# REVIEW OF THE FREQUENCY OPERATING STANDARD

PUBLIC FORUM

27 MAY 2022

**RELIABILITY PANEL REPRESENTATIVES**
CHARLES POPPLE (CHAIR), STEPHEN CLARKE (TASNETWORKS), JOEL GILMORE (IBERDROLA)

RELIABILITY PANEL AEMC

# ACKNOWLEDGEMENT OF COUNTRY

We acknowledge that we are hosting this meeting from the lands traditionally owned by the Gadigal people of the Eora nation.

We also acknowledge the Traditional Custodians of the various lands on which you all work today and the Aboriginal and Torres Strait Islander people participating in this meeting.

We pay our respects to Elders past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of Australia.

# PURPOSE OF THIS FORUM

- The Panel will present:
    - an overview of the 2022 Frequency operating standard (FOS) review.
    - the Panel's key issues for consideration.
- The AEC will conduct an industry presentation
- AEMO will present the approach to technical advice.
- The Panel will hear stakeholder views relating to the Frequency operating standard review.

# AGENDA

| Time | Agenda item | Presenter / Facilitator |
|---|---|---|
| 9:30 am | Welcome and introductions | Charles Popple *(Chair of the Reliability Panel, AEMC Commissioner)* |
| 9:35 am | Overview and background | Stephen Clark *(Reliability Panel/TasNetworks)* |
| 9:45 am | Key issues for consideration | Joel Gilmore *(Reliability Panel/Iberdrola*) |
| | (a) Settings for normal operation | |
| | (b) Standard for rate of change of frequency (RoCoF) | |
| | (c) Settings for contingency events | |
| | (d) Limit on accumulated time error | |
| 10:05 am | Q&A session | Victoria Mollard *(AEMC)* |
| 10:30 am | Industry presentation | Ben Skinner *(Australian Energy Council)* |
| 10:50 am | Approach to AEMO advice | Mark Stedwell *(AEMO)* |
| 11:05 am | Q&A session | Victoria Mollard *(AEMC)* |
| 11:25 am | Next steps | Charles Popple *(Chair of the Reliability Panel, AEMC Commissioner)* |

# FORMAT FOR THE WEBINAR

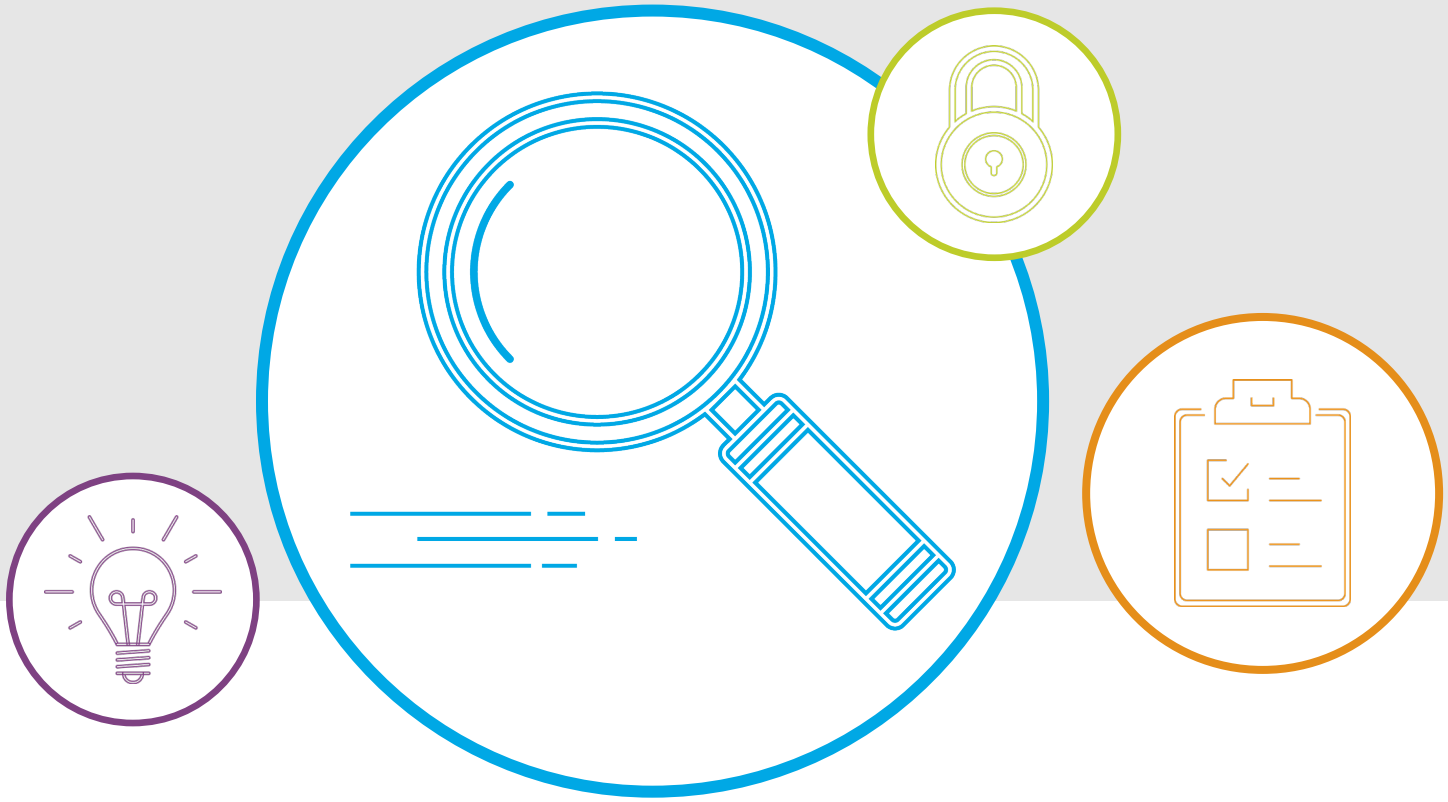
- You will have the option to make comments or ask questions via the Q&A function on your screen.
- When asking questions or presenting comments, please relate them to the purpose and scope of the meeting.
- In the Q&A area please first indicate whether you are asking a question or making a comment, then add your remarks, and then finally please include your name and organisation at the end.
- We will attempt to answer all questions during the scheduled Q&A sessions - if we don’t get to your question during the forum, we will follow up after the event.
- Comments can also be raised during the Q&A sessions. Where possible, and time permitting, participants may be invited to present their comments - if this happens, your mic will be taken off mute, and you will be asked to make your comment.

# 1

# WELCOME & INTRODUCTORY REMARKS

REVIEW OF THE FREQUENCY OPERATING STANDARD

# WHAT WE DO



The Reliability Panel, which forms part of the AEMC's institutional arrangements, reviews and reports on the safety, security and reliability of the national electricity system.

# WHO WE ARE

The Panel is comprised of members who represent a range of participants in the national electricity market, including:

Consumer groups

Generators

Network businesses

Retailers


Australian Energy Market Operator (AEMO)

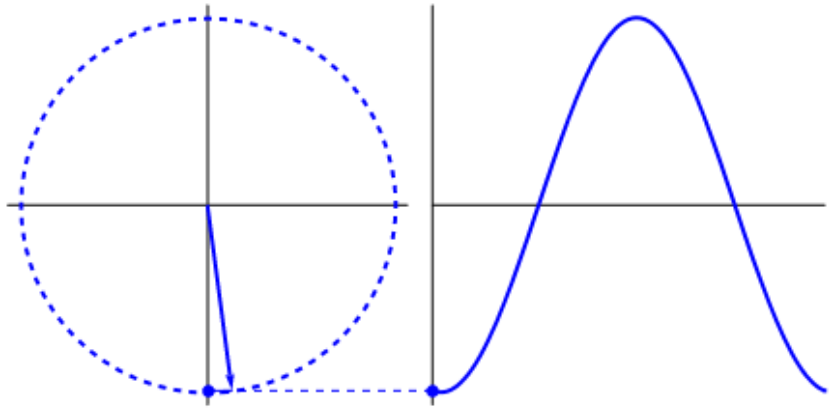
# 2

# OVERVIEW AND BACKGROUND

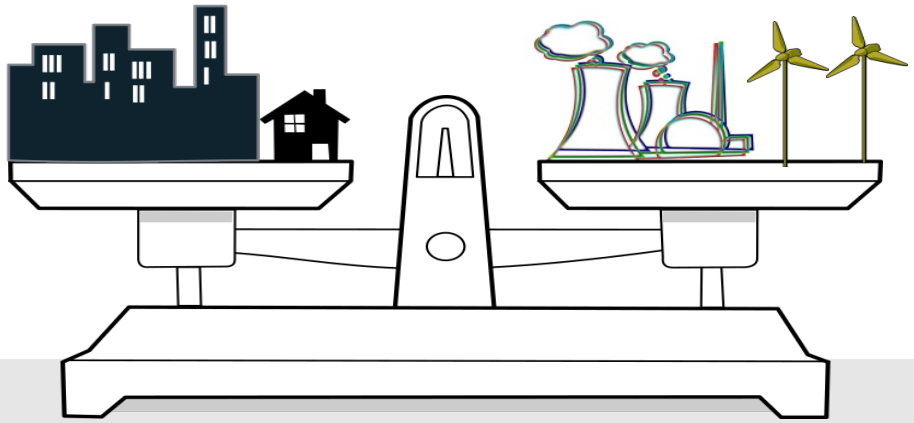
REVIEW OF THE FREQUENCY OPERATING STANDARD

# 2.1 WHAT IS THE FREQUENCY AND HOW IS IT CONTROLLED?

- Frequency is a measure of the number of voltage cycles in 1 second, it is effectively a measure of the '**speed**' of the power system. It is measured in Hertz (Hz). 1Hz = 1 cycle per second.
- The national electricity system operates using alternating current with a nominal(target) frequency of 50 Hz.
- To maintain a stable power system frequency, supply of energy into the power system must equal demand at every instant in time.
- In response to a contingency event, frequency is controlled through the coordinated application of inertia, primary frequency control and secondary frequency control.



If electricity demand exceeds supply, system frequency will decrease.



If electricity supply exceeds demand, system frequency will increase.

Refer to AEMO's Energy explained: Frequency control for further explanation

# 2.2 OVERVIEW OF THE REVIEW OF THE FREQUENCY OPERATING STANDARD

**Context for the review**

This review of the Frequency operating standard (FOS) is part of a broader program of essential system services that progresses the ESB's recommendations in the post-2025 work to "strengthen the grid" and support power system security.

The drivers for this review have been identified through related works undertaken by market bodies:

- The AEMC's *Mandatory primary frequency response* rule change
- The AEMC's *Primary frequency response incentive arrangements* rule change
- The AEMC's *Fast frequency response market ancillary service* rule change
- AEMO's *Engineering framework*

**Process for the review**

The National electricity rules require that the Panel's determination of the FOS be made on the advice of AEMO. The Panel is also considering the potential scope for complementary independent advice to inform its determination.

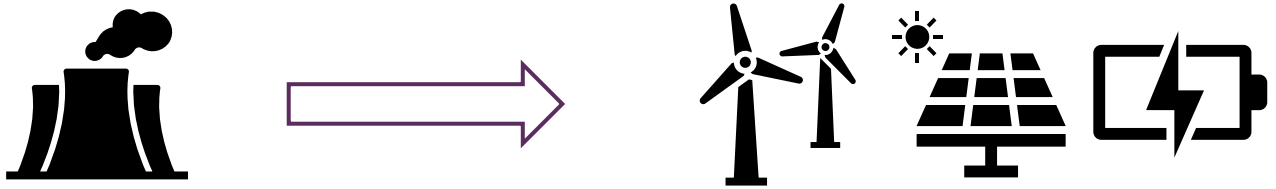
Given the pace of the market transformation, the terms of reference for the review request that the Panel consider when may be an appropriate time to undertake the next review of the FOS.

# 2.2 EFFECT OF ONGOING MARKET TRANSFORMATION

The generation mix in the NEM is undergoing a significant transformation, driven by:

- The decarbonisation of the power system
- Increased competitiveness of IBR
- Consumer preferences

Both large- and small-scale renewable generation and batteries are entering the system rapidly and in high volume, accelerating the retirement of the thermal generation fleet.



The changing energy mix is having **implications for how frequency is managed**, and how power system security requirements are satisfied, now and in the future.

The effects of the retirement of synchronous generators can be seen through:

- A reduction in system inertia
- Ride-through capability of generation sources and loads to frequency disturbances
- Changes in the frequency response capacity and capability to respond to frequency disturbances (PFR)
- Type of events that impact frequency are changing
- Undermining of UFLS schemes

The review of the FOS intends to update the standards to reflect the new operational reality and prepare for the future

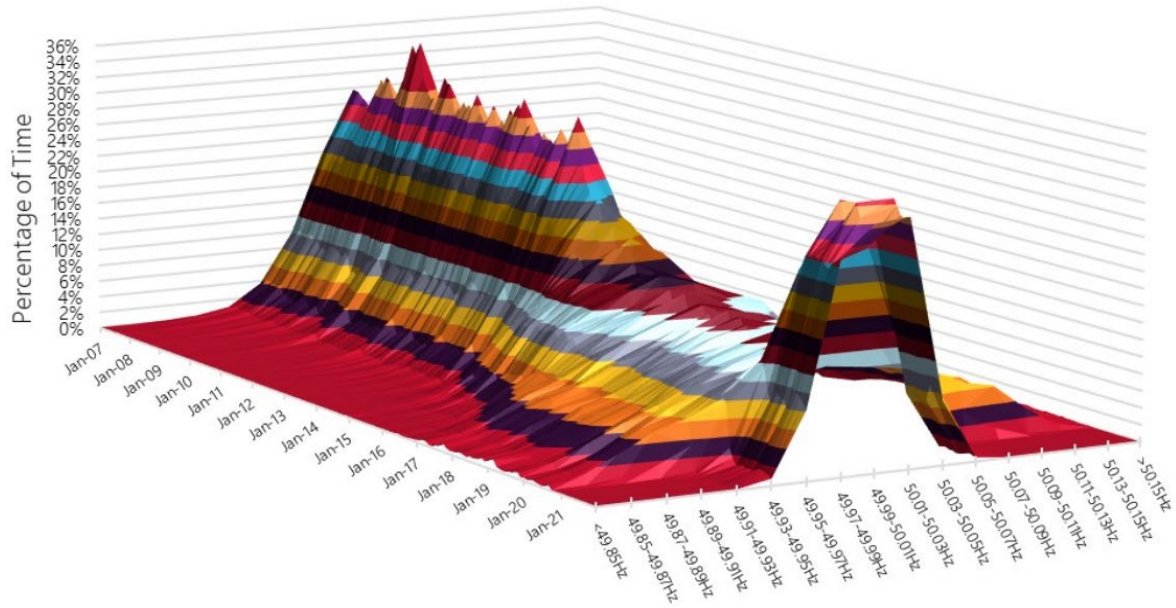
# 2.3 EFFECT OF MANDATORY PRIMARY FREQUENCY RESPONSE

Frequency performance in the NEM degraded significantly over the period from 2015 – 2020, until the introduction of mandatory PFR, resulting in:

- A widening of frequency distribution in normal operation
- Increased incidence of oscillation in power system frequency
- A decrease in power system resilience following non-credible contingencies

Mandatory PFR resulted in a large increase in responsive generation plant, significantly improving frequency performance.

Despite this, AEMO has noted that there is an opportunity to better define the requirements for frequency performance during normal operation.



# 3

# KEY ISSUES

SETTINGS IN THE FREQUENCY OPERATING STANDARD

# 3(a) SETTINGS FOR PERFORMANCE DURING NORMAL OPERATION

**The standard for frequency performance during normal operation**

During normal operation, the FOS requires that AEMO must maintain the frequency:

- *Within 49.85 – 50.15 Hz for at least 99% of the time, and*
- *Cannot exceed the NOFB for longer than 5 minutes on any occasion and not for more than 1% of the time over any 30-day period.*

Following the improvement in frequency performance due to Mandatory PFR, AEMO noted in it's 2021 PFR technical white paper that

"*There is an opportunity to amend the FOS to better specify frequency performance requirements under normal conditions.*"

In the issues paper, the Panel identified 5 different options to amend the FOS to better define acceptable performance during normal operation:

- Introduce a qualitative criteria
- Introduce additional frequency band – NOPFB (±0.05 Hz)
  90% and 85% of time for the mainland and Tasmania respectively
- Introduce standard deviation benchmark
- Introduce a millage measure and benchmark
- Narrowing of the existing NOFB to be close to (±0.05 Hz)

**The Primary frequency control band – for mandatory PFR**

The Mandatory PFR rule also introduced the Primary frequency control band into the NER. It sets a lower bound for the maximum allowable deadband that AEMO specifies for affected generators as part of the PFR Requirements.

The PFCB is currently defined in the NER as *49.985Hz to 50.015Hz, but it can also be set by the Panel in the FOS.*

**We are interested in stakeholder views on how the standard for frequency performance during normal operation is specified in the FOS.**

# 3(b) A STANDARD FOR RATE OF CHANGE OF FREQUENCY

System inertia is expected to fall over coming years, and this will lead to an increase in the rate of change of frequency (RoCoF) following contingency events, particularly for small or islanded regions of the NEM.

A system standard for RoCoF would provide an operational limit that AEMO would need to meet following certain types of contingency events (potentially with separate RoCoF standards following credible contingency events, protected events and non-credible contingency events that are not protected events).

The Panel's determination of a RoCoF standard would also need to consider

- RoCoF withstand capabilities of current and future equipment
- The size of contingency events
- Characteristics and constraints of local FCAS delivery

A RoCoF standard would likely have the following form:

*x Hz/s* measured over a period of *y seconds*.

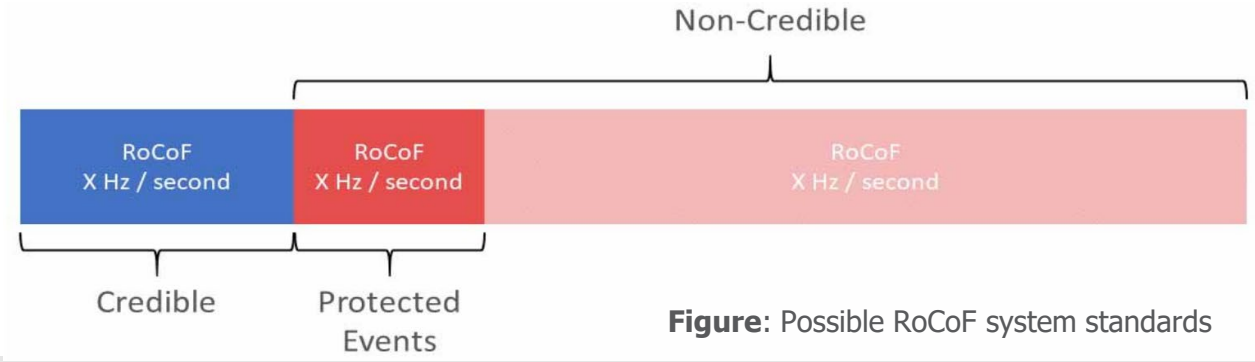



**Figure**: Possible RoCoF system standards

# 3(b).2 INTRODUCTION OF A STANDARD FOR RATE OF CHANGE OF FREQUENCY

**Costs and benefits of setting a RoCoF standard**

High RoCoF events present a risk to the secure operation of the power system and maintaining the frequency within the bounds defined by the FOS.

**Benefits of setting a RoCoF standard include:**

- Higher probability of generators remaining online following a contingency event
- Supports the effective operation of emergency frequency control schemes
- Supports the effective operation of contingency FCAS to stabilise and recover system frequency

**Costs of implementing a RoCoF limit include:**

- Increased cost of procuring additional ancillary services
- Costs associated with the inclusion of additional dispatch constraints
- The cost of RoCoF ride through capability for connecting plant (cost for larger RoCoF limit)

**We are interested in stakeholder views on including limits in the FOS on RoCoF following contingency events.**

# 3(c) SETTINGS FOR CONTINGENCY EVENTS – BANDS FOR CONTINGENCY EVENTS

The Panel intends to review the settings for contingency events to manage the changing nature of operational risk to provide a **clear foundation for operational performance requirements and limits in the power system**.

The 2022 *Enhancing operational resilience in relation to indistinct events* rule change expanded the contingency events framework to manage the risks of 'indistinct events', which are threats to the power system that are unpredictable, uncertain and could impact multiple power system elements.

The updated NER definition for contingency event will be:

> *A **contingency event** means an event on the power system which AEMO expects would be likely to involve:*
>
> *(1) the failure or removal from operational service of plant; and/or*
>
> *(2) a sudden and unplanned change to the loading level of plant.*

The Panel intends to consider a number of issues related to the settings in the FOS for contingency events to improve standardisation and transparency and reflect the operational characteristics in the system. The related issues include:

- Frequency bands and recovery times for credible contingencies
- The operational frequency tolerance band (OFTB) and requirements for connecting generators
- Minimum thresholds for generation and load events
- Alignment of the generation and load change band for the mainland with the OFTB
- FOS arrangements for the management of non-credible contingency events

# 3(c).2 SETTINGS FOR CONTINGENCY EVENTS – MAXIMUM CONTINGENCY SIZE

The FOS for Tasmania includes a limit on the largest allowable generation event for the Tasmanian power network, clarifying the allowable technical operating envelope for the Tasmanian power system with respect to the credible risks posed by the loss of generation from a single generating system or single dedication connection point.

AEMO's *Engineering framework* identified that power system risks are expected to change due to new generation and load technologies, renewable energy zones and secondary risks associated with post disturbance 'shake-off' of inverter generation. In the context of this, the Panel will consider:

- Whether the current 144 MW generation event limit in Tasmania continues to remain fit for purpose?
- Whether the limit of the largest allowable generation event in Tasmania should be extended to cover other credible contingency events, such as load and network events?
- Whether the FOS should be revised to include a limit for the largest allowable credible contingency event for the mainland NEM?

**Costs and benefits of setting a limit on the maximum credible contingency event**

**Benefits of setting a credible event limit include:**

Support the operation of the power system with physical limits

Provide increased transparency and expectations for large connecting generators or loads

**Costs of setting a credible event limit include:**

Have material impact on investment decisions for new generation plant, with larger connection costs

May have an impact on dispatch instructions for existing generation plant

**We are interested in stakeholder views on including limits in the FOS on the maximum allowable credible contingency size.**

# 3(d) LIMIT ON ACCUMULATED TIME ERROR

Time error is a measure of the accumulated time the power system has spent above or below exactly 50 Hz. Operation of the power system to maintain time error within limits helps align the service of electricity through the power system with the financial transactions underpinning the electricity market.

In order to correct for any accumulated time error, AEMO applies a small frequency offset to run the power system marginally above or below 50 Hz for a period of time. The current limits on accumulated time error are:

- *15 seconds for the mainland NEM; and*
- *15 seconds for Tasmania.*

In 2019, as part of the Panel's 2019 FOS review stage two determination, it noted that:

*"Following a suitable period of monitoring it may be appropriate for the Panel to consider further changes to the limit in the FOS in relation to accumulated time error."*

**The costs and impacts of accumulated time error may include:**

| Costs and impact of accumulated time error include: | | | |
|---|---|---|---|
| Appliances or equipment that rely on synchronous clocks. | Physical misalignment between financial settlements and real power flows. | Costs and operational impacts of time error correction. | Accumulated time error is a useful metric for frequency performance more generally. |

The Panel is considering if the accumulated time error limit should be updated or abolished.

**We are interested in stakeholder views on the limit on accumulated time error in the FOS.**

# DISCUSSION

Discussion and Q&A

# 4

# AEC INDUSTRY PRESENTATION

SETTINGS IN THE FREQUENCY OPERATING STANDARD

AUSTRALIAN ENERGY COUNCIL

# *Frequency Operating Standards Review Consultation Paper forum*

27 MAY 2022

# AEC supports FOS review

- Support the scope of the matters being considered in consultation paper

- Most urgent matter is NOFB standard clarity
  - Needs dedicated economic work

- Support Panel investigating RoCoF standard and max cont size
  - May be merit in both of these

- Support change to time error standard

# Some Context on NOFB

In July 2020 AEC wrote to Panel that NOFB FOS should be immediately reviewed

All parties agreed 2015-2019 NOFB performance was unacceptable.

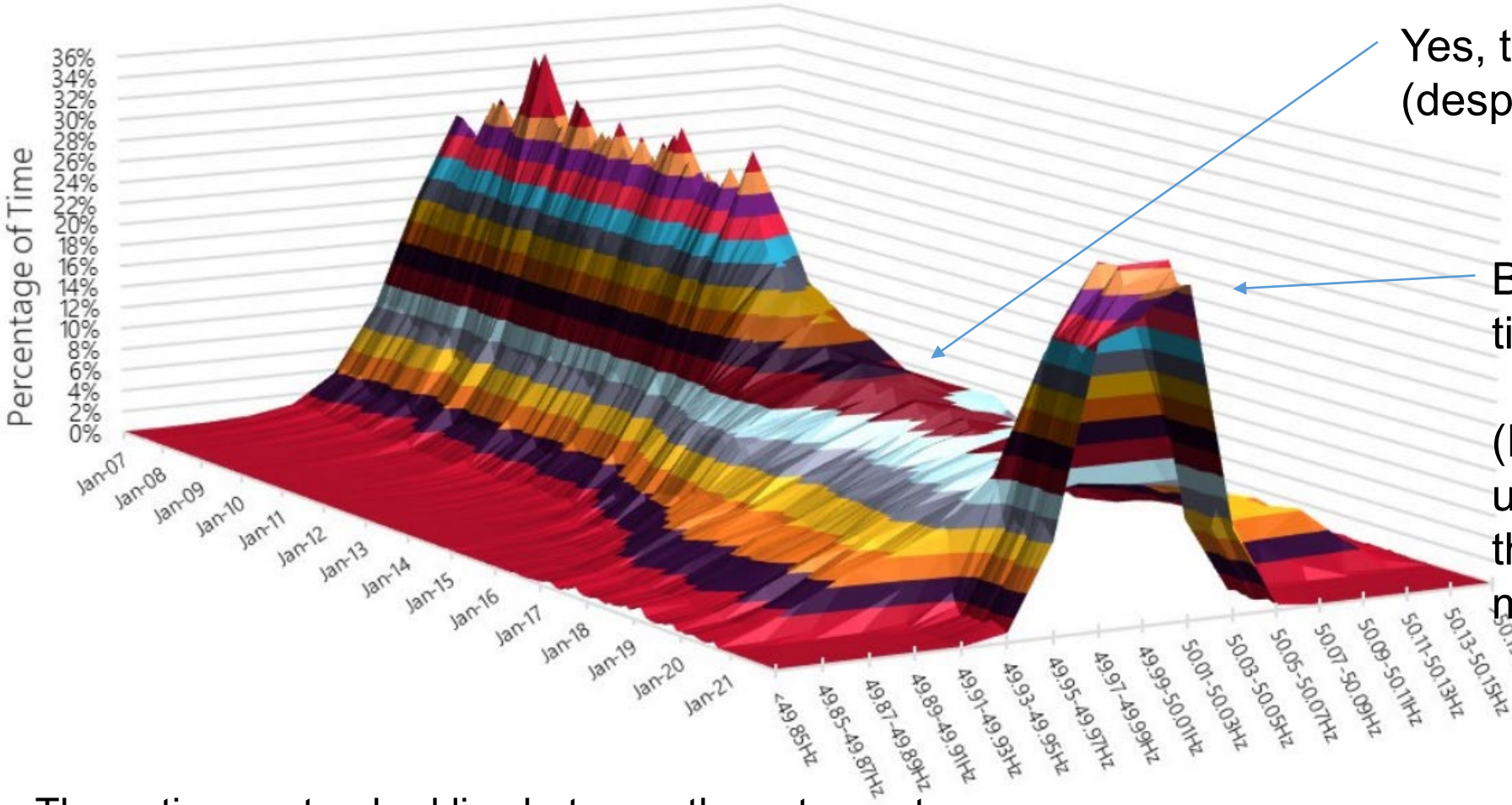
Yet it met the FOS! Clearly the FOS was not right.

Mandatory PFR rule change followed by FOS review is market design in reverse.

What should have happened:
*FIRST* should have determined what is acceptable frequency response and put in FOS
*SECOND* should have determined the best way to meet it and only it

Our letter was unsuccessful but we should not let this reverse order infect our thinking

# Don’t gold plate the NOFB




Yes, this was unacceptable (despite meeting current FOS)

But this is almost certainly tighter than necessary.

(Really an economically undesirable expression of the inefficiency of a mandatory approach)

The optimum standard lies between these two extremes

# Tight frequency is not necessarily good

- Don’t fall into the trap of “We like this tight frequency, let’s lock it in”

- Page 29:
  - Panel says a tight frequency is actually *cheaper* for industry, so what’s not to like?
    - This is unintuitive and wrong
  - Keeping frequency tight *does* involve costs
    - Will get increasingly more expensive as steam declines
  - Reducing FCAS implies these markets are being distorted
    - This is a **DIS**benefit

# NOFB: find the theoretical trade-off

- Technical analysis has been provided by AEMO.
  - Now need independent expert economic analysis.
  - The economic tradeoffs can be found
- Ignore current outcomes and current costs.
  - Think about a future market
- Costs: picture a market with all NOFB done by batteries
  - Iberdrola analysis provided deterministic expression of mileage cost
  - Determine the mileage to NOFB relationship
  - From this, say NOFB(1) costs $Xm/y; NOFB(2) $Ym/y
- Benefits: Harder because advantages of tight Hz are vague
  - Suggestion: Draw on FCAS regulation costs as a proxy of what a market would spend to hold frequency tight

# NOFB expression style

- Bicycle shed issue
  - Easy to visualise….so people tend to focus on it
  - But distracts from key concern, which is finding the optimum trade-off

- But, since Panel has asked about the colour of the bike shed:
  - Agree with ditching options 1,3,4
  - Not sure why would keep the existing standard (2), since unlikely to ever bind. So, support 5.

# RoCoF standard may be beneficial

- Clarity for:
  - Inertia mechanism settings
  - Generator connection requirements
    - E.g. if standard is set at 1Hz/s, this clarifies what plant can be installed
- Would need to grandfather existing plants
- Will affect the market split between inertia mechanism and VFFCAS
  - All the more reason for transparency

# Largest contingency size

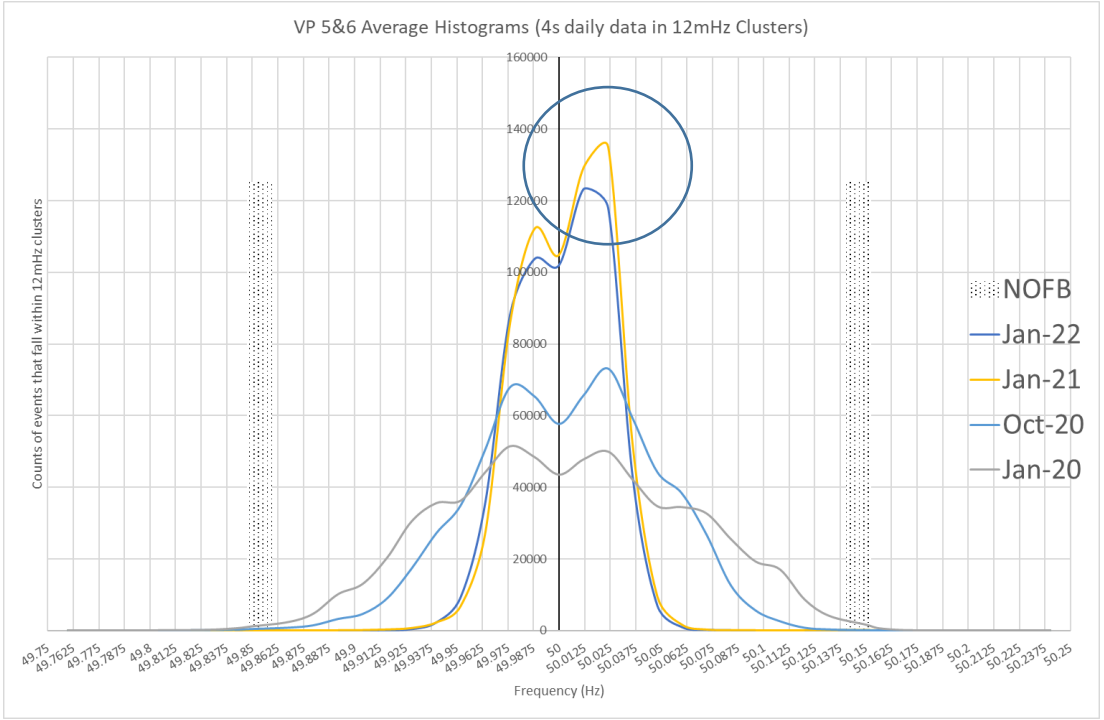
- Pros and cons

- TNSPs and AEMO already apply a “glass ceiling” to contingency size in network planning and gen connection
  - Might be good to make this transparent
  - Likely to be one for NEM + 1 each for SA, Tas + ?NQld?

- Downside is inflexibility
  - Tasmanian example – though believe this has been resolved
  - Allow AEMO/TNSPs to deviate from, with published justification

# Time error

- Time error has no customer impact, but is helpful for its diagnostic information
- Can detect when:
  - Insufficient FCAS regulation services being dispatched
  - Skewness in control systems
- Ditch absolute time error standard, replace with rate of change of time error standard
  - Will still indicate when greater control (e.g. Reg FCAS) is needed
  - Won't require AEMO to bias frequency: two wrongs don't make a right



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# Thanks

# 5

# APPROACH TO AEMO ADVICE

FOR THE REVIEW OF THE FREQUENCY OPERATING STANDARD

# Reliability Panel's Frequency Operating Standard

## AEMO Approach to FOS Advice

# AEMO approach to FOS advice

| Subject | Frequency Operating Standard 2022-23 Review |
|---|---|
| Objective: | • To inform the approach to AEMO advice for the AEMC Reliability Panel Frequency Operating Standards (FOS) 2022 review. |
| 1. **Rate of Change of Frequency (RoCoF) limits** | • AEMO has done a lot of RoCoF modelling for FFR and can continue this work.<br>• AEMO supports establishment of system level RoCoF limits in the FOS.<br><br>**<u>Key areas of interest:</u>**<br><br>• Separate RoCoF limits for credible and non-credible contingencies.<br>• Different RoCoF limits for different Regions in different scenarios such as when they island ? (SA and QLD)<br>• RoCoF standard for protected events will be specific and should be confined to the particular protected event.<br>• Most likely commence at up to 1 Hz/sec RoCoF limit for credible contingencies, as this is currently the minimum access standard for generation connections, though will study this.<br>• 1 Hz/sec is also consistent with the proposed 1 Hz/sec frequency ramp to be used to assess FFR capability in the upcoming MASS<br>• Beyond 1 Hz/sec RoCoF there is arguably always some risk of cascading failure during credible contingencies.<br>• There is also significant uncertainty around RoCoF withstand of some existing NEM plant, and international experience suggests this uncertainty can be reduced, but can't be entirely removed.<br>• The overall system RoCoF withstand capability is set by the 'weakest link in the chain', so whatever is grandfathered in will set long term system capability limits.<br>• For non-credible contingencies, RoCoF should be kept below a level where there is confidence the Emergency Frequency Control Schemes such as Under-Frequency Load shedding will operate reliably. This number is not known exactly, but is likely to be in the range 1-3 Hz/sec.<br>• A RoCoF limit requires a description of how it is calculated, i.e. over what time window, and using what measurement or calculation.<br>• What tools would AEMO have to enforce RoCoF limits to meet the FOS ? |

# AEMO approach to FOS advice

| Subject | Frequency Operating Standard 2022-23 Review |
|---|---|
| **2. Frequency bands for contingency events and potential limits for contingency sizes in the NEM including, generation, transmission, load and special schemes such as run back schemes**. | • A transparent MW credible contingency size limit will be of value going forward, particularly in the connection process<br>• Frequency bands for contingency events must be reviewed in the context of new AEMC indistinct events rules, in particular the update to the definition of a contingency event.<br>• Maximum MW contingency sizes are not only a limit in relation to FCAS procurement / Contingency Frequency Control.<br>• Large MW contingencies can affect a range of other network operating limits, often in non-linear ways, that do not readily lend themselves to co-optimisation in dispatch.<br>• This raises the question of whether the FOS is the optimum place to specify these MW contingency limits, or some other part of the NER.<br>• MW limits are likely to be regionally specific. A value for SA would not be the same as QLD. Connection size limits may also be needed sub-regionally. A 600 MW contingency in a weak regional network can have very different issues compared to the same MW contingency occurring at a strong generation centre in the same region.<br>• AEMO will engage with and take advice from TNSPs with regard to contingency size limits. The current max regional MW contingency sizes would be a reasonable starting point.<br>• Limits on credible load MW contingencies should also be considered, as well as generation. Potlines, HVDC links, possible new Hydrogen loads could be very large in future.<br>• Large generator contingency MW sizes can increase reserve requirements for reliability assessments. This can't be managed in dispatch.<br>• There are also recent examples of MW contingency size co-optimisation with FCAS volumes for 'larger than historical' contingency MW sizes in regional VIC and NSW.<br>• In these cases large amounts of VRE are disconnected across multiple sites by runback schemes, due to low network capacity and resulting non-firm connections. This was an example of an ad-hoc response to large contingency sizes. This approach can have very different impacts for high-capacity factor generation vs VRE, which less frequency operates at a level where it may be subject to co-optimisation.<br>**Benefits of having both a MW contingency limit and RoCoF limits**<br>• Having both a MW contingency limit and a RoCoF limit effectively determines inertia requirements. Settings can be tweaked over time if required. |

# AEMO approach to FOS advice

| Subject | Frequency Operating Standard 2022-23 Review |
|---|---|
| **3. Limits on Accumulated Time Error** | • AEMO completed studies in detail in the last FOS review<br>• AEMO has previously recommended the removal of the time error obligation entirely – this is to be reviewed<br>• AEMO has further data and modelling and has changed time error constants to trial results – this will be evaluated<br><br>Key areas of interest:<br>• If retaining a time error requirement, allow it to be further relaxed if required. Actual value could be based on comparable settings in other large and very large systems, but could also be arbitrarily chosen (say 30 sec ??)<br>• Main value of retaining some time error standard is that it keeps NEMDE energy market neutral over time (and keeps synchronous clocks accurate to whatever standard is set).<br>• The main factor affecting time error correction is the tuning of AEMO's AGC to correct time error. This would be the key factor changed in response to any relaxation of time error standards.<br>• The current practice of linking increased time error to increased REG FCAS procurement will be reviewed for its effectiveness.<br>• If this was done, REG FCAS procurement volumes would not be linked to time error, and would only vary above baseline requirements based on the co-optimisation with 5 minute Contingency FCAS volumes. |

# AEMO approach to FOS advice

| Subject | Frequency Operating Standard 2022-23 Review |
|---|---|
| **4. Targets for Frequency performance during 'Normal Operation' – the NOFB and the NOFEB** | • FOS NOFB should be an alarm level NOT a planning goal or desired target.<br>• For example, AEMO does not and cannot aim to achieve 49.5 Hz for every generator trip, or 50.5 Hz for every potline trip. Must aim for well within this taking into account tolerances and a variety of risks.<br>• Integrating the FFR market, determining RoCoF standards, and setting Max MW contingency limits are all fairly urgent and higher priority for the system.<br>• Structure of the relationships between the NOFB and NOFEB could be reviewed.<br>• A review and discussion of what the 'lever', or operational mechanism would be for AEMO to adjust frequency performance under normal conditions. This is essential to understand, and agree on.<br>• The important role PFR has played to re-establish control within the NOFB<br>• Essentially the system has returned to a level of control & performance last seen pre 2015.<br>• Could look at tightening the NOFB. Though, tools available to AEMO to maintain this needs considerable thought. |

# Previous FOS Reviews

| YEAR OF REVIEW | KEY REVIEW OUTCOMES |
|---|---|
| 2019 –Mainland and Tasmania | • A limit on the size of the largest generation event in the Tasmanian power system<br>• Restructure and reformatting |
| 2017 –Mainland and Tasmania | • Inclusion of a standard to apply following protected events<br>• That AEMO make "best endeavours" to meet the standard relating to non-credible multiple contingency events, that are not protected events.<br>• An increase to the limit for accumulated time error in the mainland from 5 seconds to 15 seconds. |
| 2009 –Mainland FOS | • Inclusion of the elements of the FOS that apply for periods of supply scarcity –during restoration following large non-credible events that result in load shedding. |
| 2008 –Tasmanian FOS | • Revision of the FOS for Tasmania to support the connection of higher efficiency thermal generating units –Tamar valley power station. |
| 2006 –Tasmanian FOS | • Determination of the initial Tasmanian FOS based on previous standard set by the Tasmaninan reliability and network planning panel |
| 2001 –Mainland FOS | • Comprehensive review and creation of the FOS for the mainland NE |

# Interactions with other work programs

- Primary Frequency Response (PFR)
- Fast Frequency Response (FFR)
- Inertia market rule change
- Power System Frequency risk review (PSFRR)
- Engineering framework

# DISCUSSION

Discussion and Q&A

# 6

# NEXT STEPS

SETTINGS IN THE FREQUENCY OPERATING STANDARD

# 8. NEXT STEPS

Submissions to the issues paper should be provided to the Panel by **Thursday 9 June 2022**.

We will consult further with stakeholders through our industry technical working group.

We plan to publish a draft determination in November 2022.

RELIABILITY PANEL AEMC

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