



Government of Western Australia
Department of Mines, Industry Regulation and Safety
Energy Policy WA

Power System Security and Reliability Standard for the SWIS

Project scope

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

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1. Introduction

The Power System Security and Reliability (PSSR) standards are a set of technical rules intended to maintain power system security and reliability. The existing PSSR standards for the South West Interconnected System (SWIS) are fragmented, with requirements and obligations spread across several regulatory instruments, each with its own objectives, change processes and decision makers.

As part of the Energy Transformation Strategy (ETS), the ETS Taskforce (the Taskforce) identified deficiencies with the existing regulation and governance of the current PSSR standards and oversaw a number of changes to the existing regulatory instruments to make urgent and critical improvements. In April 2021, the ETS Taskforce made the following determination for more comprehensive reform:¹

“A centralised framework will be implemented to provide for the regulation and governance of a single end-to-end PSSR standard for the SWIS, including the establishment of:

- *a single instrument containing all relevant PSSR standards.*
- *a centralised governance framework under the Coordinator of Energy, supported by a Reliability and Security Advisory Panel.*

Legislative reform should be recommended to the Minister by Energy Policy WA to enable the implementation of the centralised framework in an appropriate regulatory instrument.

An interim Joint Agreement Framework for specific PSSR standards will be established through changes in WEM Rules and Technical Rules to ensure security and reliability is maintained during the development of a longer term, single set of PSSR standards under a centralised governance.”

The Taskforce considered that this would align the PSSR standards, streamline the roles and responsibilities of the entities managing power system security and reliability in the SWIS and ensure end-to-end consistency is maintained as the standards are established or modified.

Legislative reform to enable the implementation of a centralised instrument entered Parliament in August 2023, and will be considered by Parliament in due course. Following the passage of this legislation, work will need to be progressed to develop a single end-to-end standard that will be implemented in the Electricity System and Market Rules (ESMR).

¹Refer to: [Power System Security and Reliability Standards Framework: Information Paper](#)

2. Background and work completed to date

2.1 Energy Transformation Strategy Stage 1

As part of the work under 'the Energy Transformation Strategy Stage 1, the Taskforce identified several issues in relation to the PSSR standards and their governance framework. These issues centred around the roles and responsibilities of Western Power and the Australian Energy Market Operator (AEMO) that needed to be addressed as a matter of urgency to ensure the effective management of the SWIS. These issues were addressed to the extent possible by changes to the existing instruments, as changes to primary legislation to enable a centralised instrument were not in scope for the Energy Transformation Stage 1. These changes included:

- Moving the Frequency Operating Standards from Western Power's Technical Rules to the WEM Rules to enable AEMO to discharge its key function of maintaining system security through frequency management.
- Revising the Operating States and credible contingency framework in the WEM Rules and aligning its operation with the Technical Rules.
- Updating and moving the Generator Performance Standards (GPS) for transmission connected generating systems from the Technical Rules to the WEM Rules to allow both AEMO and Western Power a role in determining performance standards for new generators, enable better monitoring of large transmission-connected generators, and allow a more graduated range of compliance responses.
- Allowing AEMO membership of the Technical Rules Committee to provide advice and support on Technical Rules amendments including PSSR standards.

Arrangements were also established to maintain security and reliability under the Joint Agreement Framework. This agreement formalises the operating arrangements between Western Power and AEMO by making changes to the WEM Rules and Technical Rules. It clarified the roles and responsibilities in relation to standards for under frequency load shedding, operational voltage limits and System Restart to ensure provisions are made for network investment and service procurement.

The changes also facilitated input from Western Power in relation to frequency operating standards and the GPS under the WEM Rules, and from AEMO in relation to Transmission Planning Criteria under the Technical Rules, both supported by basic principles of consultation and agreement.

Notwithstanding this work, deficiencies still remain. If not addressed these problems will lead to:

- investments in the network and the procurement of services in the market becoming misaligned, resulting in increased cost of market operation and inefficient network augmentation (due to a lack of agreed principles for system and network load forecast);
- divergence of regulatory instruments over time, leading to continued overlap, gaps and duplication;
- actions undertaken by AEMO and Western Power to maintain power system reliability and security being misaligned and siloed, and not guided by common standards or a single entity responsible for coordination; and
- inability for specific needs of different end user groups (e.g. appropriate regional reliability standards) to be properly addressed.

2.2 Energy Transformation Strategy Stage 2

In July 2021, the Energy Transformation Strategy Stage 2 was announced. To be delivered between 2021 to 2025, the work under Stage 2 has four distinct themes, which together will enable the ongoing energy transition and reduce carbon emissions:

1. Implementing Taskforce decisions;

2. Integrating new technology into the power system;
3. Keeping the lights on as the power system transitions; and
4. Regulating for the future.

A key initiative under 'regulating for the future' is reforming the framework for, and governance of, power system and network security and reliability.

At the same time that the Energy Transformation Strategy Stage 2 was announced, governance arrangements were modified to clarify the roles of existing institutions in the energy sector with the intent of improving responsiveness and consistency of changes in the sector.

The updated framework recognises the need for strategic leadership and coordination and ensures that the sector can efficiently respond to the State's energy transformation challenges. As part of this change, the Coordinator of Energy became responsible for the WEM Rules as well as market development, in addition to its existing roles of policy setting, strategic planning and overall coordination of the energy sector.

2.3 Electricity Industry (Distributed Energy Resources) Amendment Bill 2023

Since the commencement of the Energy Transformation Strategy Stage 2, Energy Policy WA has been reviewing the legislative and governance arrangements for the energy sector with the aim of creating a regulatory environment that is agile and responsive to the challenges and opportunities of the energy transformation.

A Bill has been introduced into Parliament to amend the *Electricity Industry Act 2004* (EI Act) to achieve these objectives. The Electricity Industry Amendment (Distributed Energy Resources) Bill 2023² aims to do three things:

- introduce a new overarching State Electricity Objective;
- expand the scope of the WEM Rules so they may also address matters currently dealt with under other subordinate legislative instruments; and
- allow the EI Act to address new subject matter, such as Distributed Energy Resources (DER), microgrids, embedded networks and stand-alone power systems (SPS).

The objective of these reforms is to build greater resilience and flexibility in the energy sector by developing a holistic framework that works to deliver outcomes that protect and advance the interests of energy consumers.

The changes under this Bill will mean that the WEM Rules will be renamed the Electricity System and Market Rules (ESMR) to reflect their expanded range. The ESMR will continue to address the operation of the WEM and contain consolidated and future-focused rules governing the electricity system in Western Australia. Their scope will be expanded to address matters contained in:

- the Electricity Networks Access Code 2004 (Access Code), made under Part 8 of the EI Act;
- Western Power's Technical Rules, made under Chapter 12 of the Access Code;
- the Electricity Industry (Metering) Code 2012, made under Part 2 of the EI Act; and
- the Electricity Industry (Network Quality and Reliability of Supply) Code 2005 (NQRS Code), made under Part 2 of the EI Act.

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<https://parliament.wa.gov.au/parliament/bills.nsf/BillProgressPopup?openForm&ParentUNID=E35776BF096674C348258A1A001F9711>

The Bill introduces a range of new definitions, however there are a few key ones related to the PSSR Standards project. These include:

- **Reliability**, in relation to the supply of electricity or the operation of an electricity system, means the ability of the electricity system to maintain or supply a consistent delivery of electricity to customers; and
- **Security**, in relation to the supply of electricity or the operation of an electricity system, includes the ability of the supply or electricity system to withstand disruption or disturbance or changed circumstances of supply or operation;
- **Quality**, in relation to the supply of electricity, means the extent to which the supply of electricity complies with any technical requirements of:
 - the regulations; and
 - the electricity system and market rules;

A new Division 3 in Part 9 of the EI Act will deal with reliable supply and electricity systems, setting out that the ESMR may provide for the following matters (amongst other things):

- the reliability of electricity supply and electricity systems;
- the security of electricity supply and electricity systems;
- the quality of electricity supply;
- the safe supply of electricity and the safe operation of electricity systems;

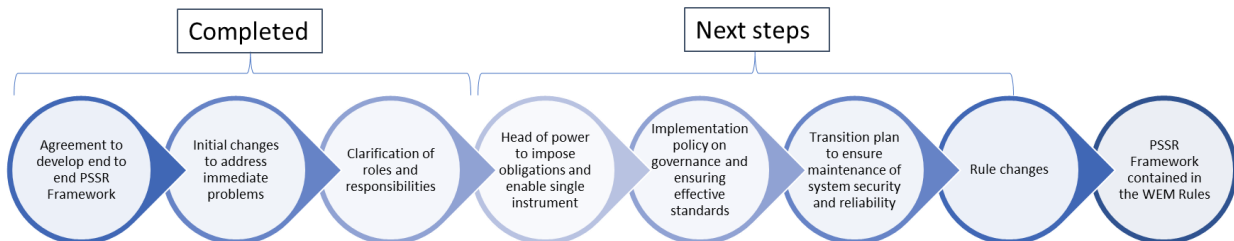
The commencement scheme for the new legislation is relatively complex. However, for the purposes of this project, on day one, the WEM Rules are amended to ESMR and new definitions come into force. Regulations will also need to be in place at this time to provide for voltage and frequency limits repealed from the *Electricity Act 1945*.

However, content of subsidiary instruments will not be amended on day one. These instruments will remain in force and be repealed over time as content is covered through amendments to the ESMR. These subsidiary instruments will be automatically repealed on 31 December 2028.

3. Scope of work for the PSSR Standards Project

Further policy development and detailed design is required to ensure that the PSSR standards are fit for purpose, that there are appropriate governance mechanisms, and that issues and gaps in the current instruments to are not transferred to the ESMR. Following this, subsequent rule changes will be required to give effect to the policy and detailed design.

Figure 1: Work completed and next steps



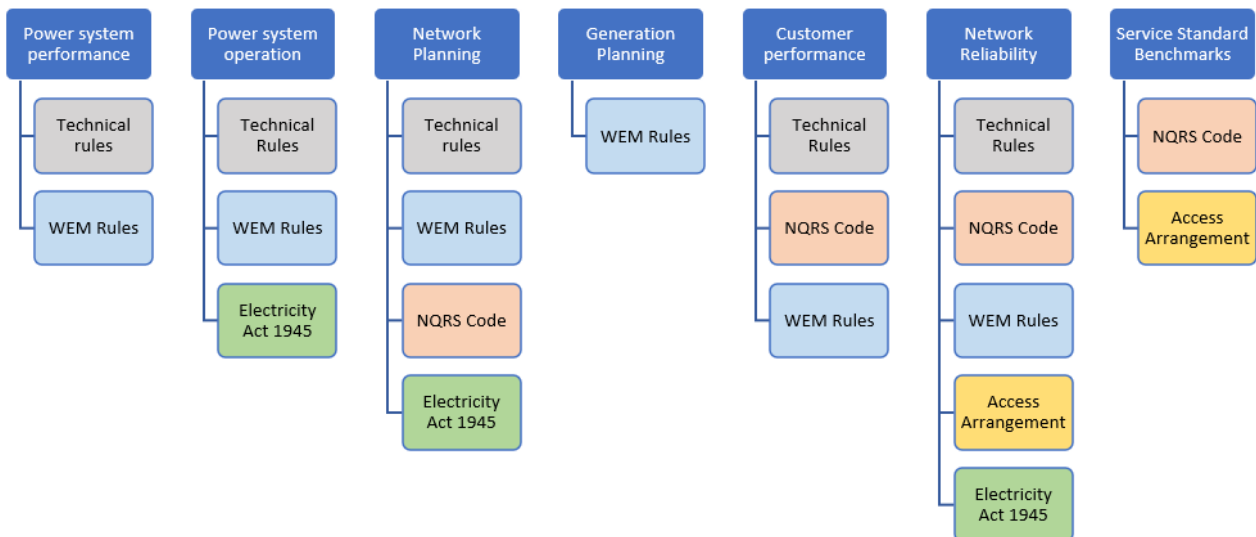
3.1 Stage 1 - Assess existing instruments

The PSSR standards for the SWIS are fragmented with requirements and obligations spread across several regulatory instruments, including:

- Instruments made under Part 8 of the EI Act, which relate to the various technical codes that are required for the purposes of access to services (such as Western Power’s Technical Rules).
- Instruments made under section 39 of the EI Act, relating to the quality and reliability of electricity supply (such as the Network Quality and Reliability of Supply Code (NQRS Code)).
- Instruments made under Part 9 of the EI Act, which provides for the WEM (and system operations) and the WEM Rules.
- Other instruments or requirements dealing with power system security and reliability standards, including the requirements that set limits for power system “pressure” (voltage) and frequency.

The diagram below illustrates the fragmentation of the PSSR standards across different instruments, each with their own objectives, change processes and decision makers.

Figure 2: Instruments governing power system security and reliability in the SWIS



The first step in the analysis will be to undertake a comprehensive assessment of the various PSSR related provisions in each of the above regulatory instruments. This should include identifying:

- the relevant standards;
- their governance arrangements (i.e. how are they set and/or changed);
- the role of AEMO and Western Power in implementing each standard across planning and operational timeframes; and
- the monitoring, compliance and enforcement framework.

3.2 Stage 2 - Gap analysis

The next stage in the process will be to determine if existing standards are effective to ensure power system security and reliability can be maintained as the energy transition continues.

The following issues with the current PSSR standards will be covered by the analysis.

- The current standards do not provide an overarching minimum standard for reliability and security that captures all electricity production and network requirements, and that balances the competing objectives of energy trilemma – sustainability, affordability and reliability.
- Some standards are no longer fit-for-purpose to meet the fast, emerging changes to the power system characterised by inter-related risk factors such as frequent changes in weather patterns, changing consumption profiles, and decentralised production of electricity. For example, there is no universal set of metrics with associated targets, incentives, and reporting to account for both generation and network operations, particularly where they are inter-dependent.
- There is overlap in standards between instruments, for example between the NQRS and Access Arrangement.
- The current PSSR standards support direct connection of energy producing systems to the transmission network in a way that facilitates WEM participation, however the framework for connecting to the distribution network in a way that facilitates market participation (which is required to enable the energy transition to DER and to support the potential role of the Distribution System Operator (DSO)), requires enhancement.

Consideration will need to be given to

- the gaps, overlaps and inconsistencies in the existing standards and their governance arrangements;

- the transparency and technical oversight of the PSSR standards; and
- the suitability of each of the standards with reference to a power system in transition that is characterised by increasing levels of DER and intermittent generation sources.

3.3 Stage 3 - Develop proposals

A single end-to-end PSSR standard governed by the Coordinator of Energy under the ESMR will need to be developed. It will need to be appropriate for:

- Both energy production and network assets, and new technologies that work together to deliver the services required for efficient and effective operation of the system and the services required for all energy producing systems and load.
- Distribution connections to enable the use of DER devices to increase the flexibility of the power system.
- A broader range of conditions, to ensure reliability and resilience given the increasing volatility in climate and market conditions.
- The significant increase in demand for DER and new technologies and services, including the emerging role of the DSO, two-way energy flows and other business models.
- Effectively managing the impact of multiple contributors to system operation such as decentralised generation, storage, and demand response.
- Ensuring versatility and resilience to continuing reforms to the electricity market and plant closures.

A universal set of metrics with associated targets and supporting reporting requirements is likely to be required. Consideration of the application and coordination of standards across the different planning and operational timeframes will be needed to ensure required outcomes are achieved.

The following matters will need to be considered in developing the governance arrangements for the new PSSR standard:

- Given the expanded role of the Coordinator, additional mechanisms may be warranted to support transparency of decision making.
 - While the Taskforce recommended a Reliability and Security Advisory Panel, consideration must be given to the most efficient governance arrangements for a standing body that can provide independent technical advice to the Coordinator.
 - Arrangements for independent advice to the Coordinator (from the Market Advisory Committee (MAC)) already exist under the WEM Rules, and EPWA considers these can be adapted to be fit-for-purpose for PSSR related matters.
 - A review of the structure of the MAC to ensure it is fit for purpose to provide advice on the expanded ESMR, including PSSR related matters, will be undertaken parallel to this project.
- Streamlined change processes or additional criteria when assessing changes to those parts of the ESMR that deal with the PSSR standards such as the impact and allocation of risks, assessing costs and benefits, consistency with market objectives and implementation and transition issues.
- Although the ERA will remain responsible for compliance and enforcement, there may be a need to enhance these arrangements, or introduce different roles and arrangements in relation to requirements that were previously contained in guidelines governed by Western Power.

The aim of the revised governance framework to support the PSSR standard should be to provide:

- A consistent and streamlined process for changing PSSR standards, underpinned by robust and transparent decision making, creating a framework that is better able to respond to change.

- A timelier and coordinated evolution of the PSSR standards, ensuring that the interests of energy consumers are protected and advanced.
- Standards and rules that are simpler and easier to navigate, streamlining entry requirements and reducing compliance costs for participants, making it easier to engage with the framework, participate in the market and to innovate for the benefit of consumers.

3.3.1 Transitional arrangements

It is unlikely that the changes being proposed can be given effect all at once. Therefore, consideration must be given to ensuring a smooth transition of the obligations and requirements. This may include a multiple step process for transferring the standards, requirements and obligations into the single instrument, a staged approach to imposing any new obligations and enforcement of the obligations, safety net provisions and streamlined change management arrangements to ensure that revealed issues and gaps can be dealt with in a timely manner.

The nature and form of transition will be informed by the changes to the systems and processes required to implement the recommendations and have regard to the cost and impact on stakeholders.

3.4 Stage 4 - Drafting amending Rules and other regulatory changes

The final step will be to draft and consult on the rules to give effect to the policy positions and detailed design.

Changes will also be required to the relevant subsidiary instruments, which will have their own change management processes.

4. Stakeholder consultation

Successful completion of this project will require extensive consultation, with all key stakeholders, and importantly with AEMO and Western Power, who will be responsible for managing the power system within the single end-to-end PSSR standard that is ultimately set out in the ESMR.

4.1 Market Advisory Committee Working Group

Given the implementation of this end-to-end standard will be through the ESMR, consultation with the MAC will be required. A MAC working group (the Power System Security and Reliability Standards Working Group (PSSRSWG)) will be established, comprising of technical experts from industry, AEMO, Western Power and consumer representatives.

The PSSRSWG will meet at least monthly during stages 1-3 of the project, and more often as required. It will also assist with the detailed development of the rules.

4.2 Technical working group with AEMO and Western Power

Given the roles and responsibilities for managing PSSR standards largely fall to AEMO and Western Power to manage through their planning processes and on an operational basis, close consultation will be required throughout the project to ensure the framework that is developed is fit-for-purpose. A technical working group will be formed consisting of EPWA, AEMO and Western Power to manage this close consultation. It is expected this group will meet at least fortnightly, and more often as required.

It is expected that this group will prepare analysis and other materials for the PSSRSWG. Given AEMO and Western Power's operational understanding of the PSSR standards, there will be a heavy reliance on analysis from this group at each stage of the project to understand issues, draw conclusions and develop proposals. It will also be expected that issues are resolved between EPWA, AEMO and Western Power prior to PSSRSWG meetings or other stakeholder consultations and that an agreed view is put forward in external consultation forums.

Some examples of the type of input that will be required by Western Power and AEMO at each stage is detailed below, although this list is not exhaustive.

Table 1: Input required by Western Power and AEMO

Stage	Examples AEMO/Western Power input at each stage
Stage 1	<ul style="list-style-type: none">Identify/confirm standards managed by each party;Identify/confirm planning and operational processes that involve consideration of each standard.
Stage 2	<ul style="list-style-type: none">Identify gaps and duplications in standards based on operational experience;Identify changing characteristics of the power system that warrant new standards being developed; andIdentify shortcomings in governance frameworks, and framework for managing standards between Western Power and AEMO.
Stage 3	<ul style="list-style-type: none">Develop proposals for change, and provide feedback on suitability and feasibility of design proposals developed by EPWA or their consultants;Identify impact of proposals on business operational costs;Identify impact of proposals on market costs;Provide input on any transitional arrangements required;

Stage	Examples AEMO/Western Power input at each stage
	<ul style="list-style-type: none"> • Provide input on appropriate governance arrangements; and • Provide input on monitoring, compliance and enforcement proposals
Stage 4	<ul style="list-style-type: none"> • Provide input on detailed design matters; and • Together with EPWA, develop and review draft amending rules.

4.3 Public consultation

A formal, public consultation paper will be released at the end of Stage 3, followed by an Information Paper with the final design proposals and responses to submissions. There will be public consultation on the draft amending rules at the end of Stage 4.

5. Project schedule

The project schedule is detailed in Table 1 below.

Table 2: Project Schedule

Tasks/Milestones	Timing
Project establishment	
Consult with Western Power and AEMO on Scope of Work	September 2023
Internal approval of Scope of work	October 2023
Engage a consultant(s) to assist with the review	November 2023
Consult with the MAC on Terms of Reference for Power System Security and Reliability Standards Working Group (PSSRSWG)	23 November 2023
Call expressions of interest for PSSRSWG	Late November 2023
PSSRSWG kick-off meeting to discuss scope	Early December 2023
Stage 1 – Assess existing standards	
Review of existing instruments to identify all relevant standards and governance arrangements, including compliance and enforcement provisions.	November – January 2024
Finalise initial assessment of standards	Mid-February 2024
MAC update	21 March 2024
Stage 2 – Gap analysis	
Identify any gaps, overlaps or inconsistencies in the existing standards, and assess suitability of existing standards	February – April 2024
Jurisdictional comparison of standards and governance frameworks	February – April 2024
Finalise gap analysis	Mid-May 2024
MAC update	13 June 2024
Stage 3 – Develop proposals	
Develop design proposals, including proposals for: <ul style="list-style-type: none"> a single end-to-end comprehensive standard; governance framework for the PSSR standard, including change management processes; the provision of advice to the Coordinator on the evolution of the PSSR standard; roles and responsibilities for AEMO and Western Power to coordinate and manage the PSSR in accordance with the PSSR standard over planning and operational timeframes; and the compliance monitoring and enforcement framework for the PSSR standard. 	May - August 2024
Consult with MAC on a draft consultation paper	5 September 2024
Publish the consultation paper	Mid-September 2024

Tasks/Milestones	Timing
Submissions on the consultation paper close	Mid-October 2024
Develop Information Paper with consultation summary and final proposals	November 2024
Consult with MAC on a draft Information paper	28 November 2024
Publish Information Paper	December 2024
Stage 4 – Develop amending rules	
Develop draft amending rules	January – April 2025
Publish draft amending rules for consultation	May 2025
Finalise amending rules	June – July 2025
Submit amending rules for consideration and approval by the Coordinator and the Minister	August 2025 (must be made and gazetted by 1 October 2025)
Commencement of rule changes	TBD

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