



FFR (Part 2) 2023 Release

October 2023

Industry Go-live Plan

Important notice

PURPOSE

This paper describes the go-live approach with respect to the upgrade of AEMO's wholesale systems for the Fast Frequency Response (FFR) – Part 2 planned to be released on 27th September in preparation for rules commencement on 9th October 2023.

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VERSION CONTROL

Version	Release date	Changes
0.1	24 July 2023	Draft released to Implementation Forum for comment
1.0	1 September 2023	Final version
1.1	20 September 2023	Amendments to clarify settlements release date vs submissions offer commencement date

Executive summary

On 27 September 2023 AEMO will implement a software release, “FFR (Part 2) 2023 Release”, across its Wholesale systems supporting AEMO’s reform delivery program for electricity under the NEM Reform Program¹. The release, introduces changes that facilitate market commencement of very fast contingency FCAS (VF FCAS) under AEMO’s Fast Frequency Response (FFR) initiative. This release follows the August 9 FFR release (Part 1) that opened registration for VF FCAS².

AEMO has a key coordination role, through collaboration with its industry working groups, to ready Industry and itself for the various system and market “go-live” dates. This document describes the go-live approach with respect to the upgrade of the relevant systems for the FFR (Part 2) 2023 release.

At a high level, the go-live responsibilities are set out below:

- AEMO to facilitate Industry Tests for the FFR (Part 2) 2023 release.
- AEMO to enable the market software to commence operations in line with rule requirements.
- Participants to complete their preparations in readiness for the FFR (Part 2) 2023 release.

¹ <https://www.aemo.com.au/initiatives/major-programs/nem2025-program/about-nem2025-program>

² https://aemo.com.au/-/media/files/electricity/nem/security_and_reliability/ancillary_services/2023/august-2023-industry-go-live-plan_final_.pdf?la=en

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1. Introduction

This chapter describes the implementation of the Australian Energy Market Operator's (AEMO) NEM Reform FFR (Part 2) 2023 Release. This document covers Fast Frequency Response (Part 2) go-live activities and then details the purpose and context of the release Go-Live Plan.

1.1 FFR (Part 2) 2023 Release

The FFR (Part 2) 2023 Release includes changes associated only with Fast Frequency Response (FFR) - Settlements. It covers the procedural, IT system and market readiness arrangements needed to implement the October Go-Live Plan using the following workstreams:

- Procedures – defines and implements the required changes to market procedures
- Systems – designs, develops, tests, and implements changes to AEMO's market systems
- Readiness – coordinates, assists, and prepares AEMO and participants to transition to the FFR changes

AEMO's FFR (Part 2) 2023 Release has entered the implementation planning phase. This paper relates to the go-live planning for this release.

1.1.1 Fast Frequency Response

The AEMC made a final rule on 15th July 2021 that requires AEMO to define and implement a Fast Frequency Response Market Ancillary Service to commence on 9 October 2023. The final rule requires the introduction of two new market ancillary services in the NEM under the existing frequency control ancillary services (FCAS) arrangements, accompanied by additional reporting requirements.

The new market ancillary services (Very Fast Raise and Very Fast Lower contingency FCAS) will allow for fast frequency response (FFR) to be procured by the Australian Energy Market Operator (AEMO) in the form of very fast services to help control power system frequency following sudden and unplanned generation or power system outages, known as contingency events.

1.1.2 5.2 EMMS Data model

Changes to the EMMS data model required to support the FFR (Part 2) implementation for the October Release was included in the May Release (23rd May 2023).

These changes are documented in the EMMS Technical Specification³.

1.2 Document purpose & approach

This document describes the go-live approach for the FFR (Part 2) 2023 Release with respect to the deployment of Wholesale System enhancements.

³ [EMMS - Technical Specification - Data Model v5.2 - May 2023 \(aemo.com.au\)](https://aemo.com.au/emms-technical-specification-data-model-v5.2-may-2023)

The FFR (Part 2) 2023 Release Industry Go-Live plan is developed in consultation with industry through the Implementation Forum. Table 1 below illustrates AEMO’s engagement approach and timeline for developing the plan.

Table 1 FFR (Part 2) 2023 Release Go-Live Plan development timeline

Milestone	Date
Initial engagement with the Implementation Forum	2 November 2022
Publish draft for industry feedback	24 July 2023
Deadline for industry feedback	8 August 2023
Publish final plan	1 September 2023

2. FFR (Part 2) 2023 Release Go-live Plan Framework

2.1 Scope

- In scope
 - Deployment of Wholesale and Settlement system changes to support the implementation of FFR.
 - Communications during deployment.
 - Support arrangements during the go-live period.
- Out of scope
 - Participant Contingency plans.

2.2 Principles

The industry transition and go-live strategy principles apply to the FFR (Part 2) 2023 Release changes. These are:

1. FFR Implementation is mandated via Rule change – Part 2 commencement dates should be met.
2. NEM operations should be uninterrupted during periods of transition and go-live.
3. Market system go-live risks should be minimised.
4. Participants should be provided with implementation flexibility where possible.
5. Participants and AEMO are responsible for their own go-live planning.

3. FFR (Part 2) 2023 Release Industry Go- Live Plan

3.1 Industry Testing

Industry testing is optional for participants and provides the opportunity to prove their market systems against AEMO's market systems in the pre-production environment.

- FFR Industry Testing Overview (Dates Indicative):
 - 9th August – FFR Services registration commences
 - Once application processed and registration information in pre-production, participants can perform pre-production testing of offers
 - Offers tested will be effective from 4/9, mimicking production submission of offers in lead up to 9/10
 - 28th August – 7-day Pre-dispatch to include FFR offers
 - 3rd September – 5min Pre-dispatch to include FFR offers
 - 4th September – FFR (R1/L1) instructions included in Dispatch (simulated market start)
 - 15th (Prelim) / 18th (Final) September – Settlement run(s) for week 36
- EMMS Data Model 5.2 currently available in Pre-prod (released 20th April) supports FFR (Part 2). Data population commences as per dates above.
- An Industry Test Plan will be released and communicated via the NEM Industry Testing Working Group (ITWG) by 31st July 2023⁴.

3.2 Go-live plan

The FFR (Part 2) 2023 release contains a single release for Wholesale Systems. EMMS 5.2 Data Model for the October release of FFR was released to production on 23rd May.

There will be no interruption to production, however this will be confirmed in the next version of this document.

The Wholesale (settlement) Systems production deployment for the FFR (Part 2) 2023 Release is scheduled for 27th September. There will be no outage for this deployment and no participant impact.

3.3 Go-live criteria and readiness decision

⁴ <https://aemo.com.au/en/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/nem2025-industry-testing-working-group>

Solution Go Live Criteria	Description
Solution readiness	AEMO solution tested in-line with requirements. System Changes required to meet initiative requirements and ongoing stability of existing systems.
AEMO business readiness	AEMO business ready to support VF (Very Fast) FCAS market commencement. Procedures and business operations in place.

Service Commencement Criteria	Description
Market readiness	<p>Sufficient participants registered to provide service with pre-dispatch offers in place for market commencement period.</p> <p>Offers in place that support delivery commissioning volumes (stipulated below) with sufficient available capacity that ensures low possibility of supply shortfalls, including under credible contingency scenarios.</p>

3.3.1 Participant readiness

Participant readiness activities, including participation in industry testing, are not a pre-requisite for AEMO to confirm technical readiness to go-live. As such, FFR will not require formalised participant readiness reporting.

Participant readiness is required, however, for market commencement. For AEMO to determine market readiness for go-live, and in line with Participant readiness criteria, AEMO will utilise Registration data and pre-dispatch information as indication of participant intention and readiness to commence offering Very Fast FCAS.

Refer Table 2 – FFR (Part 2) 2023 Release Schedule for timings for Solution and Market Readiness decisions and AEMO’s contingency positions.

3.3.2 Commissioning period

Commencing market operation with a system normal mainland NEM requirement for each of Raise and Lower Very Fast FCAS services at a commissioning volume of 50 MW for an initial period of 2 weeks.

The stated commissioning volume represents a limit – the requirement at any given time may fall below 50 MW during this period based on the underlying technical requirement, to ensure against over-procurement during this period.

The purpose of this commissioning period is to establish market operations and allow AEMO to respond if issues arise.

3.3.3 Transition period

Upon completion of the commissioning period, a transitional period will be in place to allow for a gradual phase-in of dynamic VF FCAS requirements.

The transition period is in place to manage uncertainty around the timing and rate of transition of existing FFR-capable providers, from participation in the Fast FCAS markets to registration and participation in both Fast and VF FCAS markets.

Throughout this period there will be a phasing in of the dynamic calculation of VF FCAS requirements, progressively increasing allowed requirement volumes while ensuring that sufficient capacity is registered and committed for VF FCAS market participation, with the objective of avoiding extended periods of supply shortage.

The intention is to progressively increase VF FCAS requirements at regular, fortnightly intervals.

The size of increments and length of transition period will be dependent on the level of registered capacity and participant commitment to participation in the VF FCAS services. Both registrations information and market (pre-dispatch) information will be used in these assessments.

Increments to the amounts required across groups of regions will be made separately, recognising that the volume of VF FCAS registered to support local versus global requirements may differ. Therefore, the length of transition period may differ.

AEMO will regularly monitor Contingency FCAS performance throughout the transition and may revise these plans if any unexpected outcomes are noted.

Participants will be notified of VF FCAS requirement increments via AEMO Market Notices.

3.4 Communications

Correspondence regarding the go-live will be released through AEMO Support Hub bulletins and the NEM Reform mailbox, NemReform@aemo.com.au.

There are three categories of cutover communications that participants will receive:

- General progress updates – provide participants with information about the status implementation activities via the NEM Reform mailbox
- Support Hub Notices – provides information to the market on Software releases including notifications of releases and outage completion.
- Issues – should any issues arise or deviations from the previously communicated processes, participants will be notified through the NEM Reform mailbox. If the issue or deviation is in relation to a notice previously sent through AEMO’s Support Hub Notices, participants will receive a communication through this channel (via the AEMO IT Duty Manager) in addition to the NEM Reform mailbox. Participants experiencing issues as result of the go-live should raise these incidents directly via the AEMO Support Hub.

3.5 FFR (Part 2) 2023 release industry go-Live schedule

The steps for the implementation of AEMO market system changes and associated communications are outlined in Table 2.

Table 2 FFR (Part 2) 2023 Release Schedule

#	AEMO actions	Industry Impacts and actions	Planned Time (Market Time)	Communication channel
Registration Commencement				
1	FFR Registrations Go-Live: Registrations for VF	Participant Types affected: those interested in	Wed 9 Aug 2023	

#	AEMO actions	Industry Impacts and actions	Planned Time (Market Time)	Communication channel
	FCAS formally opens in preparation for Rule commencement 9 October 2023	registering to participate in VF FCAS to submit registration application.		
2	AEMO notifies Participants that Registrations open for VF FCAS services.	Participants interested in provision of new services can make a registration application. Upon initial processing, registrations will be added to pre-production environment to allow participation in industry test.	Wed 9 Aug 2023	<ul style="list-style-type: none"> • Direct email to relevant stakeholders • FFR Project website notice • Announcements at NEM Reform Forums • AEMO communications newsletter
3	AEMO to facilitate FFR Registration Q&A session if there is sufficient demand from participants.	Participants to advise AEMO if FFR Q&A required	Aug/Sept 2023	<ul style="list-style-type: none"> • Direct email to relevant stakeholders • AEMO Communications newsletter • Announcement at NEM Reform Forums
PREPRODUCTION				
4	AEMO will deploy Settlements related system changes to Preproduction.		Thurs 17 th Aug 2023	
	AEMO notifies participants that supported industry test period has opened. A link to the industry test plan will be included in the Final version of this plan	Interested Participants (including all energy and FCAS providers) can commence AEMO supported industry testing. Note: VF FCAS test activities contingent on	From Thu 17 Aug 2023	

#	AEMO actions	Industry Impacts and actions	Planned Time (Market Time)	Communication channel
		Participant registration and addition to Pre-production environment.		
5	AEMO confirms intention for Solution go-live.		13 th Sept 2023	Email to implementation forum and impacted participants.
6	If Solution go-live deferred, AEMO provides guidance on planned technical go-live and updates go-live plan and associated delivery dates.	AEMO will engage with impacted participants for a rescheduled Solution go-live.	13 th Sept 2023	Email to implementation forum and impacted participants.
FFR (Part 2) GO-LIVE				
7	Successful VF FCAS Registrations replicated to Production (from Pre-production).	Participants notified.	Wed 20 th to Mon 25 th Sept 2023	<ul style="list-style-type: none"> Email to participants whose Registration has been replicated to Production.
8	VF FCAS Offer submission commences. AEMO sets requirement at commissioning value.	Registered VF FCAS providers can commence submission of raise and lower 1 second offers with effective date of 09/10/2023 or greater; offer data available via the Data Interchange i.e., BIDS package.	Mon 25 th Sept 2023	Email to Registered participants.
9	AEMO deploys wholesale settlements systems changes to Production.		Wed 27 th Sept 2023	<ul style="list-style-type: none"> Support Hub Notification Email to NEM Reform Implementation Forum members and interested participants.
10	7-day Pre-dispatch commences.	Continuous 7-day Pre-dispatch runs	Mon 2 nd Oct 2023	

#	AEMO actions	Industry Impacts and actions	Planned Time (Market Time)	Communication channel
		inclusive of VF FCAS to commence inclusive of consumption of Pre-dispatch instructions via the Data Interchange.		
11	<p>AEMO assesses market readiness for service commencement.</p> <p>If not sufficient registered participants to achieve the required volumes – AEMO revises/revokes FCAS requirement and reviews in 2 weeks' time.</p>		Tue 3 rd Oct 2023	AEMO issues market notice confirming commencement of VFAST FCAS service from 9 Oct (or deferral if insufficient offers).
12	5min Pre-Dispatch commences	Continuous 5-min Pre-dispatch runs inclusive of VF FCAS to commence inclusive of consumption of Pre-dispatch instructions via the Data Interchange.	Sun 8 th Oct (11pm)	
13	<p>VFAS FCAS Rule Commencement</p> <p>Bids dispatched</p>	<p>Dispatch Instructions include VF FCAS.</p> <p>Dispatched providers meet contingency FCAS requirements</p>	Mon 9 th Oct 2023 from 1pm (market time)	<ul style="list-style-type: none"> • A notification will be posted on the FFR Initiative webpage. • "NEM Reform Announcement" NEM Reform e-newsletter to subscribers of newsletter • AEMO Communication newsletter article • Announcement at following

#	AEMO actions	Industry Impacts and actions	Planned Time (Market Time)	Communication channel
				Implementation Forum, PCF and EWCF <ul style="list-style-type: none"> Email to NEM Reform Implementation Forum members and interested participants.
14	AEMO Market Introduction Stage 1: Market commissioning period.	Commencing market operation with a system normal mainland NEM requirement for each of Raise and Lower Very Fast FCAS services that is limited to a nominal commissioning volume of 50 MW for an initial period of 2 weeks.	9 to 23 Oct 2023	
	AEMO Market Introduction Stage 2: Phase-in dynamic arrangements, progressively increasing allowed requirement volumes while ensuring sufficient capacity is registered and committed for VF FCAS market participation, with the objective of avoiding extended periods of supply shortage.	Considered BAU process	Post Oct 2023	Normal production operation as per contingency FCAS
	VFAST FCAS recovery included in settlement run	Participants receive updated settlement statements/ Data Model populated	Settlement Week 36 preliminary statements (15 Sept 2023) – as per settlement calendar	

#	AEMO actions	Industry Impacts and actions	Planned Time (Market Time)	Communication channel
	VFAST FCAS recovery in Final Settlement run		Settlement week 36 Final Statements	

4. Participant Support Arrangements

Participants should use AEMO’s BAU support channels and raise all issues and incidents with the Support Hub. The NEM Reform mailbox will remain open for general queries relating to the September/October 2023 Release.

4.1 Support Arrangements for preparing for October 2023

The NEM Reform Program will support participant preparations for the FFR (Part 2) 2023 Release through:

- Planning and facilitation of the Industry Test approach for FFR (Part 2)
- Progress and Issue management during Industry Test
- Continued operation of Industry working groups including Implementation Forum and the Industry Test Working Group (ITWG)
- Participant queries will be managed through the NEM Reform mailbox

4.2 Production Support

All production issues should be raised via the Support Hub and will be managed through the current Wholesale System support processes.

4.3 Participant Support Arrangements for October

Support Hub will remain the main point of contact for issues, incidents and queries post 9th October.

Industry Q&A sessions will be arranged following the Go-live should there be demand from Participants. Questions from participants can also be directed via the NEM Reform mailbox.

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
ADC	Aggregate Dispatch Conformance
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AGC	Automatic Generation Control
ASL	Ancillary Service Load
BAU	Business as Usual
BDU	Bi-directional Unit
BESS	Battery Energy Storage System
Cutover / Go-live	System implementation event
CR	Change Request
CRMP	Cost Recovery Market Participant
DRSP	Demand Response Service Provider
DUID	Dispatchable Unit Identifier
EMMS	Electricity Market Management Systems
FCAS	Frequency Controlled Ancillary Service
FRMP	Financially Responsible Market Participant
FFR	Fast Frequency Response
ICF	Issue/Change Form
IESS	Integrated Energy Storage System
IF	Implementation Forum
IRP	Integrated Resource Provider
IRS	Integrated Resource System

Term	Definition
ITFG	Industry Testing Focus Group
MSGGA	Market Small Generation Aggregator
NECR	Non-energy Cost Recovery
NEM	National electricity market
NEMDE	National Electricity Market Dispatch Engine
NER	National electricity rules
PD	Pre-dispatch
PMS	Portfolio Management System
SCADA	Supervisory control and data acquisition
Transition	Process of shifting from current to future operating state
VFFCAS	Very Fast FCAS