period. At a high-level, AEMO anticipates that these arrangements could include the following.

- Publishing information on the Reformer about the scenarios being run by AEMO on any given day.
  - This information should at least be available on the day that the scenario is being run.
  - The information should be retained or archived on the site where it is superseded by the equivalent data set for the following day.
- Holding regular review sessions through the same forum used during Coordinated Market Trial.
  - AEMO staff involved in running a scenario could provide an informal report to participants on any issues, learnings, risks or other developments identified in recently run scenarios
  - The same staff would then be available to address participant questions about recent scenarios.

### 7.4.2 Coordination

AEMO intends to undertake less coordination of participants during the transition period, compared to Coordinated Market Trial (AEMO won't provide test packs for the transition period, for instance). Instead, we will seek to drive participant behaviour through the market mechanisms being simulated in the pre-production environment.

Where necessary, AEMO may request participants (informally, instead of by simulating some formal market function) to undertake certain actions or to perform functions within specified parameters. The requirement for this type of coordination activity will become clearer closer to the start of the Transition Period and AEMO will provide additional guidance in subsequent updates.

## 7.5 Entry and Exit Criteria

### 7.5.1 Entry criteria

AEMO will establish entry for Rule Participants to access the pre-production environment.

Where participant completes Coordinated Market Trial

For participants that have taken part in Coordinated Market Trial, AEMO would expect to set, at a minimum, the following entry criteria for entry into the pre-production environment:

- awareness of transition phase activities and communication channels (which will be advised at the time);
- Appropriately skilled resources are nominated and available to execute and support testing.

#### Where participant does not complete Coordinated Market Trial

AEMO anticipates that some smaller market participants, such as small retailers without registered facilities may not have participated in Coordinated Market Trial. For these participants, AEMO would expect to set, at a minimum, the following entry criteria for entry into the pre-production environment:

- Interface testing of relevant systems has been completed in MPT (see Table 11);
- internal system testing completed;
- Appropriately skilled resource is nominated and available to execute and support testing.

Note that AEMO does not intend to use PractiTest with participants during the Transition Phase.

#### 7.5.2 Exit criteria

AEMO intends to revise our Market Capabilities around the beginning of the transition period to reflect the core system, process and skills capabilities that we would expect market participants to have confirmed by the time our systems deploy to production.

## 7.6 Releases during transition period

An initial release into the pre-production environment is planned for the beginning of the Transition Period (1 July 2023). AEMO anticipates that it may need to issue further releases during the Transition Period and will always provide information to the market ahead of these. Such releases may include fixes for defects identified during Coordinated Market Trial. If system defects are identified during the Transition Period, AEMO is likely to favour process workarounds that allow it to defer the release of further defect fixes until after Go-Live.

# 8. Transition and Cutover

## 8.1 Overview

## 8.2 Transition Activities

### 8.2.1 AEMO's ongoing system testing, training and review

During the transition period, AEMO will continue to stress test the full suite of New WEM systems deployed in the pre-production environment and further will run scenarios using those systems in order to train our staff, refine our processes and inform revisions to our documentation. This will include the following activities:

- Developing, practicing and verifying the skills and process knowledge of key operational staff;
- Verifying and improving process documentation to reinforce and support correct use of systems and implementation of business processes;
- Testing contingencies and contingency responses and developing and/or refining contingency plans;
- Stress testing systems, processes and staff to identify limitations and test mitigations that may include system defect workarounds;
- Practicing and/or validating elements of AEMO's system cutover.

### 8.2.2 Rule participant transition activities

As discussed above, AEMO will continue running scenarios in the pre-production environment to afford participants ongoing opportunities to undertake similar activities to those set out in Section 8.2.1 above.

Rule participants will be responsible for determining their own transitional activities. The exception to this rule will be those specific obligations arising under the WEM Rules or set out in the Transition Schedule (see Section 8.3.4 below)

### 8.2.3 Assessing Rule Participant readiness

During the transition period, AEMO will draw together multiple information streams to evaluate the readiness of all Rule Participants. The key information streams are expected to be:

- market readiness surveys;
- Coordinated Market Trial participant reported testing results;
- individual participant interviews (at a minimum for all critical participants);
- information provided to AEMO in writing by Rule Participants regarding their readiness;
- results from AEMO's direct engagement with participants regarding SCADA readiness;
- joint reviews of readiness criteria with:
  - Western Power and
  - Synergy – having particular regard to the completion of the handover of all operational monitoring and control capabilities from AEMO to Synergy in respect of Synergy's generation fleet.

AEMO will undertake a risk assessment of Rule Participant readiness to be used as an input into the Go-Live Decision Making Framework (see Section 8.4.2).

## 8.3 Cutover

Cutover refers to the process of switching new systems into operation and shutting down the systems they replace. The process of switching to the New WEM will involve multiple cutover events that must be undertaken in a carefully staged and coordinated manner.

### 8.3.1 Cutover responsibilities

Each participant (and AEMO) participating in a cutover event will be responsible for developing and executing their individual cutovers in accordance with the timings and notification protocols in the Cutover Plan.

### 8.3.2 Cutover as a process, not a singular event

Cutover to implement the New WEM will be a many step process, not a singular event that occurs on the NWCD. To illustrate this point, consider the following preliminary list of milestones associated with cutover (Table 15).

Section heading

**Table 15 Preliminary list of milestones associated with cutover**

Area	Description	Timing
Registration	Updated Registration system goes live	1 June 2023
	Transition from Balancing to SCED APIs	Applicable for all Trading days commencing 1 October 2023.
	PDS Participant/Facility registration reports switch from Balancing to SCED framework	On first publication for Trading Day 1 October 2023.
Bilateral & STEM	Last STEM and bilateral submission / calculations / publications / auction under current framework	29 September 2023 Scheduling Day
	New STEM and bilateral submission / calculations / publications / auction under new rules	30 September 2023 Scheduling Day
Balancing & LFAS	Last NBDMO (and push)	12:30pm 29 September 2023
	Last Balancing horizon extension, noting BMO / LFMO calculation continues to work with shortened horizon	1:00pm 29 September 2023
	Last BMO / LFMO calculations (for dispatch)	7:00am, 1 October 2023
	Last BMO calculation (for provisional pricing)	11:00am, 1 October 2023
	Last BMO calculation (for final pricing)	1:00am, 3 October 2023
	Publish BMO (final)	11:00am, 3 October 2023
	Provisional TES Calculations	8:30am, 3 October 2023
	Final TES calculations	2:15pm, 20 October 2023
SCED / Dispatch	First Dispatch Schedule (2 hours)	6:05am, 1 October 2023
	First Pre Dispatch Schedule (8 hours)	12:05am, 1 October 2023
	First Week ahead (1 week)	8:05am, 25 September 2023
	Last dispatch instruction from RTDE	~7:50am 1 October 2023, for 8:00am???
	First dispatch WEMDE	~7:55am 1 October 2023, for 8:00am???
PASA	Last current MT PASA	15 September 2023?
	Last current ST PASA Publication	28 September 2023
	First new MT PASA Publication	1 October 2023?
	First new ST PASA Publication	25 September 2023?

### 8.3.3 Cutover plan

Around April 2023, AEMO intends to publish a draft Cutover Plan for consultation that:

- Focuses on the cutover of systems and processes that are AEMO's responsibility to manage, but which will consider the cutover activities of other parties to the extent necessary to ensure appropriate coordination<sup>9</sup>.
- Sets out timings and dependencies for cutover tasks, including any potential dress rehearsals, in the period leading up to, during and immediately post the cutover event
- Determines agreed completion, escalation and communication protocols to be activated during the cutover events
- Includes a decision-making protocol for 'proceed' and commitment decisions. The decision-making processes will reflect the level of dependence between participant and AEMO cutover activity for each system go-live. Where there are no interdependent cutover activities the market systems deployments will be managed by AEMO with notification of successful deployment and capability availability at completion.
- Establishes appropriate supports to provide post-cutover for the transition to 'business-as-usual' operations. The level of support will be dependent on the extent and scope of the change being deployed.

### 8.3.4 Transition Schedule

AEMO is required under new clause 1.56 of the WEM Rules to publish a regulatory instrument called the "Transition Schedule" by 30 June 2023. Clause 1.56.2 of the WEM Rules (reproduced below) describes in detail AEMO's obligation in respect of the Transition Schedule, which is in summary to publish an instrument identifying:

- information that Participants must submit ahead of NWCD as part of transition activity
- information AEMO must publish ahead of NWCD as part of transition activity
- the dates on or by which the information must be submitted or published

The Transition Schedule may only be published with the approval of the Coordinator of Energy. AEMO and other Rule Participants must then provide or publish information in accordance with the Transition Schedule.

AEMO plans to publish a draft version of the Transition Schedule early in Q2 of 2023 – well ahead of the prescribed deadline of 30 June 2023. AEMO would then seek the approval of the Coordinator of Energy and publish a final version close to that date.

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<sup>9</sup> In most instances, AEMO expects that Rule Participants should be able to schedule and manage their own system cutovers given adequate notice of and information about AEMO system cutover events. AEMO will invite Rule Participant suggestions on this point and consider covering third party system cutovers in the cutover plan on a case by case basis.



**Breakout box 1: WEM Rules extract describing the Transition Schedule**

- 1.56.2. Subject to clause 1.56.3, by 5:00 PM on [1 July 2023], AEMO must determine, and publish on the WEM Website, a document ("**Transition Schedule**") specifying:
- (a) the acts, matters or things to be done, which includes information to be provided or published, by AEMO and other Rule Participants relating to key operational activities under the Post-Amended Rules<sup>1</sup> in respect of the Scheduling Day for the Trading Day that is also the New WEM Commencement Day and any subsequent Trading Day for which activities are required to be done before commencement of the Post-Amended Rules;
  - (b) any other acts, matters or things to be done by AEMO or any other Rule Participant that are reasonably necessary or desirable to enable AEMO or any other Rule Participant to perform their respective functions under the Post-Amended Rules, including, without limitation:
    - i. operation of the Real-Time Market;
    - ii. scheduling and dispatch of Market Services and Non-Co-optimised Essential System Services;
    - iii. PASA assessments and Outages;
    - iv. operation of the STEM;
    - v. administration of the market under Chapter 2;
    - vi. administration of the Reserve Capacity Mechanism under Chapter 4; and
    - vii. settlement under Chapter 9; and
  - (c) the dates and times and, where applicable, the format, for when each of those acts, matters or things must be done.

Source: Tranche 6 WEM Rules Amending Rules

**8.3.5 Contingency planning**

AEMO and other Rule Participants must actively plan for a range of plausible contingencies to arise before, during or after the cutover process. Contingency planning involves defining steps to be taken if an identified risk event should occur. AEMO will document the main contingencies and responses within the Cutover Plan or other artifacts such as the Go-Live Decision Framework.

**Table 16 Contingencies and responses**

Contingencies	Response
Critical IT systems are not deployable (or fail to deploy correctly)	Each system deployment to include planning for rollback during cutover Communication of proceed and rollback decisions in-line with the protocols set out in Cutover Plans.
One or more participants / facilities will not be ready for Go-Live	Through the Go-Live Decision Framework, document thresholds (e.g. MW of energy capacity; FCESS quantities) reflecting assessed risk to system security and operational workability under different scenarios.
Individual participant contingencies – e.g. unable to perform an operation by API	Where multiple integration options exist, participants should identify alternative options to achieve an equivalent or sufficient functionality. E.g. make real-time market submission by UI if unable to make API method work.

## 8.4 Go-Live decision framework

### 8.4.1 Considerations

AEMO will develop a draft Go-live decision framework in Q1 of 2023 and publish for comment. The framework must integrate with other elements of this Strategy, and should consider:

- Risk management: key risks, mitigations and residual risks must be documented, evaluated and accepted or addressed further.
- Market Capabilities: essential market capabilities must be achieved and verified by Rule Participants;
- System Integrations: system integrations between AEMO and other Rule Participants must be tested and verified for a critical majority of the market
- Not Ready Thresholds: quantitatively defined proportions of participants or facilities that, if assessed as ready against essential market capabilities, would be sufficient to allow the new SCED market to operate securely and the integrity of supporting market processes (e.g. financial processes) to be maintained.
- Defects: defects must either be resolved or accepted by AEMO based on its assessment of the associated the business impacts and/or risks
- Communication: all stakeholders must be kept advised about decisions relating to Go-Live, through appropriate channels and in a timely way.
- Decision making process: AEMO must determine the process by which Go-Live decisions are to be made and clearly identify all accountabilities.
- Decision gate or gates: The key point(s) within the cutover process that afford a decision maker a meaningful choice or optionality as to how to proceed. Identifying whether there is one or multiple gates may benefit from differentiating the respective objectives of:
  - AEMOs standard IT Change Management processes that apply to all individual preproduction or production release and
  - The Go-live decision-making framework which must apply across the staged cutover of all systems to implement the WEM Reform Program.

### 8.4.2 Information inputs

AEMO will list the types and sources of information that it will consider as part of any decisions to be made under the Go-Live decision framework. These should include:

- The market readiness risk assessment prepared by AEMO and discussed in Section 8.2.3;
- Test summary reports;
- Technical assessments prepared by or for AEMO regarding operational, financial or safety risks to the WEM.

The intention is that these information inputs would be shared with the sector, however, some information may need to remain confidential. The Go-live decision framework will give guidance as to how this balance will be struck.

# A1. Glossary

The following terms and acronyms have the following meanings for the purposes of this document. Clause references are included where appropriate to the [Wholesale Electricity Market Rules](#).

Term	Definition
AEMO	Australian Energy Market Operator
AGC	Automatic Generation Control – the process in which generators receive Dispatch Targets (MW setpoints) automatically from the Energy Management System (up to every 4 seconds depending on operating mode), via SCADA.
Business Process	a set of operations based on multiple Market Capabilities that produce one or more outcomes essential for the operational of the New WEM.
Cutover	A system implementation event
ESS	Essential System Services. Services besides energy and capacity able to be provided by facilities in the WEM. The term replaces the term Ancillary Services.
FCESS	Frequency Control Essential System Services – being that subset of ESS that are co-optimised for dispatch by WEMDE. These comprise regulation and raise and lower contingency services, analogous to the current ancillary services Load Following Ancillary Service (LFAS) and Spinning Reserve.
Functionality	refers to discrete features or capabilities of a system. Some Business Processes rely on a subset of the full set of functionalities to be delivered under WEM Reform for a given system.
Market Capability	A capacity or ability for a given type of entity the things it needs to know or be able to do to operate, support or participate in the to comply with the
Coordinated Market Trials	Formal, industry coordinated test activities between participants' and AEMO's IT environments. Involves coordinated multi-party end-to-end testing of business process scenarios.
New WEM	The WEM in its future state following the implementation of the WEM Reform Program, which will introduce SCED, enhanced system planning arrangements and supporting reforms to the RCM and the WEM's financial and administrative systems.
NWCD	New WEM Commencement Day. On 30 September 2021, the State Government announced that it will set the New WEM Commencement Day for 1 October 2023. The Minister is expected to Gazette this date around the same time as the Tranche 6 WEM Amending Rules (late 2022).
Non-Functional Requirements	define the constraints on how a system should provide the functions or features that it is intended to deliver and include security, reliability and availability and capacity or bandwidth.
PASA	Projected Assessment of Supply Adequacy.
Post-Amendment WEM Rules	The WEM Rules as in force immediately after the New WEM Commencement Day (per 1.56.1 of the WEM Rules)
RCM	Reserve Capacity Mechanism - through which the market operator procures generation capacity to ensure that adequate generation and demand-side management (DSM) capability is available to meet the peak demand for electricity
RTMS	Real Time Market Submission – an offer to provide energy and/or FCESS from a facility in the New WEM.
Rule participant	Any person registered as a Rule Participant in accordance with Chapter 2 and AEMO. In practice: AEMO, Western Power and market participants.
SCADA	Supervisory Control and Data Acquisition – the system operated by Western Power, used among other things, to convey dispatch instructions and other data between AEMO's systems and those of other Rule Participants.
SCED	Security constrained economic dispatch, which refers to a basket of changes to the real-time operation of the WEM, including dispatch solutions being constrained by network and other system limitations, 5 minute dispatch and co-optimisation of energy and FCESS services by WEMDE

<b>Term</b>	<b>Definition</b>
Scenario	a testing concept in which a given business process is fleshed out with specific assumptions, parameters and input data such that the systems involved in supporting this business process can be operated and tested.
Standing Data	Data maintained by AEMO under clause 2.34.1 of the WEM Rules.
STEM	Short Term Energy Market – a centrally cleared day-ahead market for Market Participants to adjust their contractual positions for energy by trading with each other
Transition	Process of shifting from current to future operating state
WEM	Wholesale electricity market – operating across the South West Interconnected System.
WEMDE	Wholesale Electricity Market Dispatch Engine

## A2. Environments

AEMO is using multiple environments to manage external releases, depending on the phase or activity to which the release relates. Table 17 summarises the main types of activities involving external releases and the environments to which relevant releases will be deployed.

A more up to date version of this table will be maintained on the Reformer under the Developer Centre tab – likely as an update to this page: <https://aemcloud.sharepoint.com/sites/EXT-COM-REF/SitePages/Accessing-our-Test-Environments.aspx>.

**Table 17** Types of releases and environments

Phase / Activity	Further detail	Examples	Environment Code	Example base URLs
Market Participant Test Releases	Unintegrated, standalone applications available for Rule Participants to test isolated business processes and support system builds.	See Table 5	MPT	wems-pte1.aemo.com.au Note, this is expected to be replaced by the end of 2022 with: wems-MPT.aemo.com.au
WEM Reform Coordinated Market Trial Releases	Partially integrated applications (building to fully integrated) where AEMO facilitates co-ordinated testing of defined business processes with Rule Participants to confirm applications meet participant requirements and support participant system builds.	See Table 11	MKT	wems-MKT.aemo.com.au
Transition Phase	A fully integrated production ready system that can facilitate day / week / month in the life testing using production like data, processes and systems with internal and external stakeholders to confirm market and system outcomes	July to Oct 2023	?	TBC
RCM Releases	RCM releases are implemented following the standard pattern of a two-week release for external testing prior to Production. Standard in this context refers to the Market Trial release process that applies outside WEM Reform <sup>10</sup> .	RCM Phase 2 (March 2023); RCM Phase 3 (July 2023)	?	TBC
Production Releases	Conceptually the same as current production releases.	Registration (June 2023); RTMS, WEMDE, Outage Management etc closer to NWCD	PRD	wems.aemo.com.au

<sup>10</sup> See Reformer SharePoint site for more information: <https://aemcloud.sharepoint.com/sites/EXT-COM-REF/SitePages/Industry-Testing-Strategy.aspx#market-participant-test-versus-market-trial>. Note, access to the Reformer is restricted to market participants and their supporting service providers. If you believe you should have access, please email [wa.ets@aemo.com.au](mailto:wa.ets@aemo.com.au).