ST PASA Replacement – Workshop 1

Reserve Framework – Declarations & Notices – PASA Reporting

17 December 2025

1. Welcome & Objectives

Ulrika Lindholm (AEMO)

We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country; and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have delivered its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation - a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Read our RAP

General Housekeeping

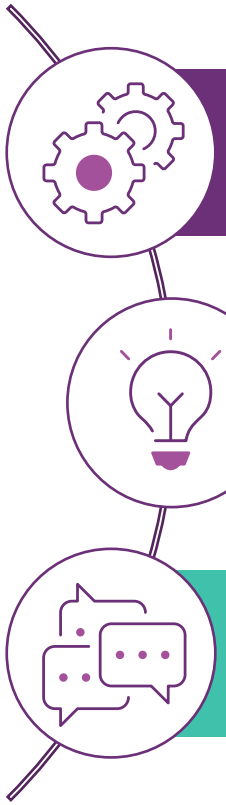
1. Please mute your microphone when not speaking.
2. We look forward to your feedback and questions. Questions are welcome throughout the session, either in the chat or by raising a virtual hand.

3. In attending this meeting, you are expected to:
   - Contribute constructively.
   - Be respectful, both on the call and in the chat.

4. We will share these slides and publish at the AEMO website.

Participants are asked to familiarise themselves with AEMO's Competition Law Meeting Protocol as outlined in on the following page and at AEMO's website.

Objectives for participants



- Provide an understanding of scope and timing of upcoming ST PASA Replacement consultation (Consultation 2)
- An opportunity to share insights and seek clarification
- Provide information about how to get involved in the consultation process

Agenda

#	Time (AEDT)	Topic	Presenters
1	1:00pm – 1:10pm	**Welcome & Objectives**	Ulrika Lindholm
2	1:10pm – 1:20pm	**Context & Recap**	Leanna Tedesco & Brian Nelson
3	1:20pm – 2:50pm	**Matters for consultation** • PASA Reporting • Reserve Framework • Market Information and Notices	 • Ross Gillett • Brian Nelson • Sujeewa Rajapakse
4	2:50pm –3:00pm	**Next steps & Close**	Ulrika Lindholm
Appendix		AEMO Competition Law - Meeting Protocol	

"Please note that this meeting will be recorded by AEMO and may be accessed and used by AEMO for the purpose of compiling minutes. By attending the meeting, you consent to AEMO recording the meeting and using the record for this purpose. No other recording of the meeting is permitted"

2. Context & Recap

Leanna Tedesco & Brian Nelson (AEMO)

Background

- Why change? Several recent incidents went beyond current ST PASA capability:
  - Bushfires in Dec ‘19 & Jan ‘20
  - Landslide in Tasmania Oct ‘22
  - A number of complex VIC/SA separations
- AEMO is undertaking two procedure consultations, the first is complete, the second will commence early next year

Proposed approach: Consultation 2

Consultation objective: to establish new reserve level declaration guidelines, and to make consequential amendments to the spot market operations timetable and procedure changes identified in prior consultations and testing.

Publish consultation paper (proposal)	**Early-mid January 2026**
Written feedback on consultation paper submission date	20 business days
Publish draft report	**Early April**
Written feedback on draft report submission date	20 business days
Publication of final document	**Early July**

Proposed workshop dates

Target audience: NEM industry participants and stakeholders who are impacted by reserve level declaration guidelines and related operational procedures.

Workshop		What is addressed at the workshop
#	Date, time (AEDT)	
1 (2 hrs)	17 Dec, 1-3pm	**Participant outputs** - what information we publish for zones/regions/aggregate
		LOR framework - zonal aggregation of outputs and application to regional declaration of conditions
		Market Information & Market Notices - communicating conditions to participants
2 (1.5 hrs)	10 Feb (TBC)	**Technical review of engine features, focusing on BDU energy modelling**
3 (2hrs)	10 Mar (TBC)	**Uncertainty modelling results -** backcasting results workshop

Placeholders for workshops 2 and 3 will be sent at commencement of consultation. For additional registrations, please contact NEMReform@aemo.com.au. Participants can expect to receive consultation notices via NEM Reform mailbox and regular AEMO communications channels.

RECAP: Current vs New PASA

Feature	Current PASA	New PASA
Objective	Dispatch generation that maximises supply to a region without forcing other regions into deficit	Dispatch generation that simultaneously meets demand at each load node across NEM at least cost, based on bid information (like NEMDE)
Subject to	n-1 security constraints for predefined network configurations (**transmission** contingencies only)	n-1 security constraints for any network configuration and set of contingencies (**transmission** and **generator contingencies**)
Uncertainty	Applied to output (FUM)	Applied to inputs (Demand, VRE Gen, Schedule Gen)
Demand	50% POE demand for each region	50% POE demand + uncertainty margin - grid losses, disaggregated for each load node
Supply	Max Avail or UIGF	(Max Avail or UIGF) - uncertainty margin - aux load
Network	Region-based, network not explicitly modelled; thermal constraints pre-defined	Full Network Model (FNM); PASA automatically creates thermal constraints based on current topology, losses modelled explicitly
Reliability Measure	Region Reserve = Region Generation + Import - Region Demand	Deficit = (Demand + Losses) – Generation, reported in the data model at zonal and regional level.
Reserve Condition Declared	When reserves are less than the defined threshold reserve level, adjusted for FUM	When a Region supply deficit is reported in Warning, Reliability or Base Run. Worst case is reported (Base is worse than Reliability, which is worse than Warning). Zonal shortfalls notified separately as forecast load shedding.
Other Models	Simplified Energy Storage management (no load side modelled) Manual RERT/PASA Availability Recall Bid Prices not used WDR modelled	Enhanced Energy Storage management Automated RERT/PASA Availability Recall Bid prices used WDR not explicitly modelled

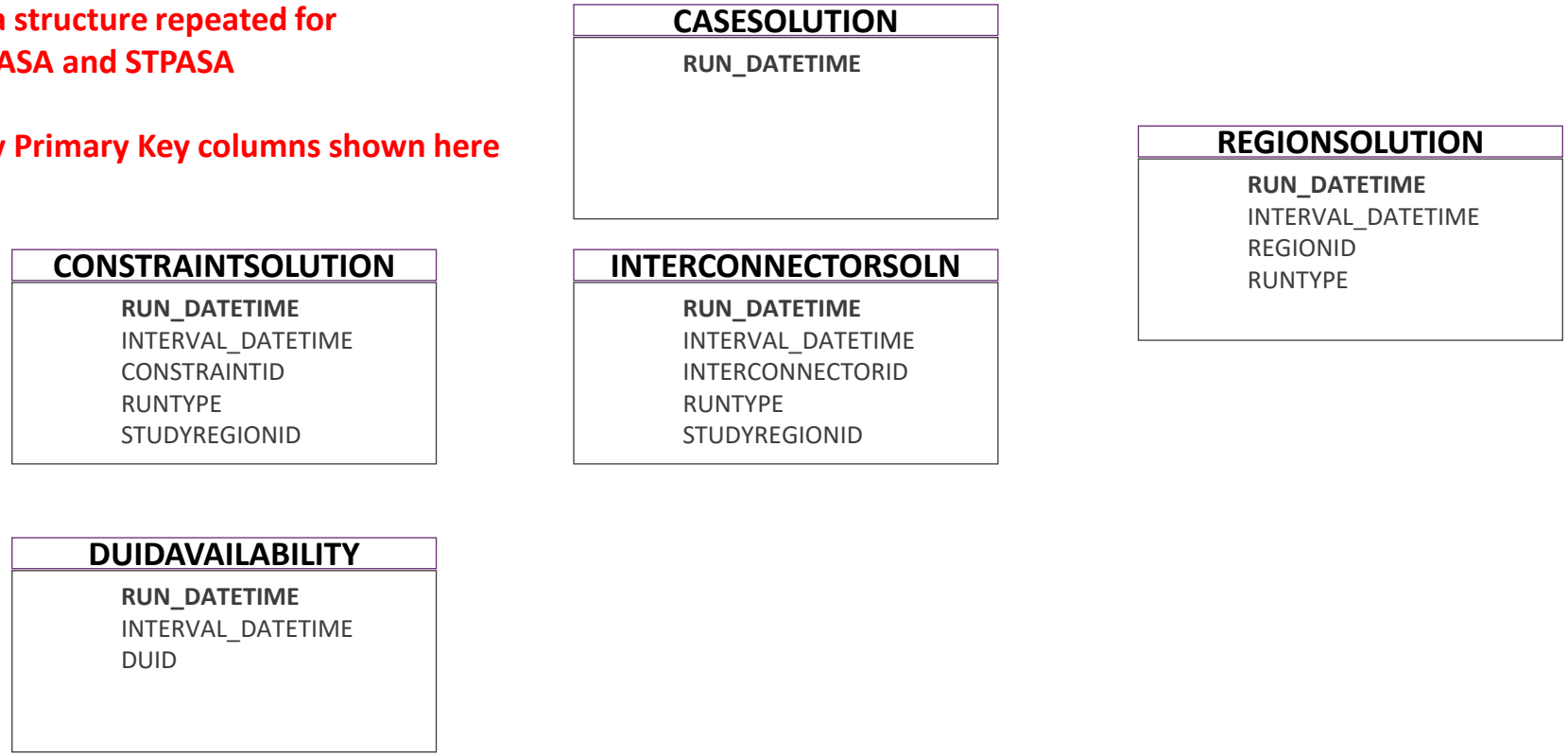
3. Matters for consultation

Brian Nelson, Sujeewa Rajapakse & Ross Gillett (AEMO)

PASA Reporting

Current PASA Data Model

- **Data structure repeated for PDPASA and STPASA**
- **Only Primary Key columns shown here**



New PASA Data Model (proposed)

- Data structure repeated for PDPASA_FNM and STPASA_FNM
- Coexists with current PASA data model
- Only Primary Key columns shown here

CASESOLUTION
- **RUN_DATETIME**

CONSTRAINTSOLUTION
- **RUN_DATETIME**
- INTERVAL_DATETIME
- CONSTRAINTID
- RUNTYPE

INTERCONNECTORSOLN
- **RUN_DATETIME**
- INTERVAL_DATETIME
- INTERCONNECTORID
- RUNTYPE

DUIDAVAILABILITY
- **RUN_DATETIME**
- INTERVAL_DATETIME
- DUID

INTERZONAL_MAPPING
- **INTERZONALID**
- EFFECTIVEDATE
- VERSIONNO

INTERZONALSOLUTION
- **RUN_DATETIME**
- INTERVAL_DATETIME
- INTERZONALID
- RUNTYPE

REGIONSOLUTION
- **RUN_DATETIME**
- INTERVAL_DATETIME
- REGIONID
- RUNTYPE

REGIONSUMMARY
- **RUN_DATETIME**
- INTERVAL_DATETIME
- REGIONID

ZONESOLUTION
- **RUN_DATETIME**
- INTERVAL_DATETIME
- ZONEID
- RUNTYPE

ZONESUMMARY
- **RUN_DATETIME**
- INTERVAL_DATETIME
- ZONEID

ZONE_REGION_MAPPING
- **ZONEID**
- EFFECTIVEDATE
- VERSIONNO

PASA_CONTINGENCY_DEFINITION
- **CONTINGENCYID**
- EFFECTIVEDATE
- VERSIONNO

New Run-based tables

New Standing data tables

Compared to current PASA Data Model:

- REGIONSOLUTION split into SOLUTION (outputs) and SUMMARY (inputs)
- ZONAL & INTERZONAL tables added
- MAPPING & CONTINGENCY standing data tables added

New PASA Data Model (proposed)

- New PASA data will report on both Regional and Zonal basis
  - “PDPASA_FNM” & “STPASA_FNM” reports & associated Participant Data Model (PDM) tables
    - Coexist with current PDPASA & STPASA reports and tables during parallel operation
  - REGIONSOLUTION, ZONESOLUTION tables:
    - Aggregate PASA solutions for each Run Type
  - REGIONSUMMARY, ZONESUMMARY tables:
    - Worst LOR Condition, Deficit Condition across all Run Types
    - Aggregate PASA inputs that do not change by Run Type - avoids repeating same data for each Run Type if in the SOLUTION table
  - INTERZONALSOLUTION table
  - ZONE_REGION_MAPPING & INTERZONAL_MAPPING standing data tables, to support Zonal tables above
  - PASA_CONTINGENCY_DEFINITION standing data table, to provide plain English description of contingency referred to in automatic constraints
- Key upcoming participant milestone:
  - 19 Dec 2025: Draft Data Model 5.7 Technical specification released

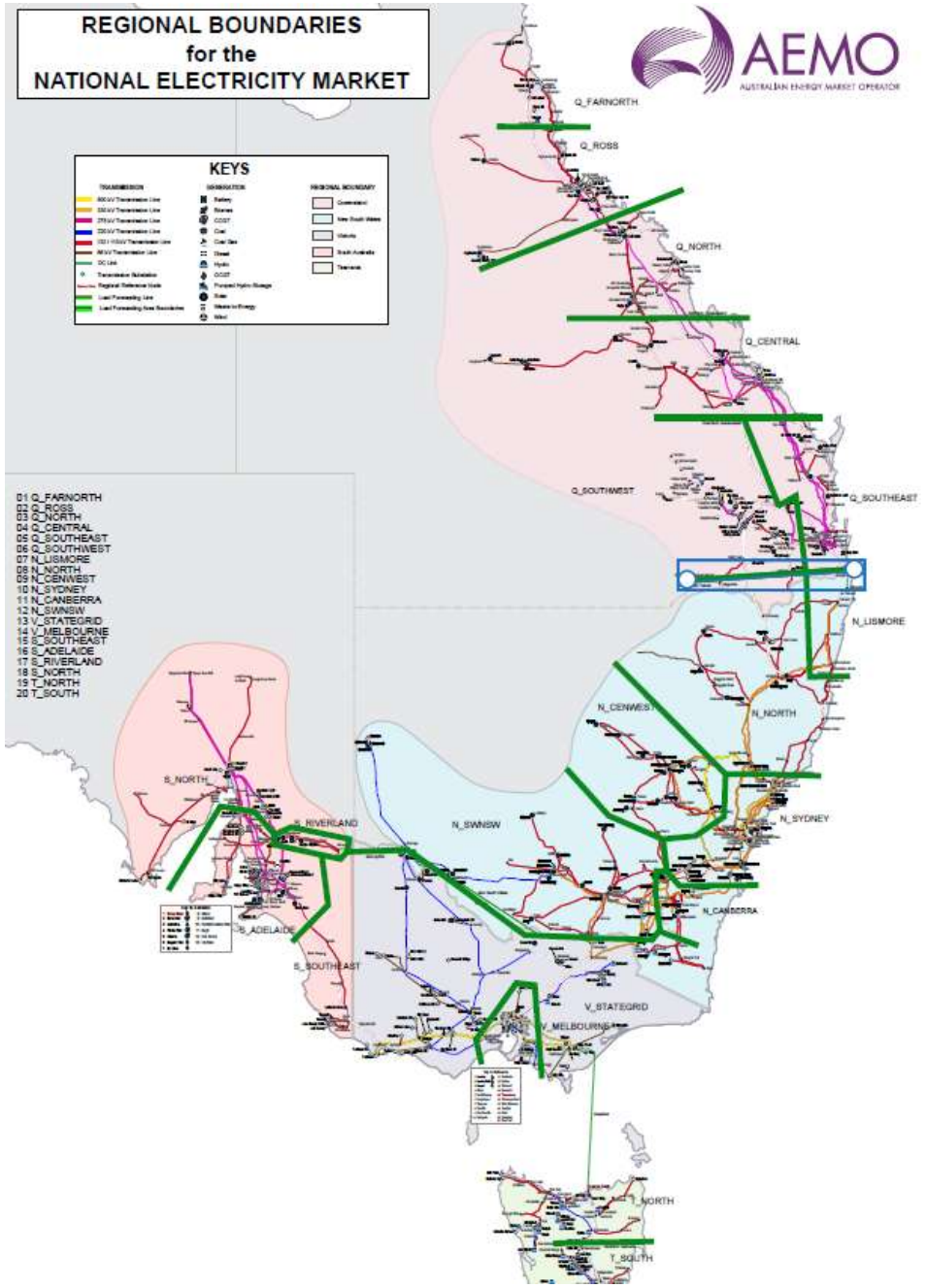
Seeking feedback on …

- Split single Region Solution report into Region/Zone Solution (outputs) & Region/Zone Summary (inputs + worst LORCONDITION, DEFICITCONDITION)
  - Need to continue publishing raw aggregated inputs?
- **CASESOLUTION:**
  - Removal of CAPACITYOBJFUNCTION
- **REGIONSOLUTION:**
  - Removal of CALCULATEDLOR1LEVEL, CALCULATEDLOR2LEVEL , LCR2, LCR
  - Removal of WDR
- **INTERCONNECTORSOLN:**
  - Removal of CALCULATEDEXPORTLIMIT, CALCULATEDIMPORTLIMIT, EXPORTLIMITCONSTRAINTID, IMPORTLIMITCONSTRAINTID
- **DUIDAVAILABILITY**:
  - Addition of bid version data
- Need for ZONE_REGION_MAPPING and INTERZONAL_MAPPING tables
- General comments on new columns and tables

Reserve Framework

Nodes, zones and regions

- The ST PASA engine will be “nodal”, with a detailed model of the NEM transmission system.
- Results will be represented as
  - Zones (20) to allow communication of local deficits due to power system security.
  - Regions (5) to apply the NER reliability framework for declaration of lack of reserve conditions.



Effective connection points

- The Reliability Panel has established guidelines for management of electricity supply shortfall events.
- Under the guidelines
  - An effective connection point is a connection point at which continued load reduction is effective in reducing the supply shortfall, taking into account network constraints at all times.
  - Involuntary load shedding across regions is implemented in an equitable manner.
- The ST PASA replacement will support the guidelines by:
  - Notifying zonal supply deficits in zones that contain any node that has reported a supply deficit (a security-related deficit)
  - Declaring lack of reserve conditions in zones that contain a RRN (a reliability-related deficit – 'RRN zones')

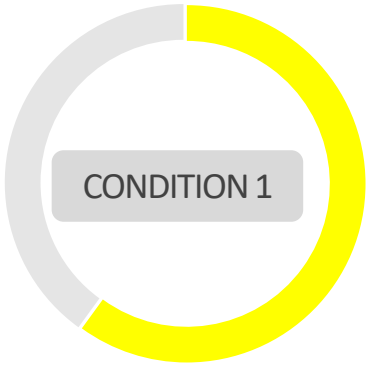
Three Run Types

Reserves in the National Electricity Market (NEM) refer to spare capacity – they indicate the difference between available capacity that could be used to supply energy and the level of energy demanded at a particular point in time.

The Reserve Level Declaration Guidelines (RLDG) must specify at least three probability levels at which AEMO will declare LOR

(Clause 4.8.4A(3), National Electricity Rules).

The declaration of lack of reserve conditions is a key mechanism by which AEMO communicates the short-term risk of involuntary load shedding (the need to reduce or disconnect load from the power system) to the market.



'Warning' run - forecasting probability of shedding load after occurrence of a credible contingency using higher Uncertainty Margins than the other runs.

'Reliability' run - forecasting probability of shedding load after occurrence of any credible contingency. AEMO may intervene if there is no market response to alleviate this condition.

'Base' run - forecasting probability of shedding load without any credible contingency occurring. AEMO may intervene if there is no market response to alleviate this condition.

Comparison with current LOR framework

Current ST PASA		Proposed System	
Current LOR Conditions	Intervene in the market	**Proposed LOR Conditions**	Intervene in the market
LOR 1 – the threshold for an LOR1 is determined by the larger value of either the FUM or the sum of the two largest credible risks in the region.	No	CONDITION 1 – supply not adequate to meet demand if there is a largest credible risk (subject to secure limits) 50 POE forecasts with high uncertainty margin	No
LOR 2 – the threshold for an LOR2 is determined by the larger value of either the FUM or the largest credible risk in the region.	Yes (if required)	CONDITION 2 – supply not adequate to meet demand if there is a largest credible risk (subject to secure limits) 50 POE forecasts with moderate uncertainty margin	Yes (if required)
LOR 3 – the threshold for an LOR3 condition is when the forecast reserve for a region is at or below zero.	Yes (if required)	CONDITION 3 – supply not adequate to meet demand (subject to satisfactory limits) 50 POE forecasts with moderate uncertainty margin	Yes (if required)

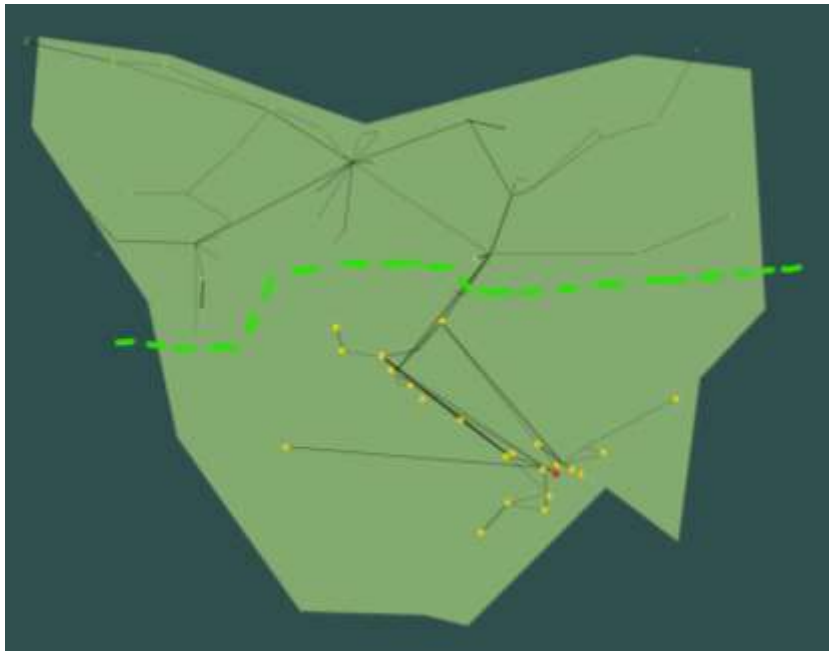
Examples: Regional vs Zonal Cases

- Two zones in Tasmania: T_SOUTH & T_NORTH

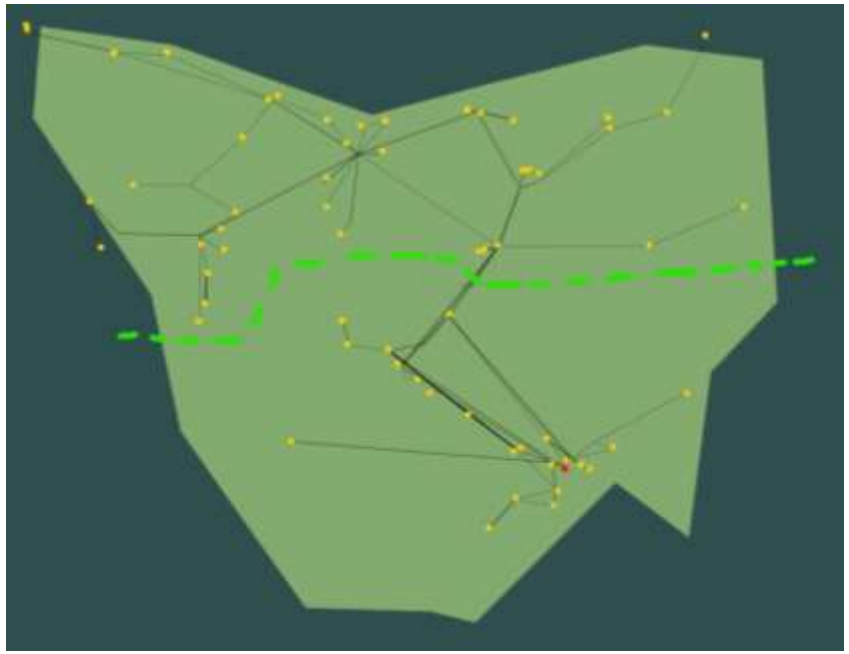
Case	Scope of Shortfall
Deficits in south only due to congestion	Zonal
Deficits in north and south due to low supply	Regional (as RRN included)

Examples: Regional vs Zonal Cases (2)

- Deficit isolated to Southern Tasmania, no reserve condition
- Involuntary load shedding notified if likely.



- North and South deficits
- Lack of reserve condition declared



Matters for consultation

- Framework consistency with the NER reliability framework
- Suitability of congestion-based zones for aggregating and reporting shortfalls
- Application of ‘RRN Zones’ to regional reserve conditions declarations
- Views on maintaining or changing the current ‘LOR’ naming convention for declarations

Market information and market notices

Market Information from new PASA

- Published through existing channels: data model, NEM reports and website

Consultation proposal, open for consultation and iteration based on stakeholder feedback:

- Market notice based on Forecast Warning run deficit in 1400 hr run will be published (similar to LOR1 forecast).
- Forecast Reliability or Base run → issue market notice seeking market response and/or network (TNSP to reschedule planned outage) response

Publication of Market Notices

Currently:

- LOR conditions declared via market notices
- Raw PASA data available on website portal

https://data.wa.aemo.com.au/public/market-data/st-pasa/

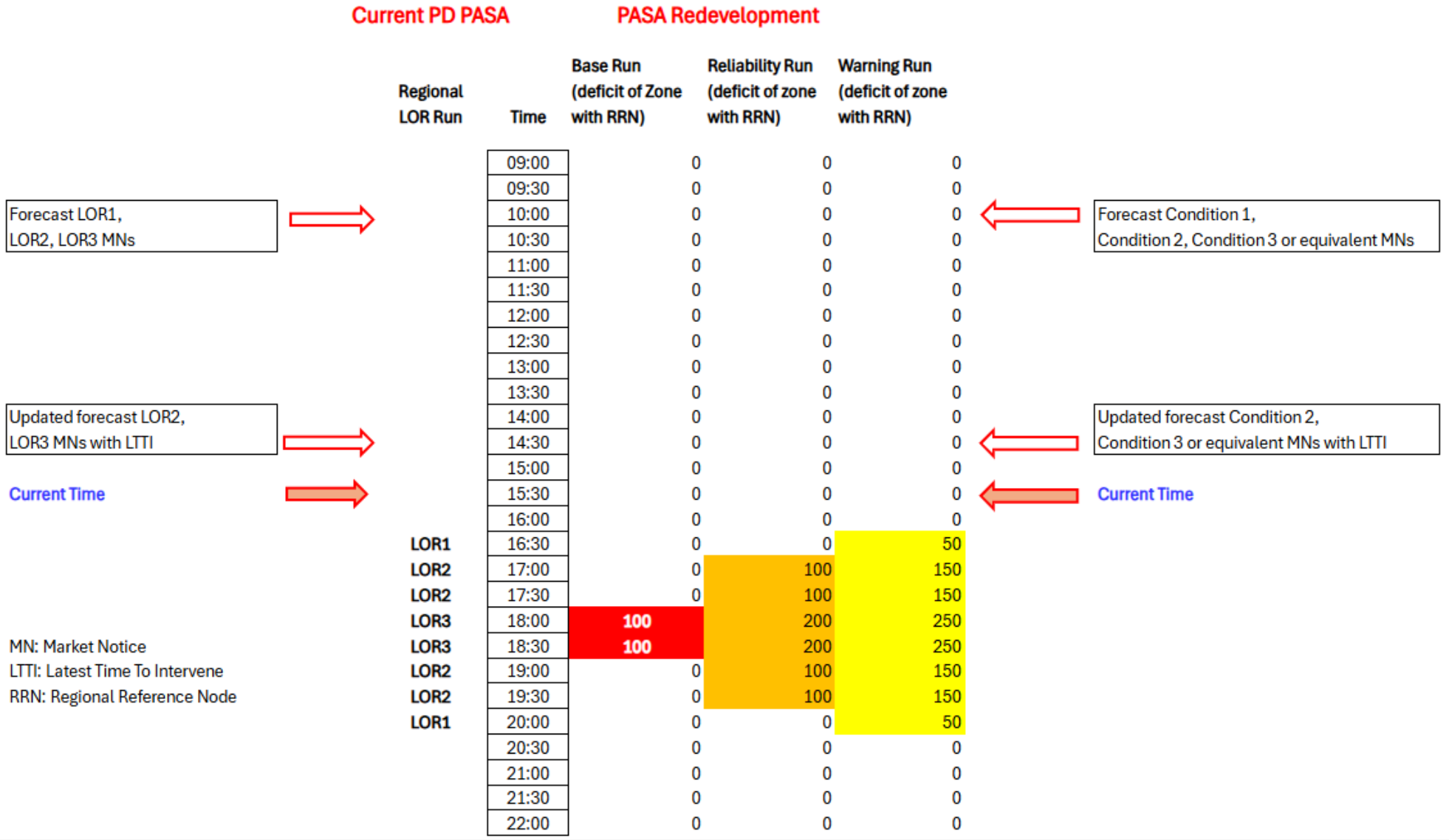
In New PASA:

- Based on applying the current approach to **Regions**
  - Regional deficits reported as reserve conditions
- Zonal deficits reported as forecast supply deficit or actual involuntary load shedding

Updates to Market Notices

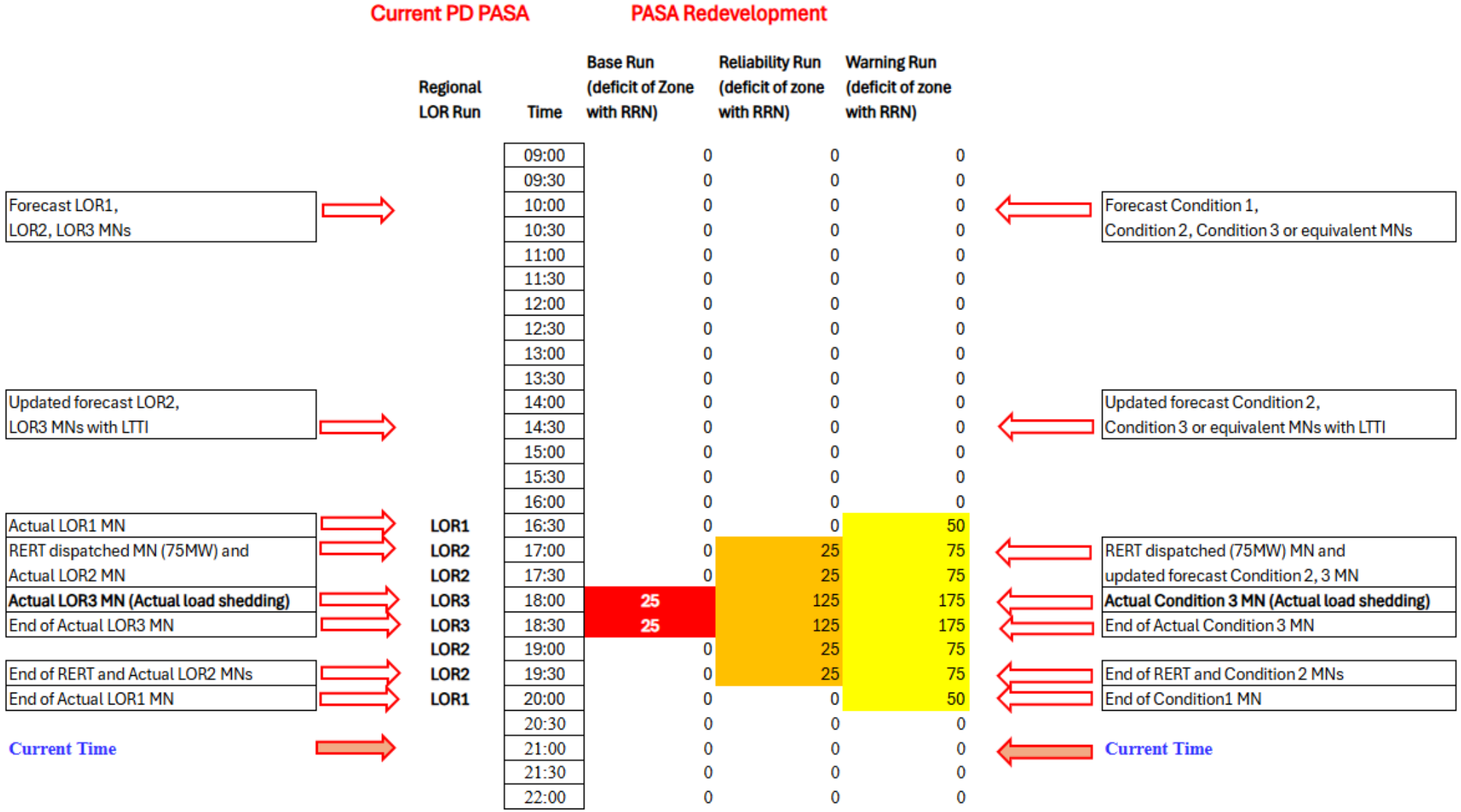
- Updates and Cancellation of reserve conditions to follow existing processes.

Comparison of Market Advice – 1



Regional LOR Run	Time	Base Run (deficit of Zone with RRN)	Reliability Run (deficit of zone with RRN)	Warning Run (deficit of zone with RRN)
	09:00	0	0	0
	09:30	0	0	0
	10:00	0	0	0
	10:30	0	0	0
	11:00	0	0	0
	11:30	0	0	0
	12:00	0	0	0
	12:30	0	0	0
	13:00	0	0	0
	13:30	0	0	0
	14:00	0	0	0
	14:30	0	0	0
	15:00	0	0	0
	15:30	0	0	0
	16:00	0	0	0
LOR1	16:30	0	0	50
LOR2	17:00	0	100	150
LOR2	17:30	0	100	150
LOR3	18:00	100	200	250
LOR3	18:30	100	200	250
LOR2	19:00	0	100	150
LOR2	19:30	0	100	150
LOR1	20:00	0	0	50
	20:30	0	0	0
	21:00	0	0	0
	21:30	0	0	0
	22:00	0	0	0

Comparison of Market Advice – 2



Matters for consultation

- Should AEMO further distinguish between ‘forecast’ and ‘actual’ conditions
  - If so, clarify the criteria for each
- Process for declaring conditions or notifying zonal deficits.
- Frequency of notices – initial, updates, cancellation
- Clarity of the proposed market notices

4. Next steps & Close

Ulrika Lindholm (AEMO)

Next steps for Consultation 2

STAGE	DATES	RESPONSIBLE
Consultation workshop 1	17 December 2025	AEMO
Early feedback on PASA reporting changes	15 January 2026	Participants
Publish consultation paper	Mid January 2026	AEMO
Consultation workshop 2	10 February 2026 (TBC)	AEMO
Feedback period on consultation paper closes	(20 business days)	Participants
Consultation workshop 3	10 March 2026 (TBC)	AEMO
Draft report published, including draft Procedure	Early April	AEMO
Feedback period on draft report closes	(20 business days)	Participants
Final report and updated Procedures published	Early July	AEMO

AEMO invites participation in the upcoming consultation and workshops.

- Your feedback is essential, and the consultation paper (and this presentation) outlines key areas for industry to consider.
- Please provide your feedback via nemreform@aemo.com.au within the timeframes indicated above.
- Feedback will inform the draft report where appropriate.

Implementation & Industry readiness

AEMO has included the remaining scope of ST PASA Replacement into the NEM Reform Implementation Roadmap and NEM Reform Program collaboration to enable market participants to have an integrated view of industry change.

While Consultation 2 is progressing, AEMO is also working to provide industry with updated delivery timings and industry readiness approach for this initiative as part of ongoing NEM Reform collaboration, indicatively by January 2026.

NEM Reform Program - How to get involved

Forums	Forum focus	Cadence	Approach
Executive Forum	Program overview and status update	3 per Year	Nomination
Reform Delivery Committee (RDC)	Long term implementation planning	3-4 per Year	Nomination
Program Consultative Forum (PCF)	Inflight initiatives status & co-ordination	Monthly	Open
Implementation Forum	Implementation of reforms	Monthly	Open
Electricity Wholesale (EWCF) & Electricity Retail (ERCF) Consultative Forums	Procedures working groups	Monthly	Open
Industry Testing Working Group	Testing	Monthly	Open
Working Groups	Inflight	As appropriate	As appropriate

Focus / working groups for inflight initiatives include:

- Market Integration Technology Enhancement WG (IDX/IDAM/PC)
- Improving Security Frameworks TNSP WG

To learn more, please visit:

- AEMO | NEM Reform Program Forums
- AEMO | NEM Reform Program Initiatives
- AEMO | Industry Meetings Calendar
- Subscribe to the NEM Reform Newsletter here
- or contact the program at NEMReform@aemo.com.au.

AEMO is transitioning mailbox support for ST PASA Replacement to NEM Reform. The mailbox for STPASAReplacement@aemo.com.au will close in January 2026. Transitional arrangements will be in place in January to ensure continuity in participant support.

AEMO

AUSTRALIAN ENERGY MARKET OPERATOR

For more information visit

- NEMReform@aemo.com.au