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

# Meeting Agenda

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| **Meeting Title:** | Power System Security and Reliability Standards Working Group |
| **Date:** | 31 October 2024 |
| **Time:** | 11.00am – 1.00pm |
| **Location:** | Online, via TEAMS. |

| Item | Item | Responsibility | Type | Duration |
|---|---|---|---|---|
| **1** | Welcome and Agenda | Chair | Noting | 1 min |
| **2** | Meeting Apologies and Attendance | Chair | Noting | 1 min |
| **3** | Competition Law Statement | Chair | Noting | 1 min |
| **4** | Previous Action Items<br>(a) Network reliability improvements<br>(b) PSSR related issues in the Western Power Technical Rules review | Chair | Noting | 5 min |
| **5** | **Stage 3 – Design proposals**<br>(a) Proposed User Facility Standards Framework<br>(b) Any Outstanding matters | EPWA | Discussion | 90 min<br>15 min |
| **6** | General Business | Chair | Discussion | 5 min |
| **7** | Next steps | Chair | Noting | 2 min |
| | Next meeting: TBD 2025 | | | |

Please note, this meeting will be recorded.

## Competition and Consumer Law Obligations

Members of the MAC's Power System Security and Reliability Standards 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.

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GOVERNMENT OF WESTERN AUSTRALIA

# Power System Security and Reliability (PSSR) Standards Review

## PSSR Standards Working Group

**31 October 2024**

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

# Purpose of today's session

**To finalise the discussion with the PSSRSWG on:**

- **The User Facility Standards Framework;**
- **Governance Framework for PSSR Standards; and**
- **Any outstanding matters.**

# Proposed User Facility Standards Framework

# User Facility Standards Framework

The Generator performance standards are a set of technical and operational standards that generators must meet to ensure the reliable and secure operation of the power system.

The Technical Rules and the Wholesale Electricity Market (WEM) Rules currently set the standards for the facilities connected to Western Power's network.

The purpose of the PSSR Standards Review is to implement a consistent single end-to-end PSSR standard for the SWIS, including developing a comprehensive framework for user facility standards that sets out the standard that must be met for all the different types of facilities connecting to the SWIS.

The new end-to-end standards must be appropriate for both network assets, and relevant energy consumption and production equipment, including *new technologies,* so they can work together to deliver the services required for efficient and effective system operation while maintaining PSSR at all times.

# User Facility Standards Framework

## Current framework

### Transmission Connected Generating Systems

- must have their performance established in accordance with the Generator Performance Standards (GPS) covered in **Section 1.40, Chapter 3A and Appendix 12 of the WEM Rules**.

- **Chapter 3A** of the WEM Rules details the requirements.

- **Appendix 12** of the WEM Rules lists each of the Technical Requirements for TCGS and sets out the levels of GPS for each Technical Requirement.

### Distribution Connected Generating Systems

- Generating Systems connecting to distribution network, as well as a Transmission Connected Generating System with an exemption from WEM Rules Chapter 3A and Appendix 12 will refer to **Western Power's Technical Rules** for the applicable GPS.

# User Facility Standards Framework

## Overview proposed framework

Will be renamed the User Facility Standards Framework to reflect the intent of bringing all the standards in to a comprehensive end-to-end framework

Combines the core of the existing GPS framework with the proposal in Western Power's 2023 Technical Rules Submission

Categorisation of facility classes with commensurate PSSR risks

Facilities over 10MVA will be required to have standards approved by AEMO and have a monitoring plan registered with AEMO

"Ideal Generator Performance Standard" is renamed to "Automatic User Performance Standard" to align with NEM NER language

Certain requirements (such as WEMR A 12.9) for new emerging technologies like grid forming inverters will be consulted on.

# User Facility Standards Framework

| Category | User types captures | Standards to apply | Notes |
|---|---|---|---|
| Large User Technical Standards | Large Energy Producing Systems (inc. ESR) >10MVA, Synchronous Condensers | Common and Automatic requirements, with a framework to negotiate between Automatic and Minimum Standards | • Western Power would be required to notify AEMO early in connection process of <10MVA systems that may warrant assessment for inclusion into the framework for large users is proposed.<br>• AEMO, in consultation with Western Power, could choose to make systems subject the same requirements as >10MVA users, where PSSR risks justify it. Criteria for this decision would need to be documented.<br>• Operational experience suggests that new ESR systems should be equally able to meet Technical Requirements in both directions.<br>• Generation/ESR within a load would be required to be compliant with User Facility Standards framework as proposed – independent of whether any electricity is exported to the network |
| Medium User Technical Standards | Small Energy Producing Systems (inc. ESR) <10MVA connected to HV/MV Network | Common and Minimum requirements. | |
| Loads | Loads other than ESR | Requirements that align with Technical Rules 3.4 | Further consideration to be given in the future as to whether large loads/inverter-based loads should have separate requirements. |
| Small User Technical Standards | LV connected | To be dealt with through DER workstream | For illustrative purposes, Western Power's proposed treatment of LV connections has been included in the table for comparison. |

# User Standards - EPS

| Performance Standards Part | Technical Requirement | Large User Technical Standards HV/MV & >10MVA | | Medium User Technical Standards HV/MV & <10MVA | Small User Technical Standards Typically <1MVA | |
|---|---|---|---|---|---|---|
| | | EPS/ ESR | Syn-con | | Non-Inv based (from 3.7) | Inverter based (from 3.7) |
| A12.1 | Definitions | X | X | X | X | X |
| A12.2. | Active Power Capability | X | - | Min | Min | Guideline & AS4777 |
| A12.3. | Reactive Power Capability | X | X | Min | Min | Guideline & AS4777 |
| A12.4. | Voltage and Reactive Power Control | X | X | Min[1] | Min[1] | Guideline & AS4777 |
| A12.5. | Active Power Control | X | - | Min[1] | Min[1] | Guideline & AS4777 |
| A12.6. | Inertia and Frequency Control | X | X | Min | Min | Guideline & AS4777 |
| A12.7. | Disturbance Ride Through for a Frequency Disturbance | X | X | Min | Min | Guideline & AS4777 |
| A12.8. | Disturbance Ride Through for a Voltage Disturbance | X | X | Min[1] | Min[1] | Guideline & AS4777 |
| A12.9. | Disturbance Ride Through for Multiple Disturbances | X | X | Min[1] | Min[1] | Guideline & AS4777 |
| A12.10. | Disturbance Ride Through for Partial Load Rejection | X | X | Min[1] | Min[1] | Guideline & AS4777 |
| A12.11. | Disturbance Ride Through for Quality of Supply | X | X | Min[1] | Min[1] | Guideline & AS4777 |
| A12.12. | Quality of Electricity Generated | X | X | X | X | Guideline & AS4777 |
| A12.13. | Generation Protection Systems | X | X | X | X | Guideline & AS4777 |
| A12.14. | Remote Monitoring Requirements | X | X | X | X | Guideline & AS4777 |
| A12.15. | Remote Control Requirements | X | X | X | X | Guideline & AS4777 |
| A12.16. | Communications Equipment Requirements | X | X | X | X | Guideline & AS4777 |
| A12.17. | Generation System Model | X | X | X | - | Guideline & AS4777 |

[1] Some variation to min standards for <200kVA systems in some circumstances – to be detailed in consultation paper

# Suitability of Appendix 12 standards

The standards in Appendix 12 have not been developed with new technologies such as grid forming inverters in mind.

These new technologies can provide important services to the grid, including addressing system strength issues and increasing hosting capacity for grid following inverters. However, it can be difficult for these technologies to meet some of the requirements of Appendix 12.

The AEMC has recently completed a work package which resulted in the minimum requirement (but not the automatic requirement) being relaxed for inverter-based resources, especially for reactive current, which could be leveraged.

Work is underway – led by Western Power – to review and propose changes to the current technical requirements for asynchronous generating units considering the current and future IBR technologies including grid forming inverters. It is expected this work will be completed in the first week of December and will be included in the PSSR Standards Review consultation paper.

# User Facility Standards Framework – Loads (non-ESR)

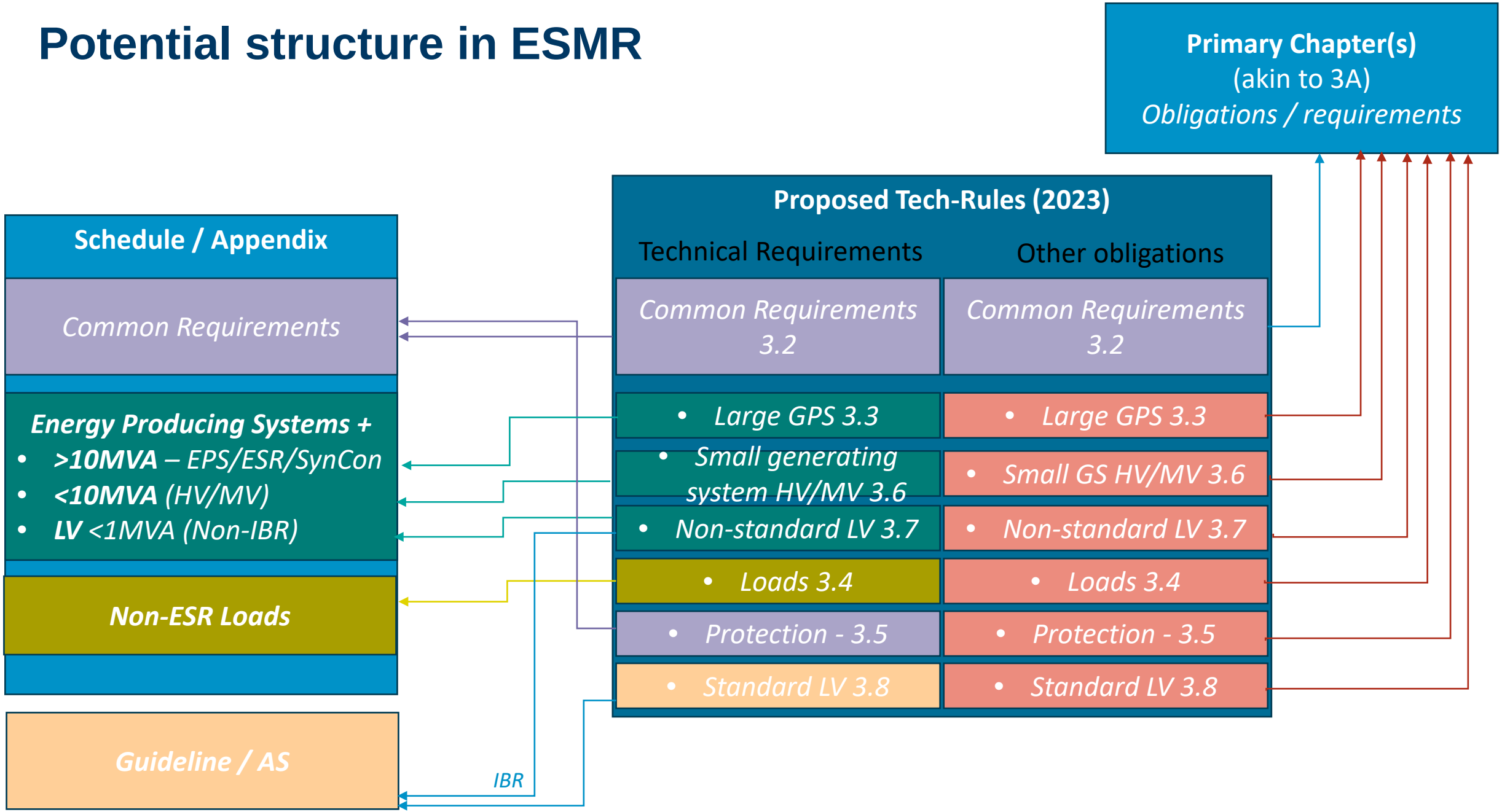
| Performance Standards Part | Technical Requirement |
|---|---|
| L1 | Protection and Control Systems (3.4.2(b)) |
| L2 | Power frequency variations (3.4.3) |
| L3 | Power frequency voltage variations (3.4.4) |
| L4 | Design Standards (3.4.6) |
| L5 | Power factor requirements (3.4.7) |
| L6 | Design requirements for User's substations (3.4.8) |
| L7 | Load Shedding Requirements (3.4.9) |
| L8 | Remote Monitoring Requirements (3.4.10.1) |
| L9 | Communications Equipment Requirements (3.4.10.2) |
| L10 | Secure electricity supplies (3.4.11) |

# Common requirements

**Requirements for all users based on proposed 2023 Tech Rules section 3.2**
(Mix of Technical Requirements and other obligations)

| Connection Standards | Technical Requirement | Comments |
|---|---|---|
| **1a** | Ability to operate while power system meets PSSR Standards in 2.2 (some overlap with requirements in A12.11) | To be included in ESMR |
| **1b** | Flicker (some overlap with requirements in A12.12) | To be included ESMR |
| **1c** | Harmonics (some overlap with requirements in A12.12) | To be included ESMR |
| **1d** | Negative Phase Sequence Voltage (some overlap with requirements in A12.12) | To be included ESMR |
| **1e** | Electromagnetic Interference | To be included ESMR |
| **1f** | Fault Levels | To be included ESMR |
| **2** | Main Switch | Connection guideline |
| **3** | Power Quality Monitoring Equipment | To be included ESMR |
| **4** | Modelling data for power system simulation studies (some overlap with requirements in A12.17) | Guideline |
| **5** | Technical matters to be coordinated (once drafting commenced, section needs to be rationalised) | To be included ESMR |
| **8** | WA Service and Installation Requirements | Reference only |

# Potential structure in ESMR



# Proposed overarching Governance Framework for PSSR Standards

# Governance PSSR Standards

## Criteria for best practice governance

A robust governance framework of PSSR Standards should promote:

- Clarity of roles and responsibilities
- Quality and transparency of decision-making
- Impartiality and objectivity
- Flexibility for change management
- Cost-efficiency and effectiveness
- Compliance by “design” (i.e. avoid the need for enforcement actions)

# Governance PSSR Standards

## Energy Transformation Taskforce decisions

### The governance body

- The Coordinator of Energy to govern a centralised PSSR standards framework.

### The advisory body

- The Coordinator to be supported in its governance role by an advisory panel - a Reliability and Security Advisory Panel (RSAP), that has representation from AEMO, Western Power, customer groups and industry representatives.

### Role of AEMO and Western Power

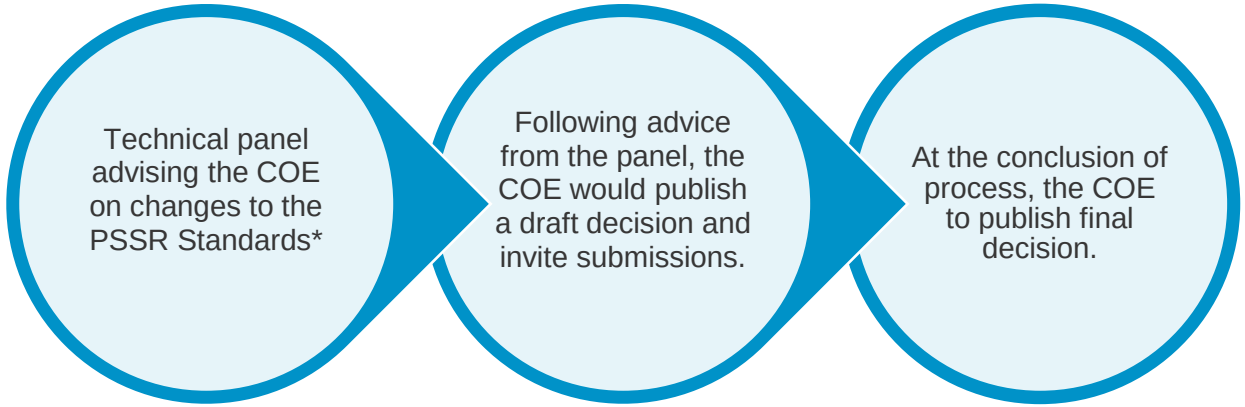
- The role of AEMO and Western Power will broadly continue as described under the EI Act, the WEM Regulations and Rules, and the Access Code and the Technical Rules with consequential amendments required in order to give effect to the centralised framework

### Role of the ERA

- The ERA's responsibility for economic regulation, compliance monitoring and enforcement will remain but with the governance of the Technical Rules to be brought into the centralised governance framework.

# Proposed process for changing technical standards

## Streamlined rule change approach with technical panel input




Fast track rule change not deemed appropriate - does not include public consultation

Streamlined process will aim to mirror standard process, except for consultation on rule change proposal.

- A panel will be established as per the Taskforce decision
- Panel to be separate from MAC and have core membership and secondary members to call upon for specific expertise.
- Panel members to be carefully selected to avoid conflicts of interest, as their advice will directly influence the standards. **The members must have the right expertise with the technical understanding/ competency**.

** recommend new standards/amendments to existing standards and assess amendments requested by third parties*

# Governance – User facility standards

## Assessing initial compliance

**Retain status quo with some modifications/amendments**

- NSP to be responsible for assessing initial compliance through connection process, with relevant consultation with AEMO for:
  - Facilities over 10MVA
  - Facilities under 10MVA on a case-by-case basis
- Negotiated outcomes for user facility standards to be transparent (i.e. published)
- Framework to be amended such that if Western Power agrees to a negotiated position, but AEMO does not, Western Power may request that AEMO engage with proponent directly to resolve any issues. Western Power must still be involved in any negotiations, but if requested AEMO and the participant will be required to attempt to resolve the issue directly rather than indirectly through Western Power.

# Governance – User Facility Standards

## Ongoing compliance monitoring

### AEMO responsible for Monitoring Plan for certain facilities

- Either those over 10MVA or required by AEMO to have a Monitoring Plan.
- Extend current Generator Register (under WEMR GPS Framework) to cover all users in the ‘large user’ category– include transitional provisions similar to current regime.

### Western Power responsible for monitoring compliance for others

- Retain status quo with Western Power responsible for monitoring compliance for facilities not covered by a Monitoring Plan with AEMO.
- Maintain the current "reactive monitoring" approach following specific events, while enabling Western Power to conduct annual "spot checks" to ensure ongoing compliance.
- Obligation on WP to report to AEMO and ERA on material non-compliances identified for facilities not covered by a plan with AEMO
- Standards to be documented in connection agreements – no centralised register.

### Consequences of non-compliance

- Retain current framework that applies to WEM GPS generators (civil penalty framework and disconnection/constraints as a last resort)

# Governance – User Facility Standards

## Dispute resolution

Extend current dispute resolution framework under WEMR 1.42 to facilities being brought under a Monitoring Plan overseen by AEMO.

Bespoke dispute resolution not needed for ongoing connections – retain something similar to access code dispute resolution framework as part the move to the ESMR that could be available to connection applicants if they cannot reach agreement on connection standards.

# Summary - Overarching proposed Governance Framework

| Governance Activity | | Responsible Party | Advisor** | Compliance body | Appeals/Enforcement | Notes |
|---|---|---|---|---|---|---|
| Rule changes | | Minister for Energy/ Coordinator of Energy | Reliability Panel | NA | ERB | Maintain a technical panel to advise on reliability and security as per taskforce recommendations |
| Confirming Initial Compliance with User Standards* | | NSP | AEMO | NA | ERA | Appeals only a procedural basis, not merit based |
| Monitoring ongoing compliance with user standards* | **Facilities with a Monitoring Plan with AEMO** | AEMO | None | AEMO | ERA | Civil Penalties framework applies |
| | **Facility <10MVA without an AEMO Monitoring Plan** | NSP | None | Western Power | ERA | Civil penalty framework applies |
| Dispute resolution mechanism on Application of Standards | | Arbitrator | Technical Experts | NA | NA | Retain transitional arrangements for disputes under WEMR 1.42. Bring all other connection standards disputes into framework currently under the access code |

Retain status quo with regard to AEMO and Western Power compliance with obligations that apply to each.

**in these slides, advisor refers a formal advisory role within the relevant regulatory instrument

# Next steps

- **The draft Consultation Paper will be presented at the 28 November 2024 MAC meeting.**
- **The Consultation Paper will be published following this.**