Department of Energy, Mines, Industry Regulation and Safety
Energy Policy WA
GOVERNMENT OF WESTERN AUSTRALIA

Meeting Agenda

Meeting Title:	Essential System Services Framework Review Working Group (ESSFRWG)
Date:	Wednesday 26 March 2025
Time:	3:00 PM – 5:00 PM
Location:	On-line

Item	Responsibility	Type
Welcome and Agenda • Conflicts of interest • Competition Law	Chair	Noting
Meeting Apologies/Attendance	Chair	Noting
Technical review of Frequency Co-optimised Essential System Services (ESS)	GHD	Noting
Sensitivity analysis	GHD	Noting
Supplementary ESS Mechanism	GHD	Noting
Working Group discussion	Chair / GHD	Discussion
Next steps	Chair / GHD	Noting
Next meeting: TBA		

Please note, this meeting will be recorded for the purposes of taking minutes.

Competition and Consumer Law Obligations

Members of the Essential System Services Framework Review Working Group (**Members**) note their obligations under the *Competition and Consumer Act 2010* (**CCA**).

If a Member has a concern regarding the competition law implications of any issue being discussed at any meeting, please bring the matter to the immediate attention of the Chairperson.

Part IV of the CCA (titled "Restrictive Trade Practices") contains several prohibitions (rules) targeting anti-competitive conduct. These include:

(a) **cartel conduct**: cartel conduct is an arrangement or understanding between competitors to fix prices; restrict the supply or acquisition of goods or services by parties to the arrangement; allocate customers or territories; and or rig bids.

(b) **concerted practices**: a concerted practice can be conceived of as involving cooperation between competitors which has the purpose, effect or likely effect of substantially lessening competition, in particular, sharing Competitively Sensitive Information with competitors such as future pricing intentions and this end:

- a concerted practice, according to the ACCC, involves a lower threshold between parties than a contract arrangement or understanding; and accordingly; and
- a forum like the MAC is capable being a place where such cooperation could occur.

(c) **anti-competitive contracts, arrangements understandings**: any contract, arrangement or understanding which has the purpose, effect or likely effect of substantially lessening competition.

(d) **anti-competitive conduct (market power)**: any conduct by a company with market power which has the purpose, effect or likely effect of substantially lessening competition.

(e) **collective boycotts**: where a group of competitors agree not to acquire goods or services from, or not to supply goods or services to, a business with whom the group is negotiating, unless the business accepts the terms and conditions offered by the group.

A contravention of the CCA could result in a significant fine (up to $500,000 for individuals and more than $10 million for companies). Cartel conduct may also result in criminal sanctions, including gaol terms for individuals.

Sensitive Information means and includes:

(a) commercially sensitive information belonging to a Member's organisation or business (in this document such bodies are referred to as an Industry Stakeholder); and

(b) information which, if disclosed, would breach an Industry Stakeholder's obligations of confidence to third parties, be against laws or regulations (including competition laws), would waive legal professional privilege, or cause unreasonable prejudice to the Coordinator of Energy or the State of Western Australia).

Guiding Principle – what not to discuss

In any circumstance in which Industry Stakeholders are or are likely to be in competition with one another a Member must not discuss or exchange with any of the other Members information that is not otherwise in the public domain about commercially sensitive matters, including without limitation the following:

(a) the rates or prices (including any discounts or rebates) for the goods produced or the services produced by the Industry Stakeholders that are paid by or offered to third parties;

(b) the confidential details regarding a customer or supplier of an Industry Stakeholder;

(c) any strategies employed by an Industry Stakeholder to further any business that is or is likely to be in competition with a business of another Industry Stakeholder, (including, without limitation, any strategy related to an Industry Stakeholder's approach to bilateral contracting or bidding in the energy or ancillary/essential system services markets);

(d) the prices paid or offered to be paid (including any aspects of a transaction) by an Industry Stakeholder to acquire goods or services from third parties; and

(e) the confidential particulars of a third party supplier of goods or services to an Industry Stakeholder, including any circumstances in which an Industry Stakeholder has refused to or would refuse to acquire goods or services from a third party supplier or class of third party supplier.

Compliance Procedures for Meetings

If any of the matters listed above is raised for discussion, or information is sought to be exchanged in relation to the matter, the relevant Member must object to the matter being discussed. If, despite the objection, discussion of the relevant matter continues, then the relevant Member should advise the Chairperson and cease participation in the meeting/discussion and the relevant events must be recorded in the minutes for the meeting, including the time at which the relevant Member ceased to participate.

Department of **Energy, Mines, Industry Regulation and Safety**
Energy Policy WA

GOVERNMENT OF WESTERN AUSTRALIA

Essential System Services Standards Review

Technical analysis summary, sensitivity analysis, and SESSM review

26 March 2025

Working together for a **brighter** energy future.

Agenda

Item 1: Technical review of Frequency Co-optimised Essential System Services (FCESS)

Conclusions of technical analysis completed
Recommendations for changes to the FCESS arrangements or for areas of further assessment

Item 2: Sensitivity analysis

Technical Parameters and their Influence on Energy and Essential System Services (ESS) Costs
Cost Impact of Varying Technical Parameters and ESS Quantities

Item 3: Supplementary ESS Mechanism (SESSM) review

Review of the current SESSM process
Case Study: Challenges and inadequacies of the existing SESSM process.

Item 4: Working Group discussion

Technical issues identified

Aim of technical analysis

What question are we looking to answer

[WEM clause 3.15.1C] A review conducted pursuant to clause 3.15.1A or clause 3.15.1B must include:

(a) technical analyses determining the relationship between the quantity of ESS scheduled and dispatched against the technical parameters in the Frequency Operating Standard (FOS);

The review has considered:

- ***Assessment of Frequency Response Performance****:* Evaluating how the system's frequency response aligns with the FOS.
- ***Review of ESS Quantity Calculation and Scheduling****:* Analysing the methodology used to determine and allocate ESS and assessing its suitability.
- ***Investigation of Potential Over-Procurement of ESS****:* Examining whether excess ESS capacity is being procured to meet FOS requirements and its implications.

FCESS performance in review

Frequency performance since new market commencement on 1 October 2023

- **Regulation**

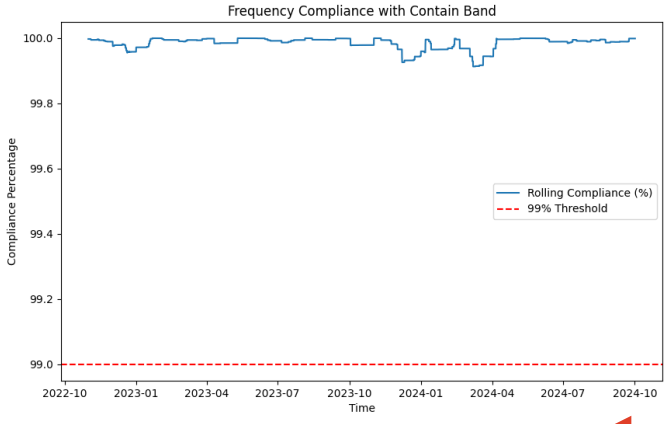
The Frequency has been maintained within Normal Operating Band (>99.8%) and Normal Operating Frequency Excursion Band during normal operation

- **Contingency Reserve**

The Frequency has been stabilised within the Credible Contingency Event Frequency Band after Credible Contingency Events, with the largest excursion recorded to date presenting a frequency nadir of 49.42 Hz.

- **Rate of Change of Frequency (RoCoF)**

The RoCoF has not exceeded the RocoF safe limit, with the largest value recorded of -0.24 Hz/sec.



Time of event	Event	Recorded Frequency Nadir (Hz)	Calculated RoCoF (Hz/sec)
27 July 2022	Trip of 340 MW of synchronous generation	49.28	-0.29
13 September 2022	DPV fluctuations coinciding with incorrect generation dispatches	50.25 (09:29), 49.72 (10:52), 49.05 (11:58)	N/A
22 December 2022		49.42	-0.22
22 November 2023		49.42	-0.24
12 January 2024	Line trip & load rejection	50.32	
7 March 2024	Trip of Collie G1 unit at 300 MW	49.44	-0.22

TABLE 1 – SUMMARY OF SYSTEM FREQUENCY OUTCOMES FOR THE SOUTH WEST INTERCONNECTED SYSTEM

Condition	Contain Band (Hz)	Stabilise (Hz)	Recover (Hz)
Normal Operating Frequency Band	49.8 to 50.2 Hz (99% of the time over any rolling 30-day period)	N/A	N/A
Normal Operating Frequency Excursion Band	49.7 to 50.3 Hz	49.8 to 50.2 Hz within 5 minutes	N/A
Credible Contingency Event Frequency Band	48.75 to 51 Hz	For over-frequency events: below 50.5 Hz within 2 minutes	49.8 to 50.2 Hz within 15 minutes
Island Separation Frequency Band	48.75 to 51 Hz	For over-frequency events: below 50.5 Hz within 2 minutes	49.8 to 50.2 Hz within 15 minutes
Extreme Frequency Tolerance Band	47 to 52 Hz (reasonable endeavours)	48.0 to 50.5 Hz within 5 minutes (reasonable endeavours) and: For under-frequency events: above 47.5 Hz within 10 seconds (reasonable endeavours). For over-frequency events: below 51.5 Hz within 1 minute; and below 51 Hz within 2 minutes (reasonable endeavours)	49.8 to 50.2 Hz within 15 minutes (reasonable endeavours)
Rate of Change of Frequency Safe Limit	0.25 Hz over any 500 millisecond period	N/A	N/A

FOS has been met!

Key findings of the technical assessment

Identified issues with the existing FCESS framework and proposed actions

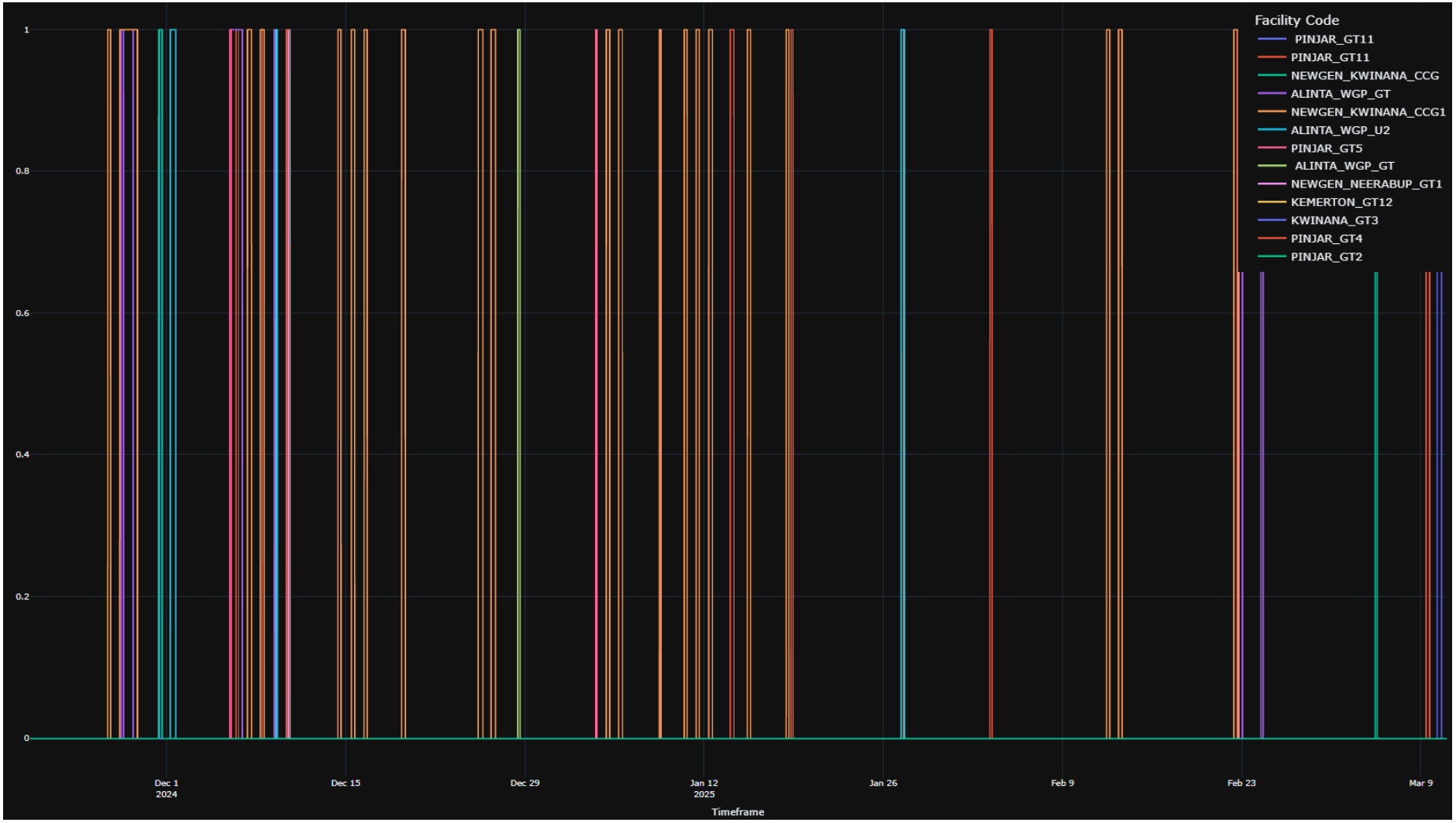
	Issue	Proposed action
1	Conservatism in FOS technical parameters for RoCoF may result in over procurement, artificial shortfalls, and unnecessary market interventions.	Reassess the appropriate value for safe limit for RoCoF
2	Lack of ESS process transparency – Insufficient documentation on: Determination of ESS quantities, Dynamic Frequency Control Model (DFCM) and WEMDE methodologies, Real Time Frequency Stability (RTFS) tool influence on dispatch, process for increasing RR and RL, statistical definition of the Largest Credible Supply Contingency (LCSC) for RoCoF requirements.	Publish guidelines and process documentation
3	Performance factor (PF) definition of generating facilities is conservative and may result in Contingency Reserve Raise (CRR) service shortfalls.	Reassessment of application of PF to CRR setting needed.
4	Assumptions and inputs to DFCM – empirical selection to match physical system observations without documentation or clear explanation, assumption and inputs based on potentially outdated information or inaccurate assumptions.	Review DFCM inputs and processes
5	Unclear Primary Frequency Response (PFR) Contributions to frequency management – Potential over-procurement of Regulation Raise (RR) and Regulation Lower (RL), as well as CRR and Contingency Reserve Lower (CRL)	Establish general PFR headroom from unaccredited or non-ESS contracted facilities and impact on system frequency
6	No consideration of new technologies e.g., virtual inertia from BESS – increases risk of shortfalls and need for direction.	Assess implementation of BESS and other technology as FCESS providers.

FOS technical parameters – RoCoF review

Impact of conservatism

- Current Safe RoCoF safe Limit: 0.25 Hz / 0.5 sec.
- Not published review of how RoCoF safe limit is determined for the SWIS.
- Comparison with other Jurisdictions: Common settings are 0.5 Hz / 0.5 sec or 1 Hz / sec.
- Impact on Secure Operating State: Minimum RoCoF thresholds impose additional quantities to be secured for RoCoF Control Service (RCS) and CRR.
- DFCM considers a RoCoF safe Limit of 0.65 Hz / 1 sec to better match physical system observations, which in turn questions accuracy of the tool to reflect real world requirements.
- The Generator Performance Standard Ride through requirement:
  - ✓ Ideal: 4Hz/s over 250ms or 3Hz/s over 1 sec
  - ✓ Min: 2Hz/s over 250ms or 1Hz/s over 1 sec
- Between 20 November 2024 and 16 March 2025 AEMO has had to issue directions for RoCoF on 84 separate occasions.
- **AEMO is currently undertaking a review of the RoCoF Safe Limit and will look to share findings publicly in the next few months.**

Frequency of AEMO Market intervention for RoCoF



- Due to shortfalls in RCS not leading to a satisfactory (Not-Secure) operating state or breach of the RoCoF safe limit, AEMO has directed facilities to bid in-service.
- These shortfalls have not been reported in Dispatch Schedule due to misalignment in the RTFS and the WEM Dispatch Engine (WEMDE) – shortfalls identified in RTFS, not WEMDE.
- RTFS looks at actual system, conditions, WEMDE looks at a statistically derived RCS quantities (based on 10th percentile of historical LCSC for each underlying demand).
- How accurate and dependable are our market processes?

Transparency of processes

Origins of ESS quantities and documentation of process

Timing of WEM Rule changes and the therein referenced WEM Procedures has created a backlog of documentation to be developed, which consequently has impacted publication dates of critical processes and procedures:

- **Regulation Base Model:** Lacks comprehensive documentation on its methodology and handling of historical data**.**
- **DFCM Runs and Updates:** Limited transparency and potentially outdated information on execution and revisions.
- **RTFS Functionality and Logic:** No available documentation on its operational role and decision-making process.
- **Dispatch Engine & Co-Optimisation:** No updates on the algorithm, functionality, or optimisation framework.

Impact of largest credible contingency on RoCoF services

Is bigger really better?

- **LCSC determines RCS needs –** The size of the LCSC is the key factor in setting RCS requirements**.**
- **Neither LCSC nor RoCoF are fixed quantities –** Both LCSC and RCS vary based on market dispatch outcomes**.**
- **Circular dependency between LCSC and RCS –** LCSC size affects the RoCoF requirement, but RCS availability also influences what LCSC sizes can be supported**.**
- **Empirical rolling benchmark used to set requirements –** AEMO resolves the circular dependency by using historical system data to establish a practical benchmark.
- **Lower end of real outcomes is used –** The benchmark is based on past observed values rather than theoretical assumptions, ensuring practical and reliable system operation**.**
- **Potential risk of inaccurate LCSC estimation –** Since the methodology relies on historical data rather than real-time system conditions, it may not always reflect the actual largest credible contingency at a given Dispatch Interval (DI)
- **Increase in LCSC due to fast acting BESS** – Commissioning of BESS with high PFs has allowed the LCSC to be increased, which increases RoCoF, and likely the required PF of facilities to arrest these frequency declines.
- **Changes to the way that Minimum RoCoF Requirement is determined in WEMDE:** To remove the circularity issue, and to create a more transparent relationship between LCSC/ Largest Credible Load Contingency and RCS.
- **AEMO is currently making changes to the way that Minimum RoCoF Requirement is determined in WEMDE to remove the circularity issue, and to create a more transparent relationship between LCSC.**

Ignoring Primary Frequency Response (PFR) of unaccredited facilities

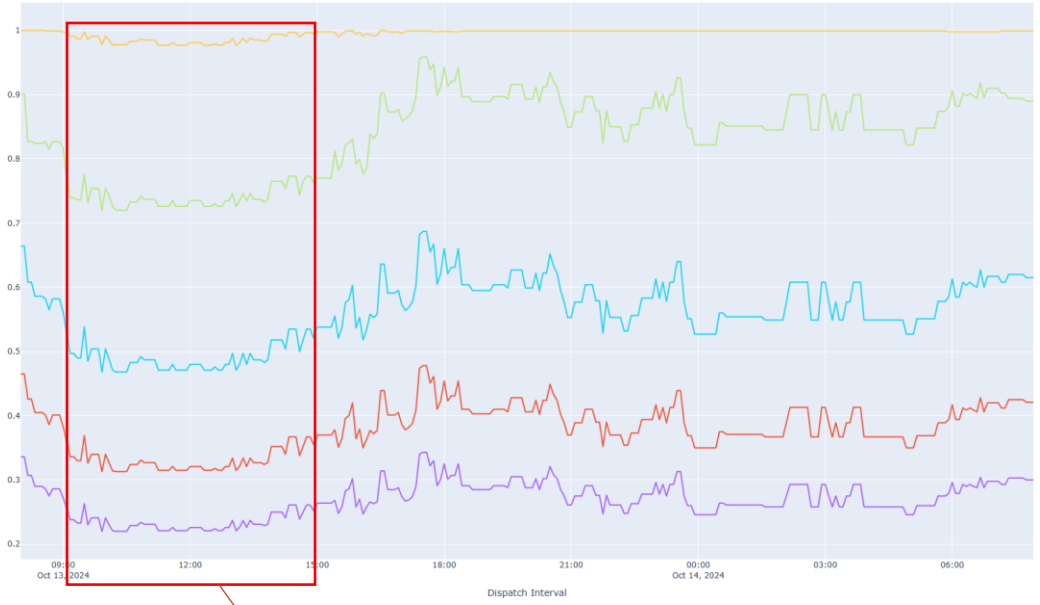
Can a rising tide lift all boats?

- **Generator Performance Standard Requirement** – All generating systems must be equipped with (droop based) primary frequency control.
- **Mandatory Frequency Response –** Generators must adjust active power output in response to frequency deviations, with a 4% droop setting.
- **Continuous Service Requirement –** All generating systems, including intermittent sources, must provide frequency response to deviations outside of the dead band, subject to energy availability.
- **Exclusion of Non-Accredited Facilities –** The response from non-accredited facilities and facilities not enabled in the FCESS market is not considered in ESS quantity calculations**.**
- **Risk of Over-Procurement –** Ignoring contributions from unaccredited sources and accredited sources not dispatched for FCESS may lead to procurement of more frequency regulation services than required, as well as ignoring the additionally available support to manage contingencies.
- Inclusion of this additional PFR will have to account for its **dynamically changing quantities.**

Performance Factors

Is the sum of the parts equal to the whole?

- **Calculation Method –**
  - The PF of facilities providing Contingency Raise services is determined for different ESS configurations using the DFCM.
  - The speed of response of a facility to changes in frequency is determined from staged tests of the physical plant.
- **Impact of High RoCoF Scenarios –** When scenarios result in a very high RoCoF, facilities with low speed factors may receive a PF of zero, meaning that they are assumed to not contribute materially to arrest the frequency decline.
- **Bidding Restrictions –** Facilities with a zero PF will not be enabled, even if they submit bids for CRR services.
- **Dismissing contributions from slower machines** – setting PF of zero ignores potential positive contributions from machines that could respond within 6 seconds, but not to the full amount required.



Drop in facility PF in low Inertia midday low demand

Expansion of ESS resource pool

Vorsprung durch Technik (Progress through technology)

- Presently no inclusion of **virtual Inertia from BESS**, partly due to definition of Inertia in the WEM Rules – increases risk of RCS shortfalls and need for directions. BESS do not decommit…
- **However, AEMO is actively considering how Synthetic Inertia could be included in RCS and will share findings in the coming months.**
- While accreditation for **CRR from variable renewables** (wind and solar) is possible, to date no variable renewable energy (VRE) have chosen to accredit, likely preferring energy production under off-take agreements. What if the right incentives were provided?
- **Synchronous condensers** fitted with flywheels provide high levels of Inertia. What compensation is required to incentivise uptake of this technology?
- **Virtual Power Plants** are being trialled to provided Contingency Reserve response in other jurisdictions and could be considered in the WEM also.

Jurisdictional comparison

Not all electricity systems are the same, but they all have similar requirements

System	System Demand	VRE %	Synchronous Gen%
WEM	4.58 GW	35%	64% (Coal, Gas)
Ireland (Rep)	6.83 GW	40%	47% (Gas)
New Zealand	7 GW	8%	88% (Hydro, Geoth., Gas)
NEM	33.36 GW	34%	61% (Coal, Gas)

System	Market	I/C	DPV
WEM	Capacity	No	2.4 GW
Ireland (Rep)	Capacity	1 GW HVDC (UK)	0.4 GW
New Zealand	Energy	No	0.3 GW
NEM	Energy	No	22 GW

Direct comparison to performance of ESS Standards in other jurisdictions difficult due to:

1. **Remoteness and lack of interconnection with other systems**
2. **Generation mix and level of utility scale VRE penetration**
3. **Level of distributed photovoltaic generation**
4. **Market structures**

Jurisdictional comparison

Insights and observations

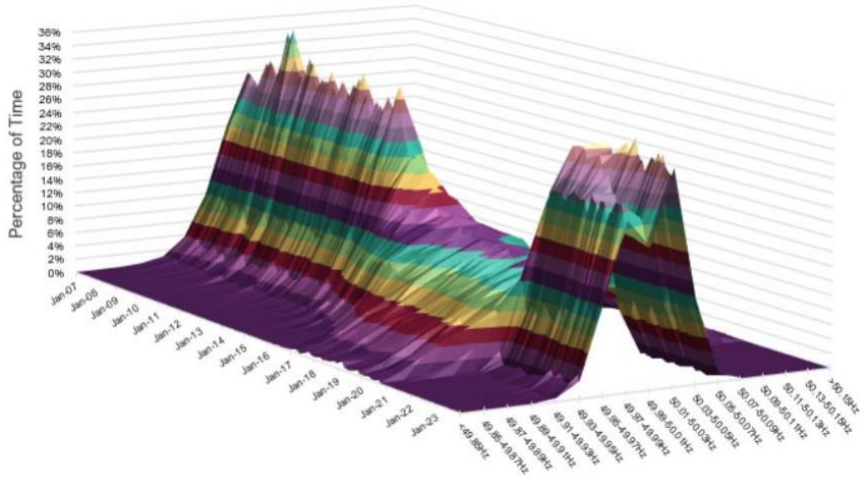
1. **Single Contingency and Regulation market** – more complex setting of ESS quantities (WEM)
2. **Mandatory PFR** – improves normal operating frequency (IE/NI, NEM, NZ)
3. **Minimum synchronous generation** – guaranteed presence of synchronous machines
4. **System Inertia** – setting minimum levels outside of markets (IE, NEM, NZ)
5. **RoCoF limits** – less conservative in other jurisdictions
6. **LCSC** – large relative to size of network and peak demand (WEM)
7. **Load relief** – similar across most jurisdictions, lowest in NEM
8. **Frequency Regulation** – higher in jurisdictions without PFR contributions (WEM)
9. **Future frequency services** – Increase in VRE penetration may drive additional FCESS requirements
10. **Contracts and markets** – FCESS markets to generate competitive tension common across most jurisdictions

ESS	WEM	NEM	New Zealand	Ireland (EI/NI)
Normal frequency band	±0.2 Hz	±0.15 Hz	±0.2 Hz	±0.1 Hz
LCSC	510 MW	750 MW	520 MW[1]	500 MW
Contingency frequency band	-1.25 / +1 Hz	±1 Hz	±0.75 Hz	±1 Hz
CRR	<460 MW	<750 MW	<400/125 MW	<378 MW
CRL	>-165 MW[2]	>-400 MW[2]	TBC	>-158 MW[2]
RoCoF (H)	0.5 Hz/sec	1 Hz/sec	<1.2 Hz/sec	1 Hz/sec
RR	110 MW	220 MW	30 MW[4]	125 MW
RL	110 MW	210 MW	30 MW[4]	125 MW

Primary frequency response and minimum conventional generation

Free rider or basic requirements?

- Synchronous generators provide PFR and Inertia
  a) Ireland and the NEM require minimum levels of online synchronous generation for system strength.
  b) New Zealand dispatches hydro generators at up to 80% capacity (to reserve headroom) with max VRE penetration of around 30%.
- Narrow band PFR provides contingency support and reduces regulation requirements, if there is headroom.
- Inertia will limit RoCoF during contingency events.
- In the WEM there are no minimum levels of conventional generation and dispatched generation generally has low headroom unless providing CRR.



Sensitivity analysis

Sensitivity analysis

Relationship between Technical Parameters and Energy & ESS Costs

Technical parameters:

- **Define the requirements for ESS to comply with the FOS.**
- **Can comprise:**
  - **a) inputs to quantification of ESS**
  - **b) variables that are part of constraint equations and cause limits to bind**
  - **c) frequency operating bands**

Objectives of the analysis as per WEM 3.15.1C:

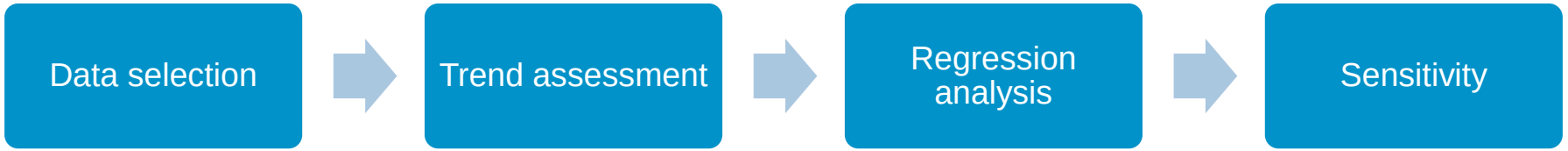
b) Determine the relationship between technical parameters and the overall energy/ESS cost

c) Assess costs and benefits of providing higher or lower levels of ESS services

d) Identify the economic impacts of changing technical parameters, with a view to decreasing the overall cost of energy/ESS

Sensitivity analysis

Implementing a process to establish the relationships



- Preliminary analysis will identify the relative size and variability of ESS cost components (prices and quantities), diurnal and seasonal patterns and structural breaks in the data.
- To define relationships between technical parameters and the WEM energy and ESS costs we have selected a set of DI's covering a wide range of time intervals of high and low prices to obtain representative samples for regression analysis.
- For high price intervals we have established a process to define the largest contributors to that instant in time e.g., a specific generator, or binding constraint.
- Trend assessment of other high-cost instances will then be conducted to establish commonalities and influencing factors.
- Regression analysis to establish relationships requires suitable data points that define the independent variable (technical parameters) and the outcomes (cost).

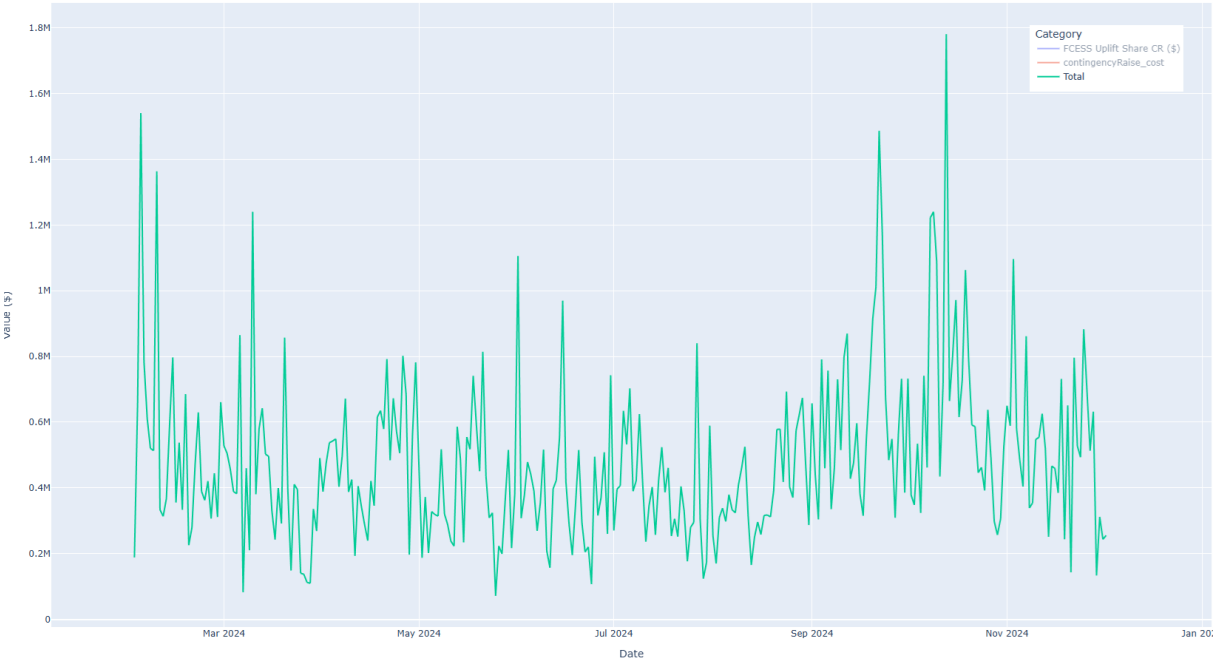
Sensitivity analysis

Challenges with determining relationships in a changing market

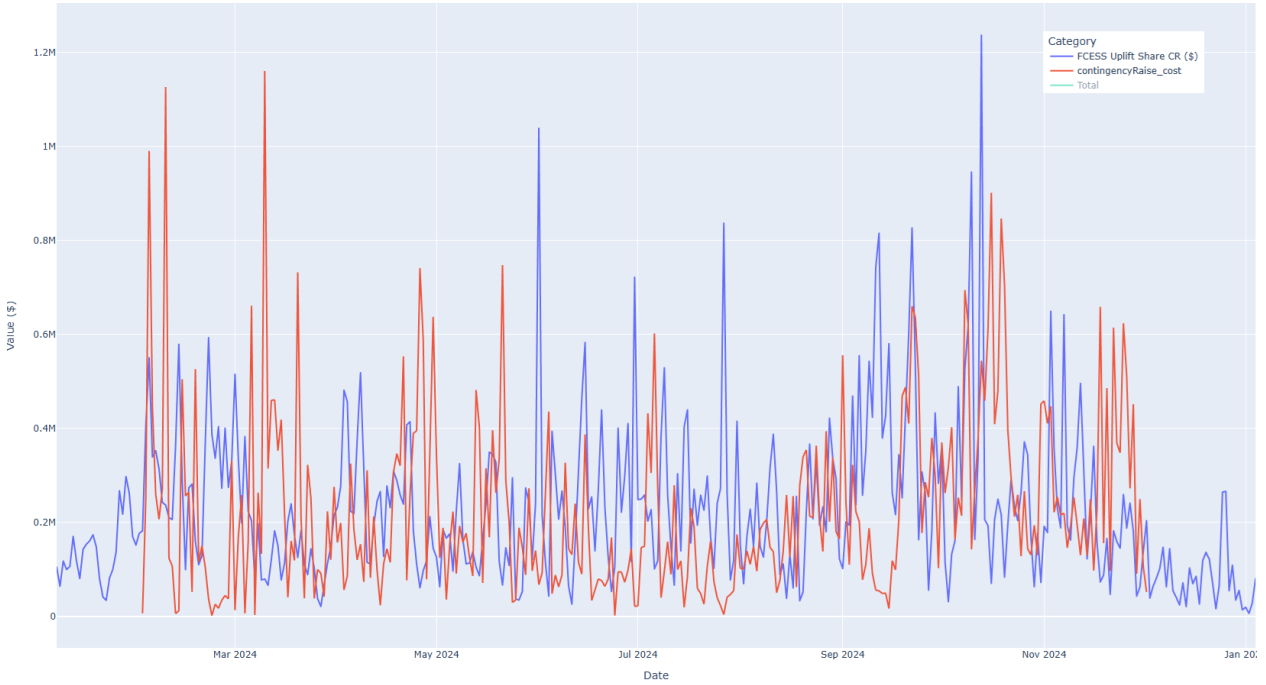
- The FOS are not amenable to regression analysis to determine the sensitivity of ESS costs. Quantifying the sensitivity would require access to the full DFCM
- Candidate parameters for regression to establish sensitivities include variable inputs to the DFCM (i.e., underlying demand, DPV, LCSC and system Inertia). It may also benefit our understanding to examine relationships with other market data (e.g., ESS costs and energy prices, ESS costs and FCESS Uplift Payments), and intra-day and seasonal trends in ESS costs.
- Multiple regression analysis relies on independence of the input variables to determine the true sensitivity of the dependent variable to each input individually. This means the accuracy of individual sensitivities could be influenced to some extent by their interdependence
- During 2024 there were at least three notable market changes including: (a) price caps introduced in May 2024; (b) the introduction of scarcity directions in the November 2024 Rules change; and (c) the November 2024 C-BESS accreditation. There were also numerous instances of AEMO direction in the markets during this period (see Market Advisories)
- Some of these changes were outside the period for which we have collected data. We nonetheless expect to be able to make some assessment of how ESS prices and/or volumes may alter, based on current Market Participants and bidding patterns

Sensitivity Analysis

Challenges with linearizing non-linear process



Total cost of Contingency Reserve Raise



Break down of post of Contingency Reserve Raise
FCESS Uplift and Market price

Sensitivity analysis

Preliminary insights

Limited ability to analyse

- Limited number of variable parameters (e.g., FOS is invariant, inputs of DCFM are not all variable)
- Significant discontinuities in the available data (e.g., introduction of a $500/MW price ceiling in May 2024)
- Data not available for assessment (e.g., data for the recent summer period)

Observations

- Volumes of CRR are distinctly higher than for other services
- Prices are more variable than volumes, so costs are largely determined by frequent price spikes
- The daily pattern of CRR dispatch closely follows the pattern of energy demand
- The relative costs for CRR FCESS are significantly less than associated energy uplift

Next steps

- Focus on CRR price, limited to year October 2023 to September 2024
- Examine selected trading periods of high cost in detail (bids, binding constraints, energy uplift)
- Test regression of CRR cost against LCSC

SESSM review

Supplementary Essential System Service Mechanism (SESSM)

Intent and purpose of the SESSM

The next phase of this review will focus on a review of the SESSM, and the following slides will provide insights into what will be covered under it.

- The SESSM was created to procure FCESS in case of inadequate supply of FCESS in the Real-Time Market to ensure a stable, long-term supply by:

Attracting new FCESS providers	➢It aims to encourage new providers to enter the market, increasing the pool of resources and competitive tension in the market.
Controlling market power	➢It promotes competition among providers and allows for regulatory review of operating costs to prevent any single entity from dominating the market.
Preventing FCESS shortages	➢It seeks to avoid situations where there aren't enough accredited facilities or participants to provide FCESS.

- The SESSM can triggered by either AEMO or the ERA when certain conditions are fulfilled. AEMO must trigger the SESSM if:
  - AEMO identifies a shortfall in an accredited FCESS that it believes the market will not resolve.
  - The number of DI (previous 90 Trading Days) with AEMO directions exceeds the threshold defined in the (yet to be published) AEMO SESSM procedure - WEM clause 3.11.4.

Supplementary Essential System Service Mechanism (SESSM)

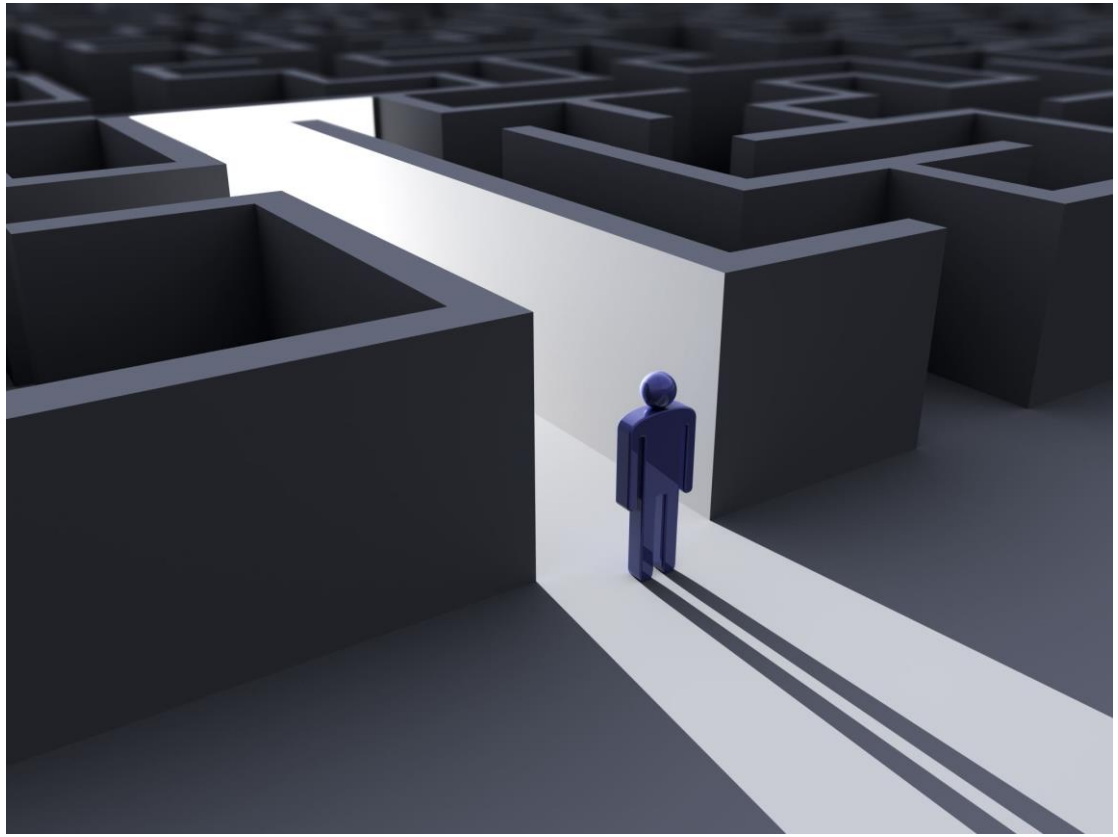
The SESSM in action

- SESSM trigger conditions are defined in the yet-to-be published AEMO procedure under WEM clause 3.11.4.
- Once SESSM trigger is identified, AEMO must publish on the WEM website the identified shortfalls and services requirements for which SESSM service is triggered.
- AEMO will document the SESSM Service Specifications, as required under clause 3.15A.46, which must include:
  - Evidence of requirements, and the form and content of the required service.
  - Methods for selection and award of contracts.
  - Assessing capability of facilities, monitoring provided services, and revising required quantities.
- As per the market reform consultation and design, the SESSM Service Specification and procurement process will be consistent with the other ESS (NCESS). In the absence of published SESSM documentation the review considers that SESSM will follow a similar procurement process as for NCESS, documented in WEM 3.11B.
- Efficiency of implementation not designed to address immediate shortfalls.
  - Contracting from existing facilities through EOI and award could take as much as 12 months.
  - Time from identifying need to having facilities in operation could be up to 3 years.
- The ERA has the power of veto on any intended SESSM awards that AEMO determines based on the received submissions

Supplementary Essential System Service Mechanism (SESSM)

Challenges and inadequacies of the existing SESSM process.

- Incomplete or unpublished procedures create a lack of process and specification transparency.
  - **SESSM Trigger:** procedures defining when the SESSM is activated (WEM 3.11.4)
  - **SESSM Service specification:** procedures defining the SESSM Service specification included in overall SESSM (WEM 3.15A.46)
  - **SESSM procurement:** specification defining the information to be provided by a SESSM respondent (WEM 3.15A.20)
- The WEM Rules require a facility with a SESSM Award to make themselves Available and In-Service but does not guarantee a commitment. Requiring commitment would necessitate a direction to the facility



SESSM review

Case Study: Challenges and Constraints in AEMO's Procurement of RCS via Synchronous Condensers (Syncons)

Limitation of SESSM to procure Syncons for RCS:

a) There are no established procedures or standards for accrediting Syncons to provide RoCoF or for measuring how well they perform.

b) There is no incentivisation for Syncons to provide Inertia as the default payment is an Energy Uplift.

c) No process of dispatching Syncons for RCS in WEMDE.

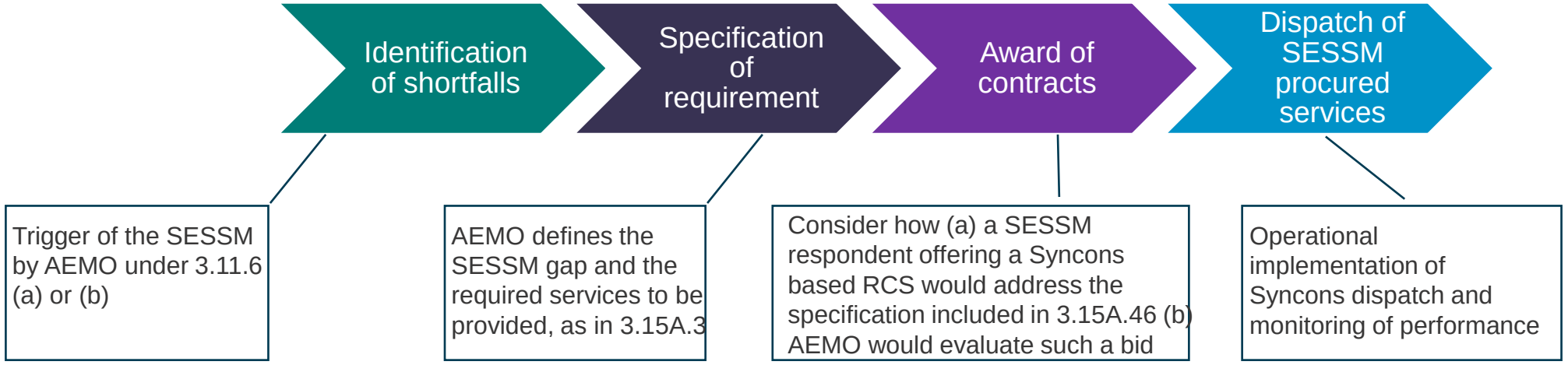
Changes to SESSM considered for case study:

a) Process of valuing Syncons for RoCoF contributions.

b) Process of dispatching Syncons for RoCoF only.

c) Process of gap filling to implement long-lead facilities.

d) Adequacy assessment for declutching existing (and future) generators from turbines.



Thank You