

Frequency Performance Payments (FPP)

7 June 2024

Industry Testing Strategy





Important notice

Purpose

The industry testing strategy sets out the high-level approach and principles associated with the National Electricity Market (NEM) testing activities that will support Frequency Performance Payments (FPP) December 2024 non-financial operation rule implementation.

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Version control

Version	Release date	Changes
0.1	28/05/2024	Initial draft issued for discussion
0.2	03/06/2024	Feedback from Gary Kuiper and Amit Kumar incorporated.
0.3	04/06/2024	Feedback from Priti Zacharopoulos incorporated.
0.4	05/06/2024	Feedback from Greg Minney and Oliver Derum incorporated.
1.0	06/06/2024	Final Industry Test Strategy



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1 Introduction

This section provides background information on AEMO's Frequency Performance Payments (FPP) December 2024 non-financial operation release, and sets out the purpose, scope, and approach to the development of this Industry testing strategy.

1.1 AEMO's FPP program

The National Electricity Market (NEM) is experiencing a period of significant change. The progressive replacement of thermal, synchronous generation with variable inverter-connected resources, such as wind, solar and batteries, makes the task of managing the power system securely more complex.

The Australian Energy Market Commission (AEMC) recognised the need for a new framework of incentives for NEM participants regarding Primary Frequency Response (PFR). On 8 September 2022, the Australian Energy Market Commission (AEMC) published a final determination in [the Primary Frequency Response Incentives rule change](#). The new rules amend the existing provisions for the allocation of costs (often referred to as 'Causer Pays') relating to Regulation Frequency Control Ancillary Services (FCAS) as well as implementing a new incentive framework for the provision of PFR. The key effects of the rule change are to:

- Extend the requirement for all scheduled and semi-scheduled generators to provide automatic PFR (by removing the sunset clause that would have seen that obligation lapse in June 2023).
- Introduce a new system of incentives and penalties that will see scheduled generators, schedule loads and semi-scheduled loads either receive or be liable for payments, based on whether they have had a helpful or unhelpful impact on system frequency. These are the frequency performance payments that give their name to the overall reform.
- Use the performance values determined for FPPs, which are calculated for every five-minute interval, to allocate the cost of Regulation FCAS.

1.2 Purpose of the Industry Testing Strategy

This document offers stakeholders, especially NEM participants who will be affected by the changes, a clear understanding that the industry testing for FPP December 2024 non-financial operation release will be a non-coordinated industry testing. There will not be designated test scenarios/cases for market participants to test. Market participants will, instead, be requested to test the [in-scope items](#) and report any defects to AEMO, via AEMO support hub.

This Industry Test Strategy will help participants understand and plan for system, process and operational changes that will commence with non-financial operation from December 2024.

Kindly note that this Industry testing strategy document is focused only on the non-financial operation changes which are applicable from December 2024. It does not include any changes related to June 2025 release.

1.3 Reference documents

FPP related documents listed in Table 1 are relevant to the industry testing strategy. The FPP project page is where additional information can be found for the FPP project.

Table 1 Reference documents and web sites

#	Document name
1	AEMO Technical Specification - Data Model v5.4
2	AEMO Electricity Data Model v5.4 (aemo.com.au)
3	AEMO AEMO Frequency Performance Payments project

1.4 Audience

This Industry Testing Strategy is primarily intended for all NEM participants affected by the FPP market reform, particularly:

- Test managers
- Test leads
- Test analysts (system integration, UAT, industry testing)
- Project managers
- Developers
- Business and functional SMEs
- Market Participants

Secondary audiences within these businesses including:

- Development managers
- IT operations teams
- Change controllers
- Operations teams



2 Industry testing framework

This section describes the framework that underpins the FPP Industry Testing Strategy. It explains the Industry Test Strategy's objective, scope, assumptions, communications, data refresh, test environment and indicative timeline for FPP December 2024 non-financial operation release.

2.1 Industry testing objective

Industry testing provides market participants the opportunity to test their updated systems and processes against AEMO's updated systems.

In relation to FPP December 2024 non-financial operation release, the overall objective of industry testing is:

To support industry readiness and confirm AEMO's and participants' preparedness for the FPP system "go-lives".

2.2 Industry testing scope

AEMO is planning for six-month non-financial operation period, from December 2024. The scope of this industry testing will be functionality that is delivered for the non-financial operation period. This functionality will be deployed into the pre-production environment for participants to integrate with their relevant systems.

2.2.1 Scope inclusions

The scope of industry testing for FPP December 2024 non-financial operation release:

- New data model 5.4 reports are developed as part of FPP December 2024 non-financial operation release. Once participants have upgraded to/installed data model 5.4, they should be able to subscribe to new table data feeds.
- Participants should be able to receive the new data feeds in their data model tables.
- The [Technical Specification Data Model 5.4](#) document should be considered as the source of truth and should be referred for the scope of FPP December 2024 non-financial operation release.

Notes:

1. Data model 5.4 release will provide two scripts to participants, one to create data model from scratch and other to update from previous version. This step is a pre-requisite for any participant to be able to perform their testing.
2. The data feed reports will be run at the same frequency which is planned for production.

2.2.2 Scope exclusions

The industry testing scope exclusions are:

- Settlement related changes for FPP December 2024 non-financial operation release.

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- Any data model changes apart from FPP Package mentioned in [Technical Specification Data Model 5.4](#) document are not in-scope for FPP December 2024 non-financial operation release.
 - Downstream business procedures for each industry participant.

Each NEM participant is responsible for their own preparedness in respect of the above matters and should account for such items within their respective organisational testing programs.

2.3 Assumptions

The key assumptions underpinning the industry testing strategy are as follows:

1. AEMO will provide and maintain the single Pre-Production environment which will be used for industry testing phases.
2. Any change that is linked to or deployed to support a procedural or technical specification change will ensure the procedure(s) or technical specification(s) are documented and approved prior to the commencement of industry testing.
3. As part of any changes to Pre-Production, AEMO will give notice to participants of outages or code changes and provide release notes for the changes.
4. The latest refresh of Pre-Production environment with Wholesale Production data occurred on 7 February 2024. Kindly note that there is no plan of any further refresh of Pre-Production environment with Production data.
5. AEMO will perform all internal functional testing prior to the release of any changes into pre-production for all FPP December 2024 non-financial operation changes that AEMO is coordinating.
6. Participants will perform internal testing prior to connecting to the AEMO pre-production environment.
7. Participants will have appropriately skilled resource capability for execution and support requirements during industry testing.
8. AEMO will provide support to investigate and resolve defects identified during industry test. All participants engaging in industry testing will report any defects via AEMO support hub.
9. Results from industry testing may be used by participants for their own reference.
10. AEMO will support participants to resolve any connectivity issues within the pre-production environment.

2.4 Communication and Q&A session approach

Commencement of Q&A sessions will be aligned with the test execution for industry testing. These Q&A sessions will be in the form of meetings with the proposed parameters as listed below. AEMO will work with participants to ensure these sessions are structured effectively. AEMO proposes:

- Scheduled twice weekly for 30 minutes, for participants seeking any kind of clarifications or discussions related to industry testing.
- Meetings will be recorded for action taking purposes, but not for publication.
- Questions not answered during the meeting will be taken away and answered following the meeting.
- Ad hoc meetings can be organised between 09:00 and 17:00 Hrs (AEST) on business days, for any defects which needs prioritized attention.
- Latest defect updates, if any, will be sent out after the sessions as part of defect reporting.

Table 2 describes how the progress of industry testing will be monitored and reported. Communications and defect reporting will involve both AEMO and participants.

Table 2 Communications and Q&A session approach

Frequency	Type	Responsible
Twice Weekly	<ul style="list-style-type: none">• Q&A sessions• Defect reporting	AEMO and Participants
Ad hoc	<ul style="list-style-type: none">• Defect related meetings will be organised for the defects which needs prioritized attention• Issues in accessing Pre-Production environment	AEMO and Participants

2.5 Data refresh

AEMO's Pre-Production environment was last refreshed successfully with Wholesale Production data on 7 February 2024. AEMO will not undertake any further data refresh of Pre-Production environment prior to deployment for Industry testing of FPP December 2024 non-financial operation release.

2.6 Test environment: AEMO's pre-production

AEMO will prepare and maintain the single pre-production environment prior to the commencement of industry testing. Any testing related support for FPP December 2024 non-financial operation in the pre-production environment will be provided between 09:00 and 17:00 Hrs (AEST) on business days via AEMO support hub.

2.7 Indicative timeline

The indicative timeline for the industry testing of FPP project is shown in Figure 1 and Table 3, below.

Figure 1 FPP project timeline

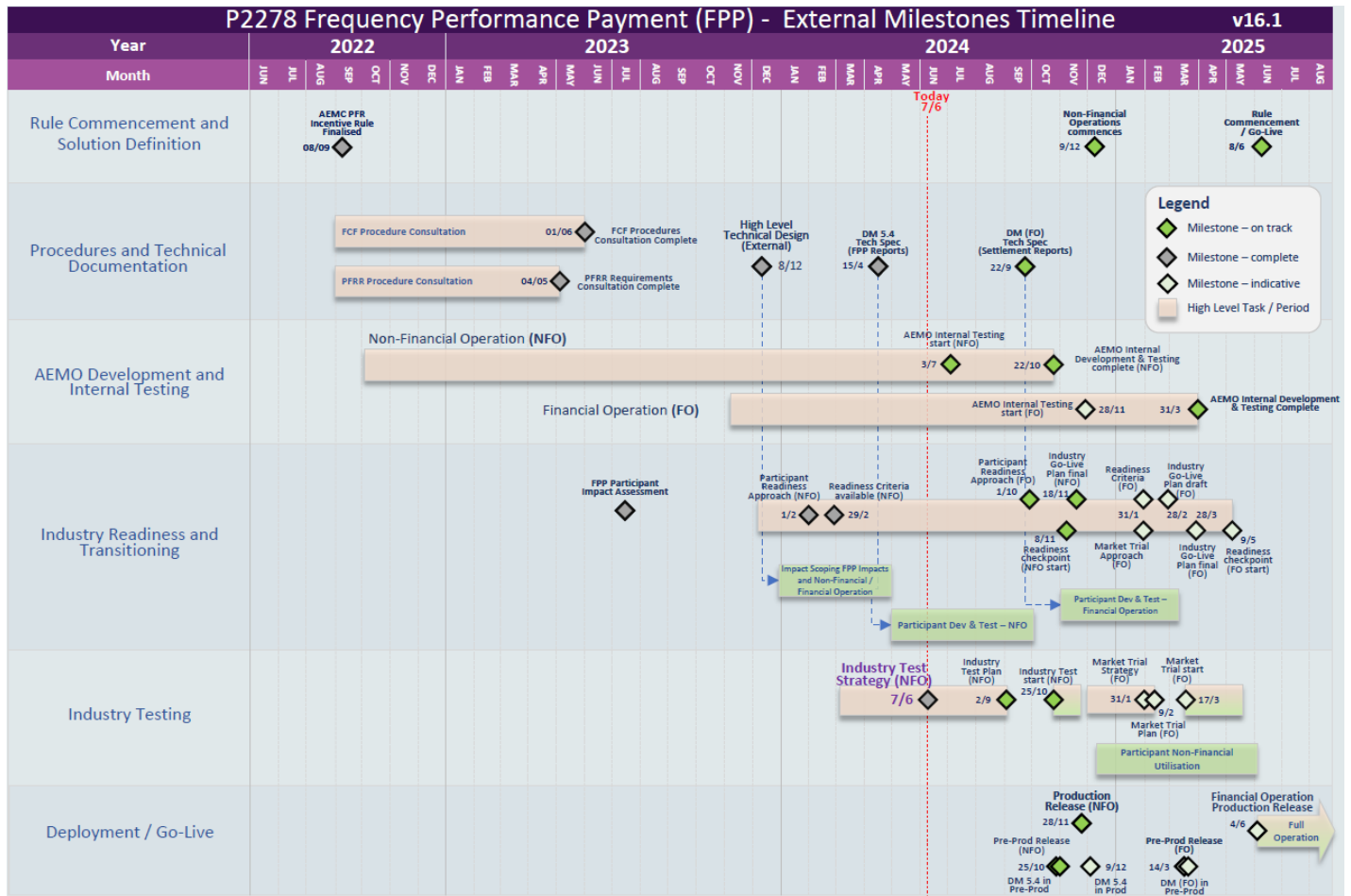


Table 3 FPP project milestones

Milestone	Date
High Level Technical Design (External)	8-Dec-2023
Industry Test Strategy (NFO) published	7-Jun-2024
Industry Test Plan published (NFO)	2-Sep-2024
Pre-Production Release (NFO)	25-Oct-2024
Industry Test start (NFO)	25-Oct-2024
Industry Test finish (NFO)	22-Nov-2024

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3 Defect management

Industry testing defect management will be a collaborative effort, principally involving AEMO's and participants' testing teams, development teams and business analysis teams.

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, the system impact and priority of the defect.

Participants can report defects via AEMO support hub. AEMO will manage all the defects that were identified during test execution. Ad hoc meetings can be organised between 09:00 and 17:00 Hrs (AEST) on business days, for any defects which needs prioritised attention for resolution. Where it is determined that it is not an AEMO defect, AEMO will coordinate with market participants to obtain the status of the defect.

3.1 Defect management approach

3.1.1 Raising defects

Defects reported by participants during industry testing will be captured by AEMO's test team in Practitest, with the following information:

- Description of defect
- Who detected it and the date it was detected
- Defect owner (entered after gaining agreement as to who owns the defect)
- Target fix date (entered by defect owner)
- Defect severity
- Defect priority
- Defect status
- Defect root cause (entered by defect owner).

3.1.2 Defect escalation and triage

All open defects will be discussed in each meeting. If a critical/high priority defect cannot be resolved within the agreed timeframes, it can be escalated in the same meeting.

Defect triage meetings will be held internally by AEMO to discuss the status of any reported defects. A defects report will be shared with participants prior to the weekly meeting.

3.1.3 Defect severity and prioritisation

Defects will be classified according to severity and, where there are multiple defects of the same severity, these will be address based on priority by the participant test leads in consultation with other affected participants, as

described in 0. Priority will indicate the degree to which the defect affects both the system capability, testing execution and the overall project. Priority is determined by assessing probability of system and the business impacts, as described in Table 5.

Table 4 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 some 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 workarounds available, with testing 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 5 Defect priority classification

Priority	Definition
1- Blocker	Entire functionality is blocked, and no testing can be conducted. Fix/resolution turnaround time is best endeavour effort in first 4 hours or provide update on impact.
2-Highest	Defect is considered high impact to testing; multiple tests are blocked/failed due to the defect and no workaround is available.
3-High	Defect is considered high impact to testing; one or more tests can be linked to the defect, but workaround is available, and testing is still able to continue.
4-Medium	Defect is considered moderate impact to testing; one or more tests can be linked to the defect, but workaround is available and none of these tests are currently a priority.
5-Low	Defect is considered low impact to testing, no tests are failed or blocked due to this defect.

Following acceptance of a defect, a resolution date will be added and published in the weekly defect report for all identified defects.

3.1.4 Defect cause

The defect root cause of a valid defect will be updated in Practitest by AEMO's test team once the defect cause is identified. Table 6 shows the available defect causes and their descriptions.

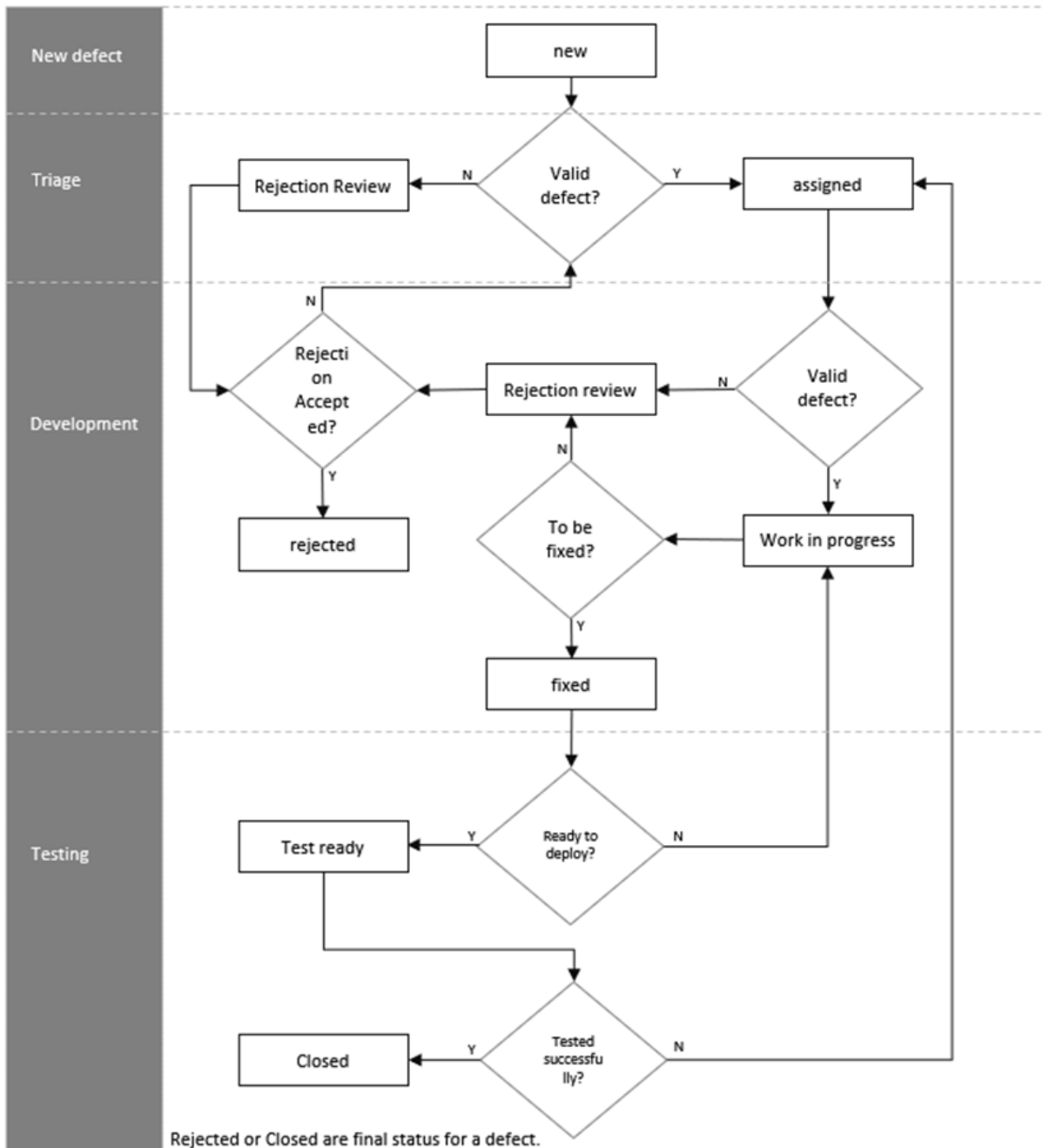
Table 6 Defect cause

Defect 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.
Configuration	The intended outcome of the configuration is not met.
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 it is 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.

3.1.5 Defect process flow

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

Figure 2 Defect management cycle



GLOSSARY

This document uses many terms that have meanings defined in the National Electricity Rules (NER). The NER meanings are adopted unless otherwise specified.

TERM	DEFINITION
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
NEM	National electricity market
FPP	Frequency Performance Payments
PFR	Primary Frequency Response
FCAS	Frequency Control Ancillary Services
B2B	Business-to-business
B2M	Business-to-market
FRMP	Financially responsible market participant
Industry testing	Informal, uncoordinated testing by participants in AEMO's IT environments. Self-testing of functionality such as connectivity, and/or coordinated multi-party testing of functional scenarios.
NER	National electricity rules
NMI	National metering identifier