

# Frequency Performance Payments (FPP) implementation Participant impacts and timelines workshop

30 June 2023

*The information presented here is general in nature. AEMO encourages industry participants to undertake their own due diligence to assess energy market reform impacts on their respective organisations.*

*This workshop will be recorded for the purpose of compiling a written record and be available for AEMO staff members not in attendance. The recording will not be published.*



We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

**We pay respect to their Elders  
Past and present.**

# Agenda

#	Time	Topic	Speaker
1	10:00am	Welcome and introductions	AEMO
2	10:05am	Workshop purpose and ask	AEMO
3	10:10am	FPP: Changes and participant impacts	AEMO
	10:20am	Discussion	All
4	10:35am	Industry development and testing: Timelines and requirements	AEMO
	10:40am	Discussion	All
5	10:55am	Consultation questions and next steps	AEMO
	11:00am	Close	

# 1. Welcome and introductions

## 2. Workshop purpose and ask

# Workshop purpose and ask

The purpose of this workshop is for AEMO to outline, for industry feedback, our current view of:

1. The impacts of FPP on different market participants

2. The industry testing process, including timelines for AEMO to provide tech specs and other information, and the six-month non-financial operation period that will occur from Dec 2024.

Discussion and views from participants are requested either in this session, or in writing by 14 July.

This workshop is part of AEMO's broader efforts to improve our implementation processes across the NEM2025 program.

# 3. FPP – Changes and impacts

# FPP – Recap

- Under the AEMC's Sept 2022 Primary Frequency Response Incentives rule change, AEMO is creating a new system of FPP.
- From 8 June 2025, eligible generating units will either receive penalties or earn revenue, based on whether or not their performance has a desirable effect on system frequency (i.e. moves frequency closer to the 50Hz target).
- Frequency Contribution Factors (CFs) will be determined for each eligible unit for every five-minute trading interval, or default CFs applied.

# Changes and impacts

FPP will see CFs calculated for every trading interval, with resulting revenue flows. There are two key changes.

Reporting of new data for all eligible generating units, via NEM Reports/AEMO data interchange

Settlement of frequency performance payments

# Impacts on different participants

Participant type	Impact level	Impact description
Cost recovery market participants with units to be individually assessed for FPP	High	<ul style="list-style-type: none"> <li>- New CFs to be calculated each trading interval and reported to plant operator the following interval.</li> <li>- Default contribution factors (DCF) to be calculated where necessary data is unavailable.</li> <li>- Data for all participants published at the start of the next trading day.</li> <li>- FPP included in settlements</li> <li>- No direct impact on dispatch process, however CFs may inform participant Regulation FCAS offers</li> <li>- No additional metering requirements</li> </ul>
Cost recovery market participants without units to be individually assessed for FPP	Moderate	<ul style="list-style-type: none"> <li>- Reporting of settlement data requires changes to existing participant interfaces</li> <li>- Overall cost of FCAS to be recovered from participants expected to increase.</li> </ul>
Other participant categories (e.g. NSPs, meter providers)	Minimal	<ul style="list-style-type: none"> <li>- No direct impact.</li> </ul>

New data to be reported

# Frequency Measure (FM): 4-seconds resolution

- Will be published after the FPP calculation

Item	Sample
DTime	20/07/2021 04:06:16
RegionID	NSW1
Frequency_Deviation ( <i>FD</i> )	0.015
Frequency_Measure ( <i>FM</i> )	0.02116

# Private: Unit Performance and Contribution Factors (CF)

- Will be published confidentially after the FPP calculation

Item	Sample
Interval_DateTime	20/07/2021 04:10
UnitID	xxx01
Raise_Performance ( <i>P<sup>raise</sup></i> )	4.8972
Lower_Performance ( <i>P<sup>lower</sup></i> )	-0.4188

Item	Sample
Interval_DateTime	20/07/2021 04:10
UnitID	xxx01
ConstraintID	F_I+RREG_0220
Bidtype	RAISEREG
Contribution_Factor ( <i>CF</i> )	0.0028

Performance and CF for residual will also be published to all

# Requirement for Corrective Response (RCR) and Regulation Usage (U)

- Will be published after the FPP calculation

Item	Sample
Interval_DateTime	20/07/2021 04:10
ConstraintID	F_I+RREG_0220
Bidtype	RAISEREG
Requirement_for_Corrective_Response (RCR)	332.62
Usage (U)	0.3455

# Exclusions due to FM or Bad Inputs

Item	Sample
Interval_DateTime	20/07/2021 04:10
Regionid	NSW1
FCAS_Type	RAISEREG
Region_Exclusion_code	2

Item	Sample
Interval_DateTime	20/07/2021 04:10
ConstraintID	F_I+RREG_0220
Const_Exclusion_code	1

Region Exclusion Code	Comment
1	Majority Bad SCADA
2	4sec intervals with correct FM sign below minimum count
3	FM value not reaching the threshold
4	...

Constraint Exclusion Code	Comment
1	FM test not passing all relevant regions
2	Good quality test not passing all relevant regions
3	FM mismatch between regions
4	FM mismatch between islands
5	...

# Estimated recovery rates

- Can be published after the FPP calculation
- Residual rates are per MWh of energy – it will be estimates only since ATE is unknown

Item	Sample
Interval_DateTime	20/07/2021 04:10
ConstraintID	F_I+RREG_0220
Bidtype	RAISEREG
P_Regulation ( $P_{regulation}$ )	
TSFCAS	
PAYMENT_RATE_UNIT_FPP	
PAYMENT_RATE_RESIDUAL_FPP	
RECOVERY_RATE_UNIT_FPP	
RECOVERY_RATE_RESIDUAL_FPP	
RECOVERY_RATE_UNIT_USED	
RECOVERY_RATE_RESIDUAL_USED	
RECOVERY_RATE_UNIT_UNUNUSED	
RECOVERY_RATE_RESIDUAL_UNUNUSED	

# Example

- Rates per performance value vs rates per contribution factor

Item	Sample
UnitID	xxx01
Performance for xxx01 ( <i>P</i> )	5
Absolute value of sum of performance for requirement ( <i>AP</i> )	100
Contribution Factor for xxx01 ( <i>CF</i> )	0.05
<i>RCR</i> for requirement	600
<i>P<sub>regulation</sub></i> for requirement	30
PAYMENT_RATE_UNIT_FPP per Performance (\$/MWhz)	= (1/100) x (30/12) x 600 = 15
$\frac{TA}{P} = \frac{1}{AP} \times \frac{P_{regulation}}{12} \times RCR$	

# 4. Industry development and testing

- Timelines and requirement

# Six-month non-financial operation

- AEMO has planned for a six-month period of non-financial operation of the new FPP arrangements, from December 2024 to May 2025.
- CFs and other data to be included in NEM Reports and FPP amounts to be calculated and reported to participants and the market.
- This will allow time for participants to prepare for FPP go-live, including seeing how different patterns of operation would result in penalties or payments.



# Indicative FPP artefacts and resources to be provided by AEMO



Resource	Purpose	Timing
FPP participant impact assessment	Provide participants with a high level view on the impacts of FPP, based on this consultation.	July 2023
High-level technical design	Provide participants with enough detail regarding FPP reporting to begin to scope their own requirements, begin engagement with developers/vendors, and provide feedback to AEMO.	Dec 2023
Participant readiness approach	Details how AEMO will support and track participant readiness for the commencement of testing and operation of FPP.	Jan 2024
Tech Spec for FPP reporting (DM 5.3.1)	Finalises detail of how new data will be reported to the market. Forms the basis of industry system development to receive and use the new data.	Apr 2024
Tech Spec for FPP settlements (DM 5.4)	Finalises detail of how FPP will be accommodated within the NEM settlements system.	Sept 2024
Operational readiness approach	Provide market participants with the approach AEMO will take to achieving operation readiness for FPP go-live.	Sept 2024
Pre-prod testing environment	Pre-prod environment for FPP data provision to be made available one month prior to commencement of non-financial operation, for industry testing.	Nov 2024
Readiness criteria – financial operation	Provide market participants with the criteria AEMO will use to assess and manage commencement of FPP financial operation including relevant contingency approaches.	Jan 2025
Industry test approach – financial operation	Outline how AEMO and industry will undertake testing of financial operation of FPP.	Jan 2025

# 5. Consultation questions and next steps

# Consultation questions

## Participant impacts of FPP

- Do you agree with AEMO's characterisation of the participant impacts of FPP?
- Are there additional impacts to be considered?

## Timing of delivery of tech specs

- Is AEMO's estimate of industry development and testing timelines reasonable?
- Is the provision of tech specs for FPP reports in April 2024, and FPP settlements in September 2024, sufficient to allow participants to undertake necessary preparation for the commencement of non-financial operation from December 2024?

## Other industry development and testing needs

- Do participants require additional artefacts or other support to prepare for non-financial operation and go-live?

# Next steps

- Written feedback is invited until 14 July. Please email [FPPconsultation@aemo.com.au](mailto:FPPconsultation@aemo.com.au).
- We are also happy to schedule individual discussions to receive your feedback.
- We will consider feedback received and report back to the NEM Reform Program's Program Consultative Forum (PCF) and attendees at this session.
- Further discussions may be scheduled, if necessary.

# Appendix - Useful links

- Frequency Contribution Factors page (contains Frequency Contribution Factors Procedure (FCFP) and Tuning Parameters)
  - <https://aemo.com.au/energy-systems/electricity/national-electricity-market-nem/system-operations/ancillary-services/frequency-contribution-factors>
- FCFP Consultation Page (contains stakeholder submissions, AEMO Final Report and FCFP showing tracking from Draft to Final).
  - <https://aemo.com.au/en/consultations/current-and-closed-consultations/frequency-contribution-factors-procedure#:~:text=AEMO%20has%20conducted%20a%20consultation,2%20of%20the%20NER.>
- Primary Frequency Response Requirements Guideline
  - <https://aemo.com.au/en/initiatives/major-programs/primary-frequency-response>
- AEMC Primary Frequency Response Incentive Arrangements Rule change
  - <https://www.aemc.gov.au/rule-changes/primary-frequency-response-incentive-arrangements#:~:text=The%20core%20elements%20of%20the,changes%20in%20power%20system%20frequency.>



For more information visit

[aemo.com.au](http://aemo.com.au)