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

Meeting Agenda

Meeting Title:	Power System Security and Reliability Standards Working Group
Date:	1 February 2024
Time:	9.30am – 11.30am
Location:	Online, via TEAMS.

Item	Item	Responsibility	Type	Duration
1	Welcome and Agenda	Chair	Noting	2 min
2	Meeting Apologies and Attendance	Chair	Noting	2 min
3	Competition Law Statement	Chair	Noting	2 min
4	Minutes of Meeting 2023_12_14	Chair	Noting – Already approved	2 min
5	Updates Technical Working Group	Chair	Noting	2 min
6	Stage 1 – Framework **(a) PSSR Definitions** **(b) Existing Framework and Time Horizons – Stage 1 Approach** Stage 2 (Gap Analysis) – Approach **(a) PSSR Review and Time Horizons**	Mott MacDonald /Merz	Discussion	90 min
7	General Business	Chair	Discussion	10 min
8	Next steps	Chair	Noting	10 min
	Next meeting: TBD			

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.

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

GOVERNMENT OF WESTERN AUSTRALIA

PSSR Standard for SWIS

PSSR Standards Working Group - Stage 1 Framework

Meeting 2 - 1 February 2024

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

Purpose of Today's Session

1. To set the boundaries (what is in and out of scope) of the Stage 1 PSSR Standards Review.
2. To begin the discussion on the proposed framework for the Stage 1 assessment and Stage 2 gap analysis.

Agenda

9.40am	Item 1: PSSR Definitions
9.55am	Item 1.5: Discussion and Clarifications
10.15am	Item 2: Existing Framework and Time Horizons
10.30am	Item 2.5: Discussion and Clarifications
10.50am	Item 3: PSSR Review and Time Horizons
11.10am	Item 3.5: Discussion and Clarifications
11.20am	Item 4: Closing

PSSR Definitions

Definitions of security and reliability

Electricity Industry (Distributed Energy Resources) Amendment Bill 2023 (the DER Bill)

Reliability

Reliability means the ability of the electricity system to maintain or supply a consistent delivery of electricity to customers.

Security

Security includes the ability of the supply of electricity system to withstand disruption or disturbance or changed circumstances of supply or operation.

"Consistent delivery of electricity" (from Reliability) requires a definition of quality/adequacy. For example:

1. Is a "brown out" (low voltage supply) part of a reliable supply?
2. Would a supply with high harmonics that make electrical devices trip or fail be considered part of a reliable supply?

Quality

In relation to the supply of electricity, means the extent to which the supply of electricity complies with any technical requirements of:

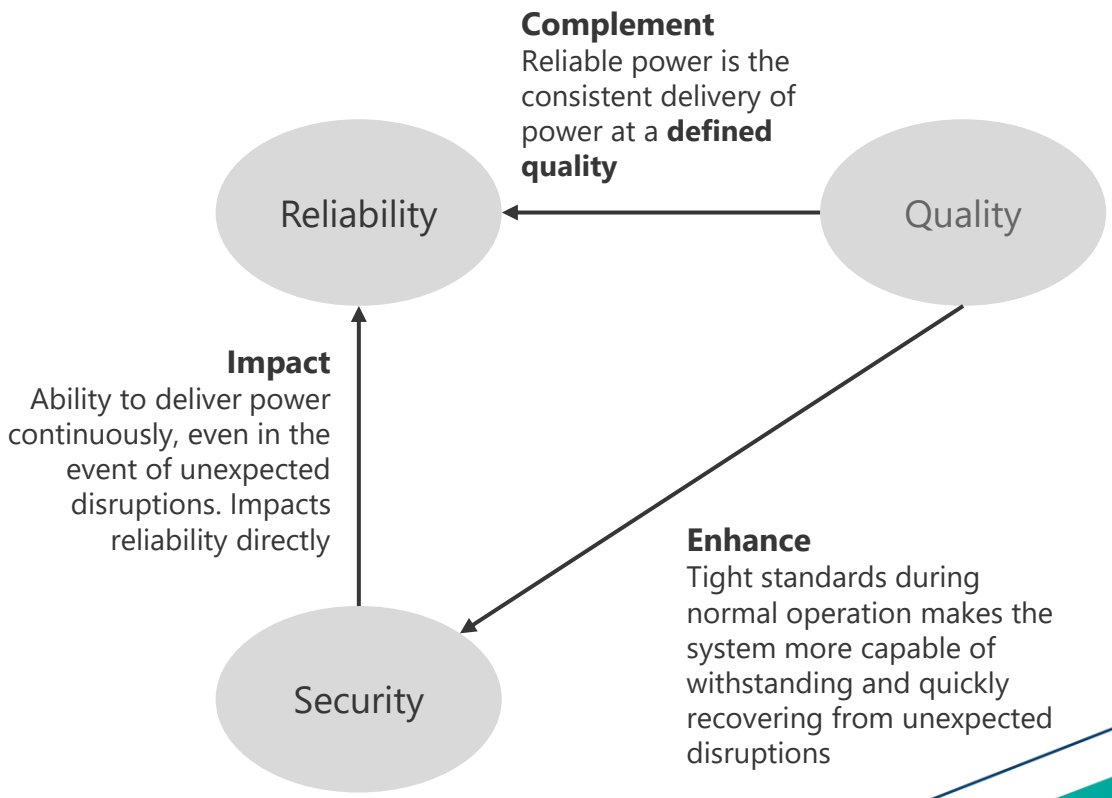
a) the regulations; and

b) the electricity system and market rules; and

c) Electricity Industry Amendment (Network Quality and Reliability of Supply) Code 2005;

Security, Reliability, and Quality Interplay

	Security	Reliability	Quality
By definition (DER Bill)	The ability of power system to withstand unexpected disruption or disturbance.	The ability of power system to maintain a consistent delivery to customers without interruption.	The ability of power system to comply with any technical requirement set by the regulation and/or market rules.
By example	The power system's ability to remain stable and operational following a ground to earth fault close to the largest generator.	A power grid's capacity to quickly reroute power during a substation failure, minimizing outage time for consumers.	Maintaining the frequency or voltage of the power supply within defined tolerances (FOS), regardless of fluctuations in demand or generation.
Misconceptions	Protecting electrical equipment from damage and protecting personal safety is **not** security.	The durability of single components is **not** reliability as long as the system is able to continue operating effectively, even if individual elements fail.	Less carbon emission or noise pollution from the electricity generation is **not** quality.



The DER Bill definitions are considered workable as long as we are clear on what is **not** PSSR

What is not security and reliability?

Protecting electrical equipment from damage and protecting personal safety.
A system can remain secure and reliable whether electrical protection devices operate to protect people / equipment or not.

This exclusion is important for the following reasons.

- For the interface with the instruments managed by Energy Safety.
- It excludes consideration of the requirements of electrical protection devices. This will impact the discussion on the role of fault current / system strength in security and reliability.

This exclusion does not apply to protection specified and implemented for PSSR purposes.
(such as for compliance with Technical Rules 3.6.10

This clause 3.6.10 applies only to protection necessary to maintain power system security. A Generator must design and specify any additional protection required to guard against risks within the Generator's facility

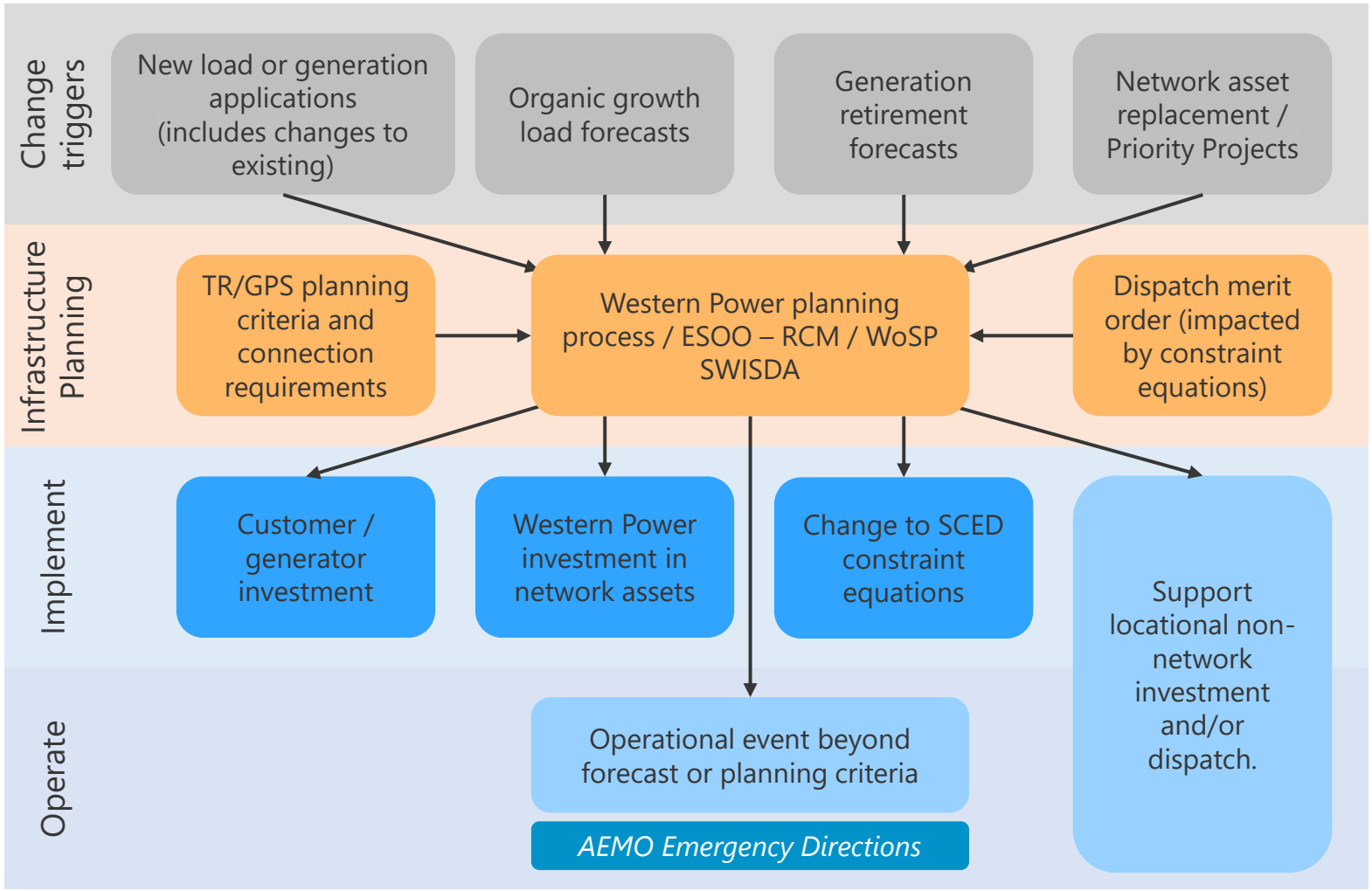
Other helpful definitions

System Strength (WEMR) - Is a measure of how resilient the voltage waveform is to disturbances such as those caused by a sudden change in Load or an Energy Producing System, the switching of a Network element, tapping of transformers and other types of faults.

System Strength Requirements (WEMR): Means, the requirements identified to maintain sufficient System Strength on the SWIS, as determined by the processes specified in the WEM Procedure referred to in clause 3.2.7.

Existing Framework and Time Horizons
Stage 1 Approach

Context to maintaining reliability and security



PSSR Mechanism inform all of these different activities

This process is delivered consistent with the relevant legislative instruments (i.e. Technical Rules).

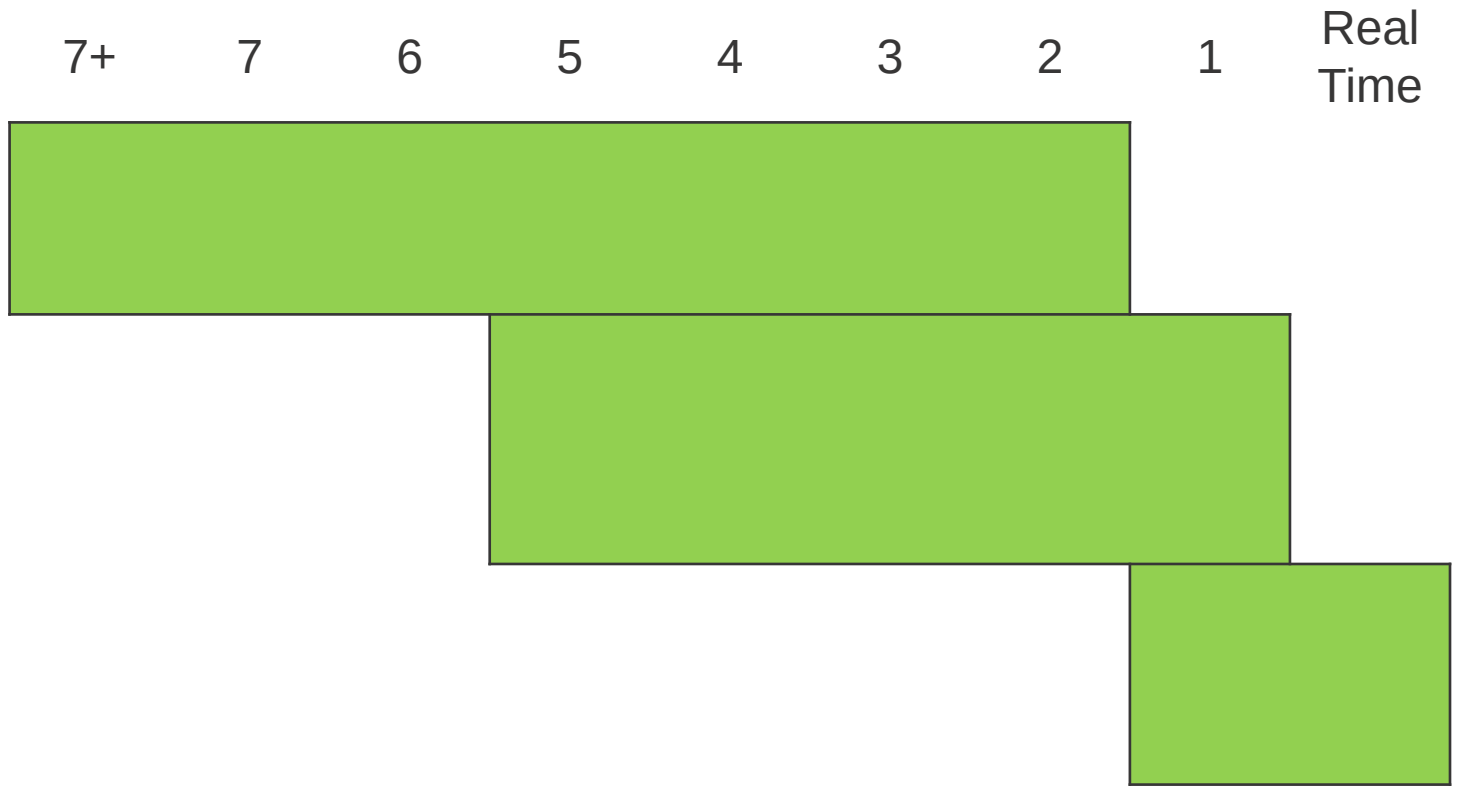
Time Horizon Tranches

Tranche

Infrastructure Planning
Long-term, high uncertainty due to forecasting long-term impacts.

Implementation
Design and construct, medium uncertainty, decreasing through the design and commission.

Operation
Short-term, lower uncertainty as inputs are better defined.



Infrastructure Planning activities define new infrastructure requirements, operational activities determine how to utilise existing infrastructure. There are several planning and operational horizons that are considered by each Western Power and AEMO, and these differ across generation/transmission/distribution activities.

The framework presented here is generic for discussion purposes.

Context of maintaining reliability and security (continued)

How are the activities different?

Aspect	 Infrastructure Planning	 Implementation	 Operation
Security	Defined by expected performance of generators and load during new generator connections, loss of load and changes to network availability.	Significant detail that increases with certainty through design and commissioning.	Achieved by dispatching sufficient reserve and system strength in correct network locations.
Reliability	Through probabilistic or deterministic criteria in network investment planning and RCM process.	Timing of investment / Planning of outages	By generation adequacy provisions.
Requirements	Defined with reference to long term planning process with high uncertainty.	Defined with reference to specific technologies sourced from global markets.	Can be defined with reference to more immediate impacts.

Note that the Instruments have been developed to the traditional process for maintaining PSSR.

Existing defined security and reliability outcome requirements

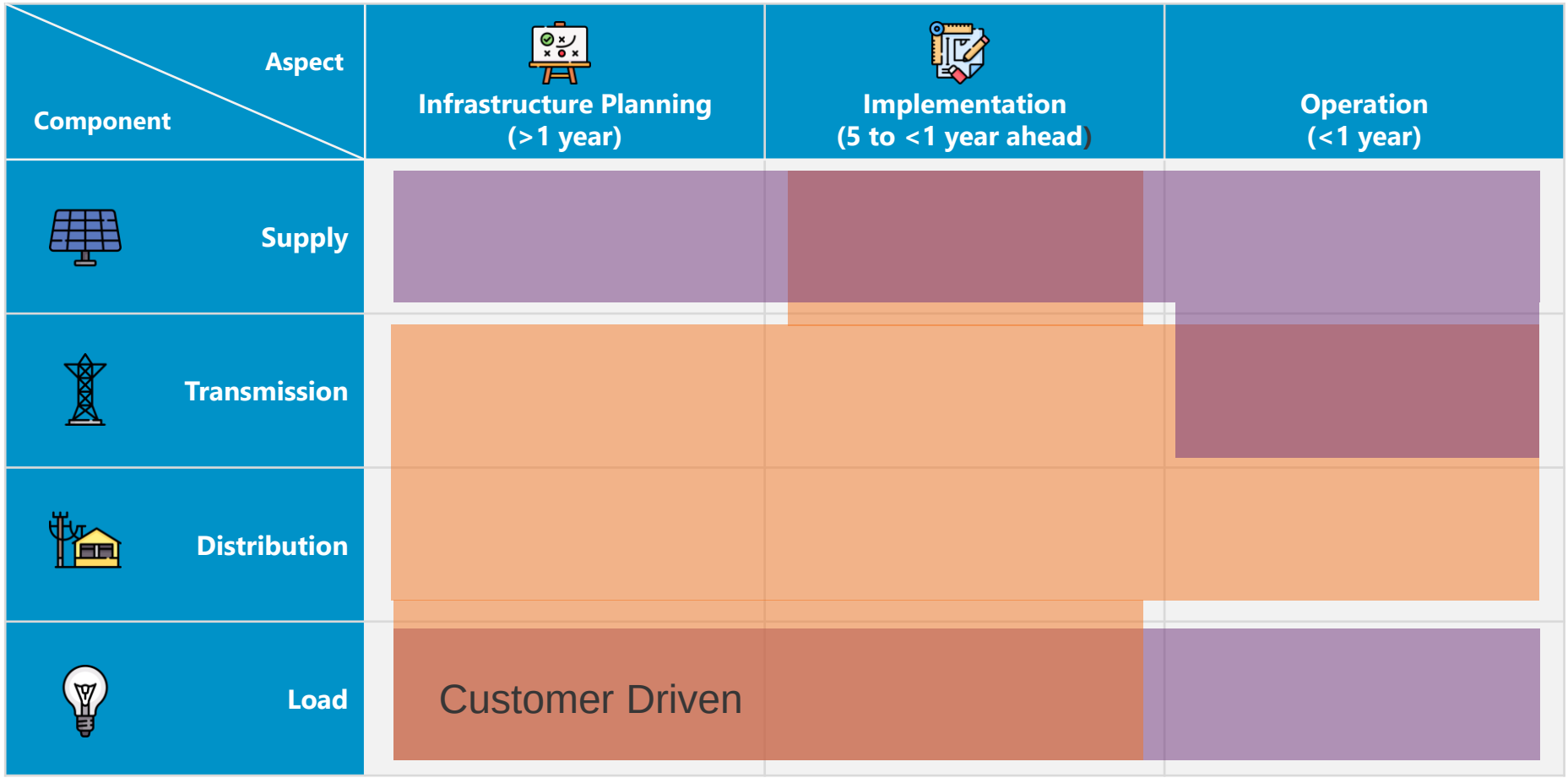
	Infrastructure Planning (>1 year)	Implementation (5 to <1 year ahead)	Operation (<1 year)	Result
Supply	WEM Rules 4.5.9	WEM Rule Appendix 12 Technical Rules Section 3	WEM Rules Market Operation, ESS and System Strength	Adequate installed generation with correct capability operated economically.
Transmission	Technical Rules 2.5.2 Value Customer Reliability AA5	Technical Rules Section 2 NQRS Clause 9 ENAC NFIT / Reg Test	WEM Rules	Adequate and economic installed Transmission infrastructure.
Distribution	Technical Rules 2.5.3	Technical Rules Section 2 NQRS Clause 9 &13	NQRS Clause 10-11	Adequate and economic installed Distribution infrastructure.
Load	Customer driven	Technical Rules Section 3 WA Electrical Requirement	WEM Rules DSM and Cyclic Load Shedding	Load is supplied and does not adversely impact PSSR.
Result	Adequate installed infrastructure to supply loads within defined contingencies.	Installed infrastructure creates and transmits power of the correct quality and remains operational for defined system disturbances.	Installed infrastructure is used to maintain supply at the defined quality in a manner remains operational for credible system disturbances.	PSSR to customers at required standards.

Notes:

- Power quality outcomes are most greatly impacted by generators and loads. Delivering against quality requirements defined in section 2 of the TR requires the application of section 3 of the TR.
- Power security outcomes are most greatly impacted by the capability of generators' automatic and high-speed response and the availability of sufficient reserve generation.

This is the proposed structure of the Stage 1 review.

Existing PSSR Process Responsibility



Existing Responsibility

AEMO

western power

AEMO western power

Legislative governance arrangements has a similar overlapping nature, dependent on the relevant instrument.

PSSR Review and Time Horizons
Stage 2 Approach (Gap Analysis)

Infrastructure Planning for reliability vs security

- The new definitions in the DER Bill take a broad view to reliability which has a customer supply focus. This differs from the existing definitions in the WEM Rules which has a specific focus on operating decisions and therefore does not consider reliability issues such as customer outages due to network failures in N-0 network systems.
- The definition of energy not supplied to a customer in an otherwise secure system as a reliability impact aligns with the definitions in the **Value of Customer Reliability** approved by the ERA under AA5.
- This change in definitional approach is reflected in the following slides which has a focus on planning for both reliability and also security.

Infrastructure Planning for reliability

There are two broad forms of analysis that are used in reliability planning:

1. **Deterministic**: Determines the installed equipment required to most efficiently meet defined reserve criteria (N-1 etc.).
2. **Probabilistic**: Forecasts the actual reliability outcomes through determining a mean quantum of unserved energy / lost load / expected energy shortfalls.

Probabilistic analysis requires application of probabilistic tools (such as Monte Carlo analysis) to complex problems. Due to this complexity, it is best applied in a targeted manner, usually to economically optimise the timing of investments for reliability.

Reliability planning guidelines provide the best customer outcomes when deterministic criteria are used as a trigger for design consideration and value of customer reliability (VCR) / Unserved energy targets drive timing of the required investment.

AA5 has an approved VCR: https://www.erawa.com.au/cproot/22440/2/AAI---Attachment-6.3---Estimation-of-value-of-customer-reliability-for-Western-Power-s-network.pdf

Infrastructure Planning for reliability

Reserve Capacity of Installed Assets	Availability (or outages) of Installed Assets
Characteristics	
Determined by: Capacity and number of Installed Assets.	**Determined by**: Availability / failure rate / outage rates of each asset.
Changed by: load and equipment connection / retirement.	**Changed by**: equipment age and condition.
Existing Drivers	
Technical Rules require *2.5.2 The Network Service Provider must **design** the transmission system in accordance with the applicable criteria…* *Note: The requirement to **design** requires solutions to be identified and allows the timing of solutions to be economically optimized to VCR based on probabilistic analysis.*	**AA5 economically incentivises** equipment **availability** through service standard benchmarks and Western Power earning a return when aged / poor condition assets are replaced based on VCR business cases.
The WEM Rules Require the greater of deterministic and probabilistic targets **– no economic optimisation**.	**The WEM Rules economically incentivises** minimum **availability** requirements on generation equipment, via the RCM

For Western Power, deterministic criteria can trigger probabilistic analysis that forecasts the actual reliability outcomes considering both **reserve** and forecast **availability.**

VCR defines timing and prioritisation of Western Power solutions for reliability.

Infrastructure Planning for security

Planning for security is dominated by generation adequacy planning that is largely implemented through the RCM and ESS markets.

Reserve Capacity Mechanisms

Determines the amount of installed generating or demand response capacity required given defined performance requirements (ESOO). The RCM facilitates the installation of the required generation through market signals or direct procurement.

The defined technical requirements relevant to PSSR are defined as below.

Generation Performance Standards

Generators must be capable of providing defined quantities of active and reactive power, at defined speeds, in response to defined system stimulus (voltage / frequency) and dispatch instructions (set points). Generators must remain in Continuous Uninterrupted Operation (CUO or ride through) for defined disturbances. New generators must not impact the ability for other generators to remain in CUO.

Fuel Security Requirements

RCM currently requires 14 hours of fuel / 4 hours of storage.

Peak and Flex Capacity

Flex Capacity must meet incremental technical requirements (above GPS) by providing a faster response to dispatch set points. Installation of facilities to provide incremental requirements facilitated by the RCM Flex Service.

Infrastructure Planning for security (cont)

Essential System Services

ESS providers must meet incremental technical requirements (above GPS and RCM) by providing a faster response to dispatch set points and greater visibility and control. Installation of facilities to provide incremental requirements (above GPS / Technical Rules) facilitated by market signals from ESS Markets and (if shortfall) direct procurement.

Load Shedding

The enforcement of load shedding is the last line of defense for system security but directly impacts reliability. Defined in the Technical Rules and implemented at Western Power feeders and large customer installations.

Network Designed to Remain in CUO (Ride Through) for Defined System Disturbances

Ideally the design of network (including protection specification) must ride through same system disturbances specified for generation (e.g. RoCoF requirement of 4Hz/sec). However, this is not an specific existing requirement. It may be required by Good Electrical Industry Practice obligations of TR 1.8.1.4. There is a financial incentive for Western Power to demonstrate ability to ride through frequency events under the RoCoF cost recovery mechanism.

Implementation

- Large generators are implemented to meet GPS, RCM Flex and ESS requirements (depending on the operational response being provided) and must undertake the commissioning tests defined within these. The GPS, RCM Flex and ESS mechanism all have separate ongoing testing requirements.
- Smaller generators (<10MW) and loads must be implemented to meet the Technical Rules requirements and undertake commissioning tests defined in both. There is limited or no ongoing testing of these facilities.
- Distributed generators must meet the requirements of the Technical Rules (including AS4777) and the Distributed Generation Energy Resource Management Requirements (DGERM). There is some testing of these facilities at commissioning by the Clean Energy Council. Western Power can request commissioning validation of testing under the DGERM and can request ongoing validation testing.

Operation

- Generation dispatch (including constraint equations and maintenance outage approvals) undertaken by AEMO under WEM Rules.
- Network switching by AEMO and Western Power (depending on which component of the network).
- Customer notifications under NQRS undertaken by Wester Power.

Appendices

Comparison of PSSR definitions

Term	DER Bill	WEM Rules	NER
Security	includes the ability of the supply of electricity system to withstand disruption or disturbance or changed circumstances of supply or operation.	**Power System Security**: Means the safe scheduling, operation and control of the SWIS in accordance with the Power System Security Principles The Power System Security Principles are: a) the power system should be operated such that it is and will remain in a Secure Operating State to the extent practicable; b) following a Contingency Event, AEMO should take all reasonable actions to return to a Secure Operating State as soon as possible, and in any case within 30 minutes, other than during a Low Reserve Condition or when in an Emergency Operating State; c) sufficient Inertia should be available to meet applicable Inertia Requirements; and d) sufficient capability should be maintained at applicable locations in the SWIS to meet the applicable Power System Stability Requirements, including any System Strength Requirements The SWIS is in a Secure Operating State when the SWIS is able to return to a Satisfactory Operating State following a Credible Contingency Event in accordance with the Power System Security Principles and the requirements of the Technical Envelope. The SWIS is in a Satisfactory Operating State when the SWIS is operating in accordance with all relevant requirements of the Technical Envelope.	**Power System Security**: The safe scheduling, operation and control of the power system on a continuous basis in accordance with the principles set out in clause 4.2.6. The power system is defined to be in a secure operating state if, in AEMO's reasonable opinion, taking into consideration the appropriate power system security principles described in clause 4.2.6: 1. the power system is in a satisfactory operating state; and 2. the power system will return to a satisfactory operating state following the occurrence of any credible contingency event or protected event in accordance with the power system security standards.
Reliability	means the ability of the electricity system to maintain or supply a consistent delivery of electricity to customers.	**Power System Reliability**: Means the safe scheduling, operation and control of the SWIS in accordance with the Power System Reliability Principles The Power System Reliability Principles are: a) the SWIS should be operated such that it is in a Reliable Operating State to the extent practicable; b) subject to maintaining Power System Security, where the SWIS is not in a Reliable Operating State, or is not forecast to be in a Reliable Operating State, AEMO must take all reasonable actions to restore or maintain a Reliable Operating State as soon as practicable; and c) AEMO must assess risks to Power System Adequacy and act to minimize any risks to Power System Adequacy in accordance with the WEM Procedure referred to in clause 3.3.2. The SWIS is in a Reliable Operating State when AEMO has not initiated any manual load shedding directions, and does not reasonably expect to initiate any manual load shedding directions, in accordance with the WEM Procedure referred to in clause 3.3.2	**Reliability**: The probability of a system, device, plant or equipment performing its function adequately for the period of time intended, under the operating conditions encountered.
Quality	means the extent to which the supply of electricity complies with any technical requirements of: • The regulations; and • The electricity system and market rules	No global definition – Quality generated of electricity is defined in A12 A12.12 Technical Requirement: Quality of Electricity Generated A Generating System, when generating and when not generating, must not produce, at any of its Connection Points for generation, • Voltage Imbalance –Greater than the limits determined by the Network Operator at the Connection Point informed by the Technical Rules. • Voltage Fluctuation: AS/NZS 61000.3.7:2001 • Harmonic Distortion: AS/NZS 61000.3.6:2001	Not readily defined in a summeriseable format

Comparison of PSSR definitions

Term	DER Bill	CIGRE	NERC	IEEE	IEC	ENTSO-E
Security	includes the ability of the supply of electricity system to withstand disruption or disturbance or changed circumstances of supply or operation.	The ability of the power system to withstand disturbances, where: • Power system includes all elements of the generation, transmission and distribution systems, and customer facilities that supply or use power and energy, or provide ancillary services; • Ability to withstand will vary depending on specific disturbances and applicable criteria or standards, and includes agreed use of customers' ability to vary power supply, adjust demand and provide ancillary services; • Disturbances include electric short circuits, unanticipated loss of system facilities, or other rapid changes such as in wind or solar generation.	The ability of the bulk power system to withstand sudden, unexpected disturbances, such as short circuits or unanticipated loss of system elements.	Security of a power system refers to the degree of risk in its ability to survive imminent disturbances (contingencies) without interruption of customer service. It relates to robustness of the system to imminent disturbances and, hence, depends on the system operating condition as well as the contingent probability of disturbances.	The ability to tolerate a credible event without loss of load, over-stress of system components, or deviation from specified voltage and frequency tolerances.	The ability of the electric system to withstand sudden disturbances such as electric short circuits or unanticipated loss of system elements.
Reliability	means the ability of the electricity system to maintain or supply a consistent delivery of electricity to customers.	A measure of the ability of a power system to deliver electricity to all points of consumption and receive electricity from all points of supply within accepted standards and in the amount desired	The degree to which the performance of the elements of that system results in power being delivered to consumers within accepted standards and in the amount desired.	Reliability of a power system refers to the probability of its satisfactory operation over the long run. It denotes the ability to supply adequate electric service on a nearly continuous basis, with few interruptions over an extended time period.	The ability of a power system to meet its supply function under stated conditions for a specified period of time	The degree of performance of the elements of the bulk electric system that results in electricity being delivered to customers within accepted standards and in the amount desired.
Quality / Adequacy	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 measure of the ability of a power system to meet the electric power and energy requirements of its customers within acceptable technical limits, taking into account scheduled and unscheduled outages of system components, where: • Power system includes all elements of the generation, transmission and distribution systems, and customer facilities that supply or use power and energy, or provide ancillary services; • Customers include all parties that supply power and energy or ancillary services, as well as those who consume them; • Requirements of customers include their basic power and energy needs, and agreed use of customers' ability to vary power supply, adjust demand and provide ancillary services; • Acceptable technical limits and scheduled and unscheduled outages are those specified in the applicable planning criteria and standards; and • System components include all elements of the supply, delivery and utilization systems regardless of ownership or control.	The ability of the electric system to supply the aggregate electrical demand and energy requirements of the end-use customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements	The ability of the electric systems to supply the aggregate electrical demand and energy requirements of their customers at all times, taking into account scheduled and reasonably expected unscheduled outage of system elements.	The ability of an electric power system to supply the aggregate electric power and energy required by the customers, under steady-state conditions, with system component ratings not exceeded, bus voltages and system frequency maintained within tolerances, taking into account planned and unplanned system component outages.	The ability of the electric system to supply the aggregate electrical demand and energy requirements of the customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.

The DER Bill definitions are considered workable as long as we are clear on what is **not** PSSR

Alignment between requirements

Component \ Aspect	Infrastructure Planning	Implementation	Operation	Alignment
Supply	The Planning Criterion to be used by AEMO in undertaking a Long Term PASA study is that there should be sufficient available capacity in each Capacity Year during the Long Term PASA Study Horizon to: a) meet the forecast peak demand (including transmission losses and allowing for Intermittent Loads) supplied through the SWIS plus a reserve margin equal to the greater of: a) the forecast peak demand…..; and b) the size, in MW, of the largest contingency….. b) limit expected energy shortfalls to 0.0002% of annual energy consumption (including transmission losses).	WEM Rule Appendix 12 Technical Rule Section 3	The SWIS is in a Secure Operating State when the SWIS is able to return to a Satisfactory Operating State following a Credible Contingency Event in accordance with the Power System Security Principles and the requirements of the Technical Envelope	Technical Envelope is the power system conditions that generators are Designed to continue to operate as per A12 and TR S 3. (WEMR 3.2.5) Largest Credible Contingency applies in planning and operation.
Transmission	a) N-0 <20MW N-1 / N-1 1% 132kV N-1-1 330kV b) Probability standard informed by VCR in AA5 $30.59-70.53/kWh	a) Technical Rule Section 2 < 2.9 b) NQRS Clause 9 (So far as is reasonably practicable) c) Clause 13 Customer average incident duration (CAIDI).	WEM Rules	N-1 matches WERM 3.4.2. WEMR3.2A requirement to interface between WP and AEMO
Distribution	N-0 N-1 after manual switching TR allows for VCR.	a) Technical Rule Section 2 b) NQRS Clause 9 (So far as is reasonably practicable) c) Clause 13 Customer average incident duration (CAIDI).	a) NQRS Clause 10-11 b) Customer notice and permitted outage duration	As is reasonably practical in NQRS Clause 9 aligned with industry standards in TR NQRS Section 11 allows for outages consistent with N-1 after manual switching. Country N-0 in context of ALARP?
Load	Customer driven	Technical Rule Section 3 WA Electrical Requirement	WEM Rules for DSM and Cyclic Load Shedding	WAER largely related to safety with minor exceptions in 7.2 DSM to specific customers only. TR Part 3 to deliver Part 2 / Technical Envelope
Alignment	Reasonable alignment on deterministic. Probabilistic alignment to be confirmed in next stage	Alignment with NQRS as planning standards are reflective of reasonable. deltas between WERMR and TR	Installed infrastructure is used to maintain supply at the defined quality in a manner remains operational for credible system disturbances	Clear and unambiguous guidance to those planning, investing