2024/25 Summer Readiness

14 November 2024

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

Agenda

2024/25 Summer Readiness :

- Weather and climate
- Electricity and gas system readiness
- Operations emergency readiness

Summer Outlook

1 November 2024 – 31 March 2025

Summer outlook

Improved
Similar or unchanged
Potential to get worse

Impact	West/East	Comparison to average summer
Heatwaves		Similar, above median temperatures are expected for most of Australia.
Bushfire risk		Fire danger is likely to be above average across parts of Queensland and western Victoria from October to December, with the rest of the country having near-average fire risk. The fire danger risk in NSW has reduced compared to the 2023/24 summer outlook.
Widespread flooding		ENSO outlook remains at La Niña Watch, above-median rainfall is likely for the majority of New South Wales, inland Queensland and eastern Tasmania. Western Tasmania and the majority of South Australia and Victoria are expected to experience average rainfalls.
Record max / min demands		Increased likelihood of record minimum electricity demands, presenting operational challenges. Operational procedures are being updated. Reserve shortfalls could arise if higher demand periods coincide with unplanned generation outages and transmission limitations. Similar gas demand levels are expected.
Generation availability		Overall similar synchronous generation availability in the NEM and WEM. NSW, South Australia and Tasmania show minor reductions due to maintenance and mothballing of some plant (South Australia). Increased availability of synchronous plant in Queensland due to return to service of Callide C plant. Additional IBR capacity installed in the NEM and WEM. Similar generation availability in the WEM with new battery storage facilities commissioned at Collie and Kwinana.
Network outages		Volume of High Impact Outages (HIOs) is similar in the WEM. In the NEM, Victoria followed by Queensland are showing significant increases in outage bookings driven by maintenance and project works. Potential for increased planned network outages in NSW and TAS following reduced activity during planned industrial action.
Reliability		The 2024 NEM Electricity Statement of Opportunities (ESOO) identified a forecast reliability gap in NSW, SA and VIC. Similar to the previous season, loss of load probability (LOLP) study shows significant number of days with increased LOLP in the NEM (except for Tasmania). Similar reliability considerations exist within the WEM, depending on generation performance. The 2024 WEM ESOO identified a shortfall against the Reserve Capacity Target (RCT) for 2024-25. Supplementary Capacity is being procured in 2024 to mitigate this residual shortfall risk.
Fuel supply		Coal storage levels are at normal levels in the NEM and WEM. Environmental restrictions for some hydro power stations may arise with increased rainfall forecast on the east coast and reduced rainfall forecast for western Tasmania. Gas storage levels are recovering after winter, however, any increased drawdown to support peak electricity demand will need to be replenished during summer and autumn for winter 2025. Reduced volume of gas production facility maintenance (compared to last season) reduces gas storage refilling risk. In the WEM there is adequate gas supply for the season.
Health of markets		Similar, prudential risks / extreme energy price risks are considered low.

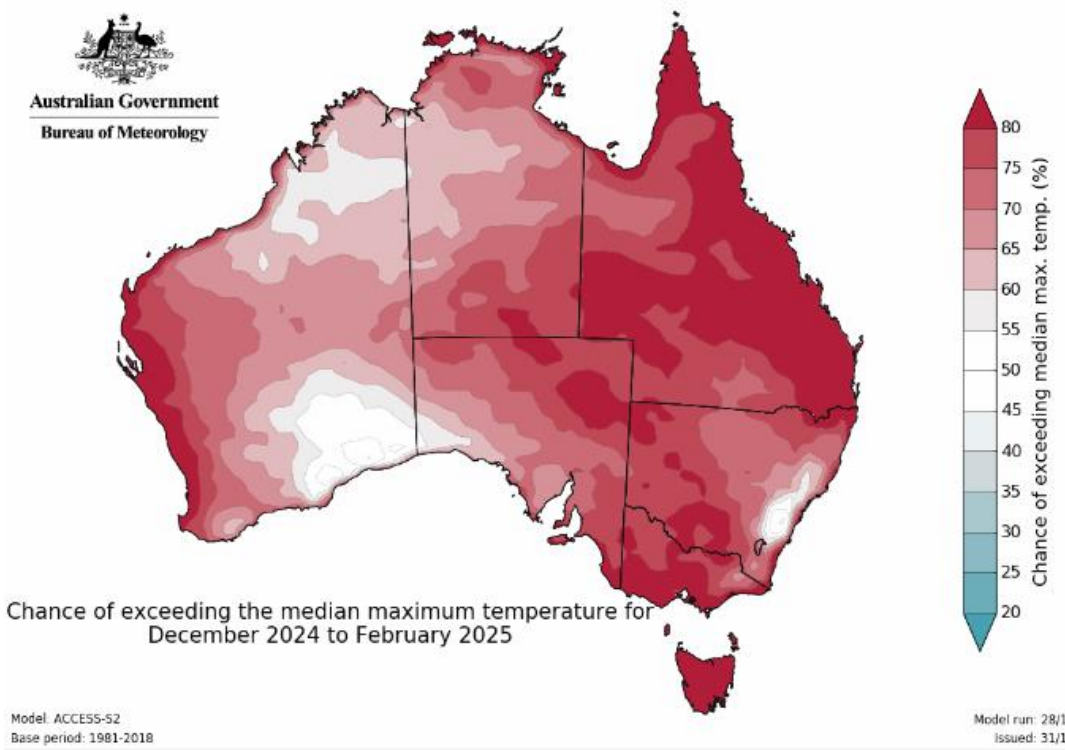
Notes: Summer is defined as the period from 1 November 2024 to 31 March 2025. November is considered summer as part of this assessment due to potential for elevated risk of early declaration of fire danger period and early heatwaves driving high demands. It should be noted that climate model accuracy improves closer to the start of the season, particularly bushfire risk assessment. Information on scheduled generation availability and planned transmission outages are subject to change. Comparison to "average" summer is based on the past 3 summer periods.

Weather and Climate

Climate Outlook

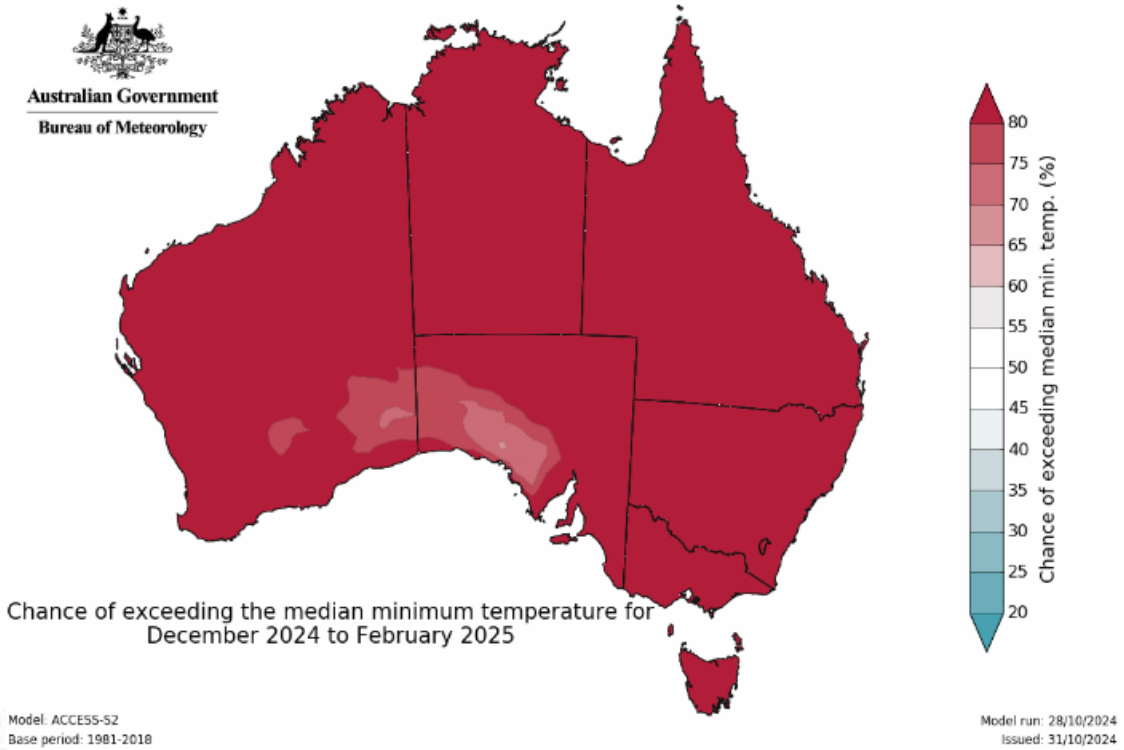
December 2024 to February 2025

Maximum temperatures



Maximum temperatures are likely to be above median for most of the country.

Minimum temperatures



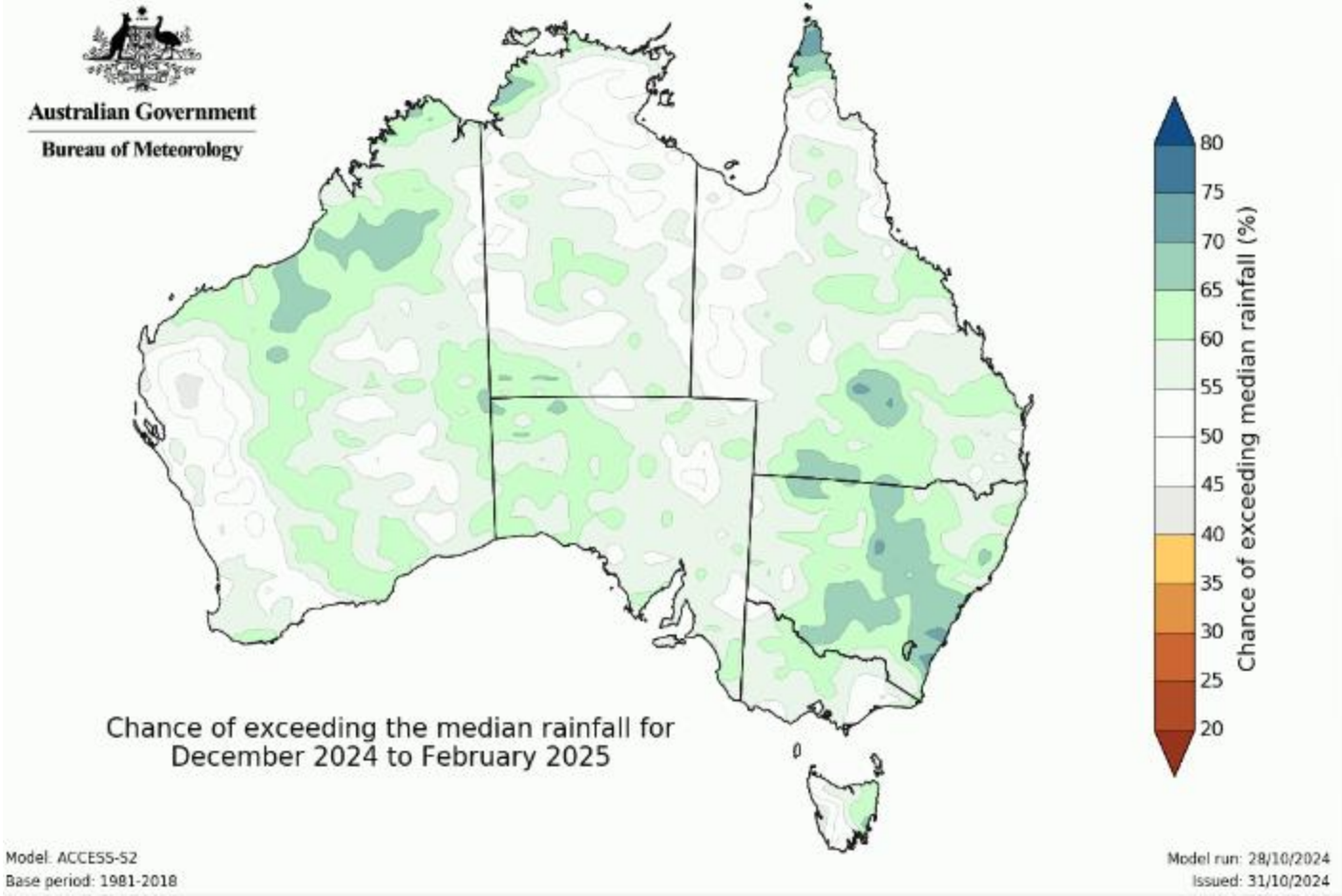
Minimum temperatures are likely to be above median for all of the country.

Climate Outlook

December 2024 to February 2025

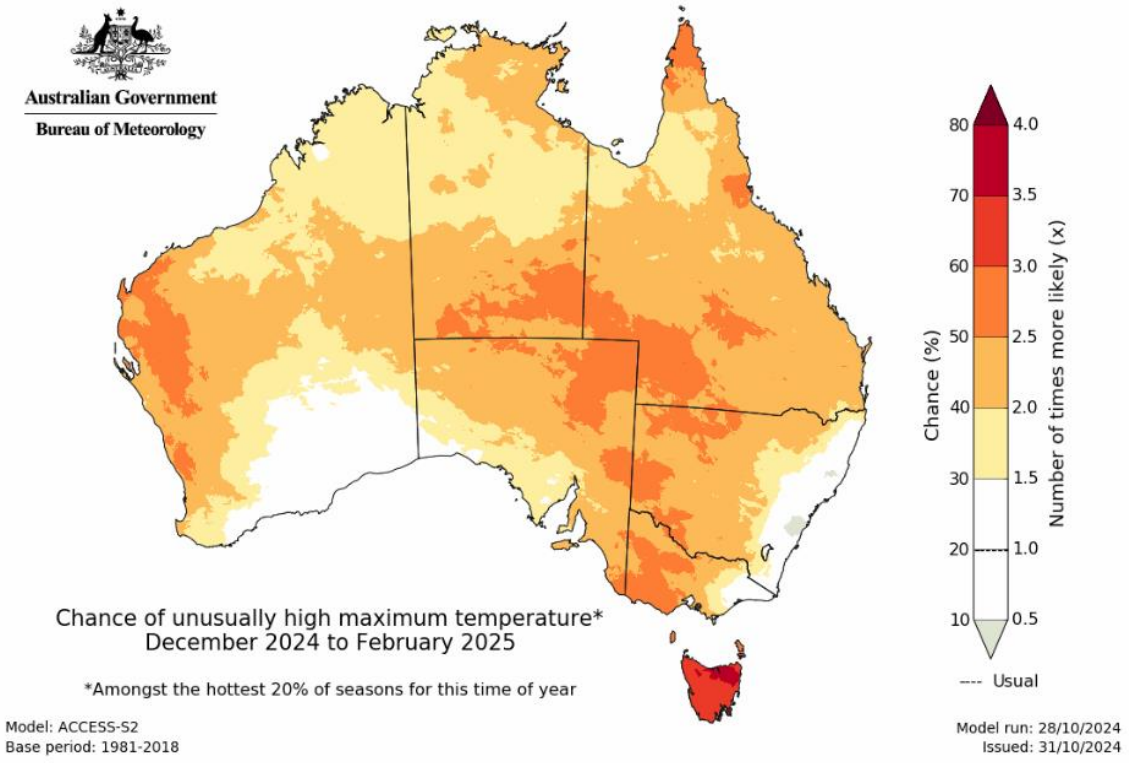
Rainfall

- Above-median rainfall is likely for the majority of NSW, inland QLD and eastern TAS.
- Around median rainfall is likely for western WA, western Tasmania and the majority of SA and Victoria.

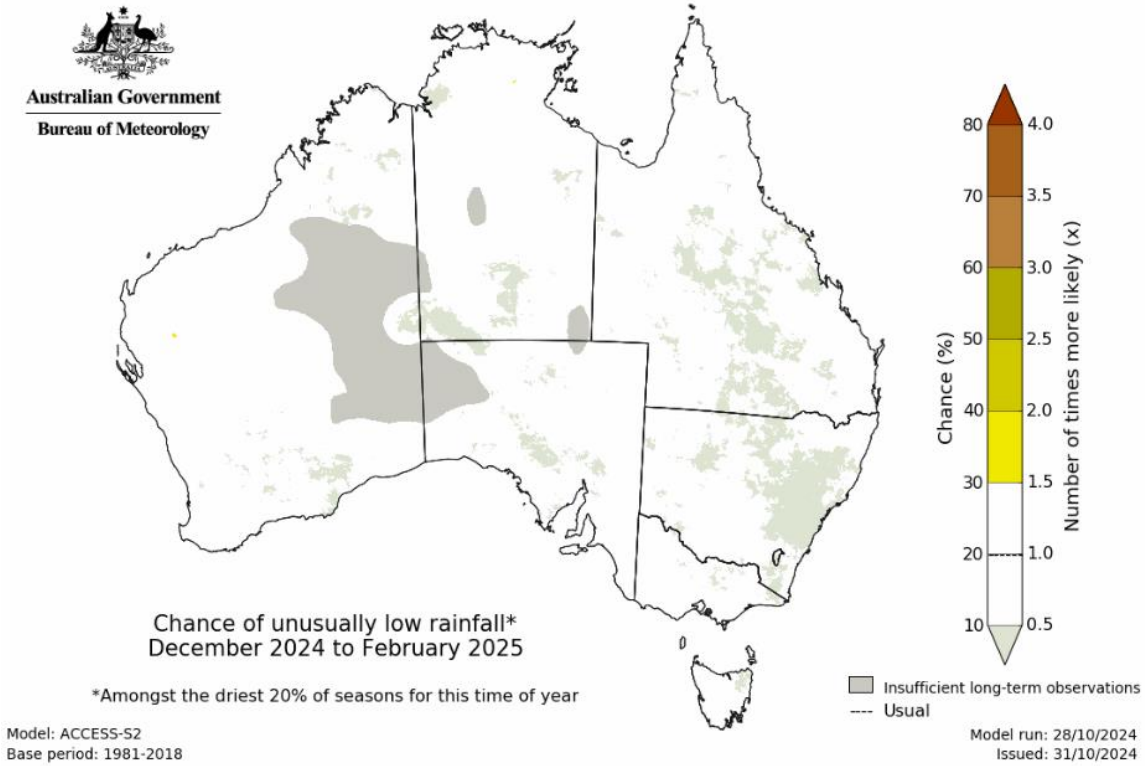


Climate Outlook

December 2024 to February 2025



Likelihood of unusually warm conditions for the majority of TAS, most of QLD and SA and parts of WA, NSW and VIC.



Low likelihood of unusually dry conditions for most of the country.

Electricity System Readiness

Generation Availability

On average, synchronous generation availability is expected to be similar in the NEM compared to summer 2023/24. Increased capacity in the Queensland region (Callide C PS) is offset by reduced capacity in NSW, SA and TAS (such as Lower Tumut PS and mothballing of Snuggery and Port Lincoln power stations in SA). No notable change in VIC. In the WEM, additional BESS capacity is available compared with summer 2023/24.

Major Generator changes

- Coal stockpiles in the NEM and WEM are at normal levels.
- East Coast gas usage will need to be monitored. Supply from Queensland may be required due to gas production maintenance outages.
- In the WEM Muja 6 will be operating in 'reserve outage mode' until its delayed retirement on 1 April 2025.
- Several large generating units are taking planned outages mostly spanning Nov to Dec period:

  QLD: Callide B1, Kogan Creek Power station and Tarong 2 outages.

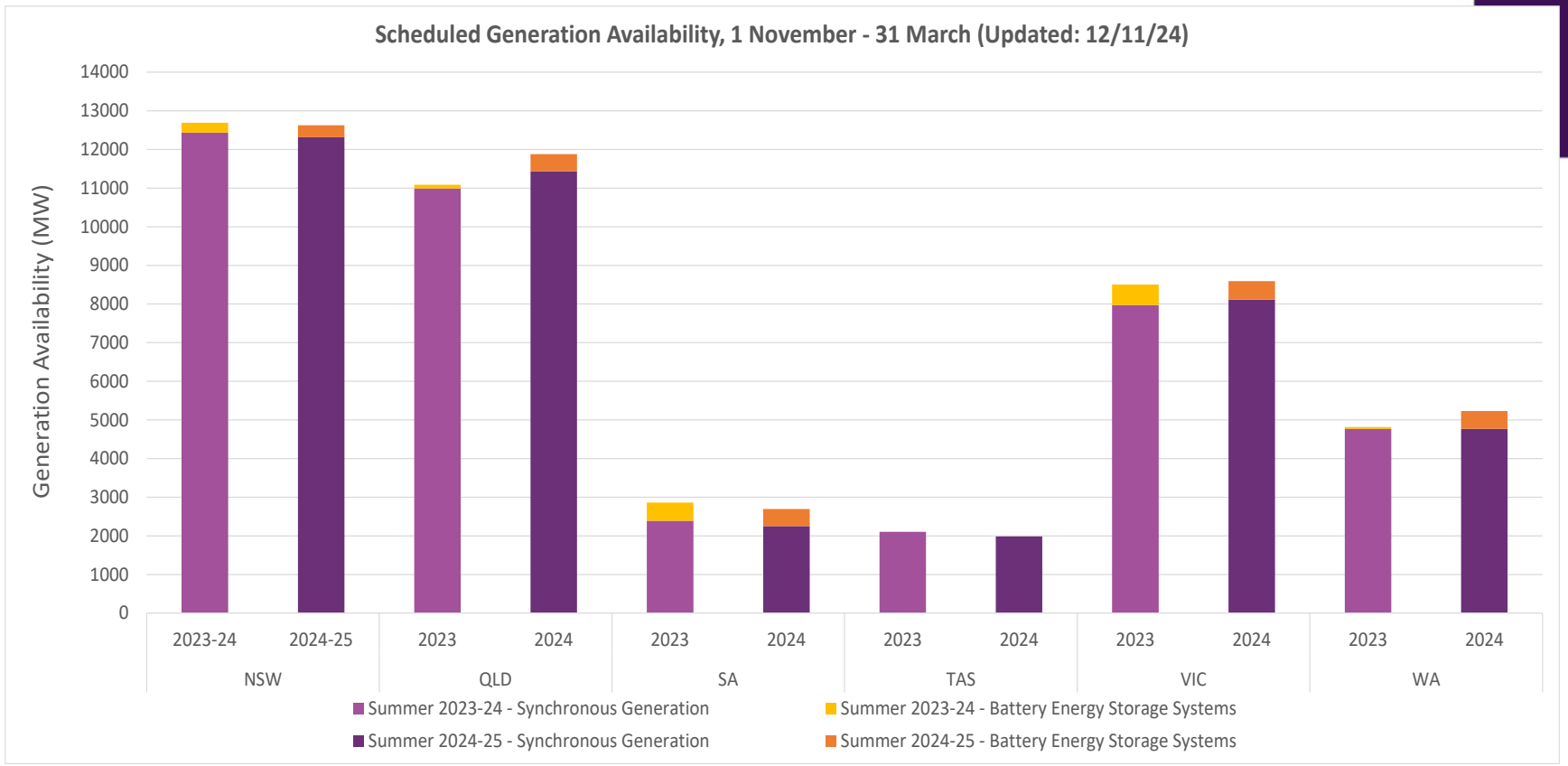
  NSW: Bayswater 2, Eraring 3, Tallawarra A, Vales Point 6 outages and Lower Tumut capacity reduction.

  VIC: Loy Yang A4, Newport, Yallourn 1, Yallourn 4 outages and Murray capacity reduction.

  SA: Torrens Island B4.

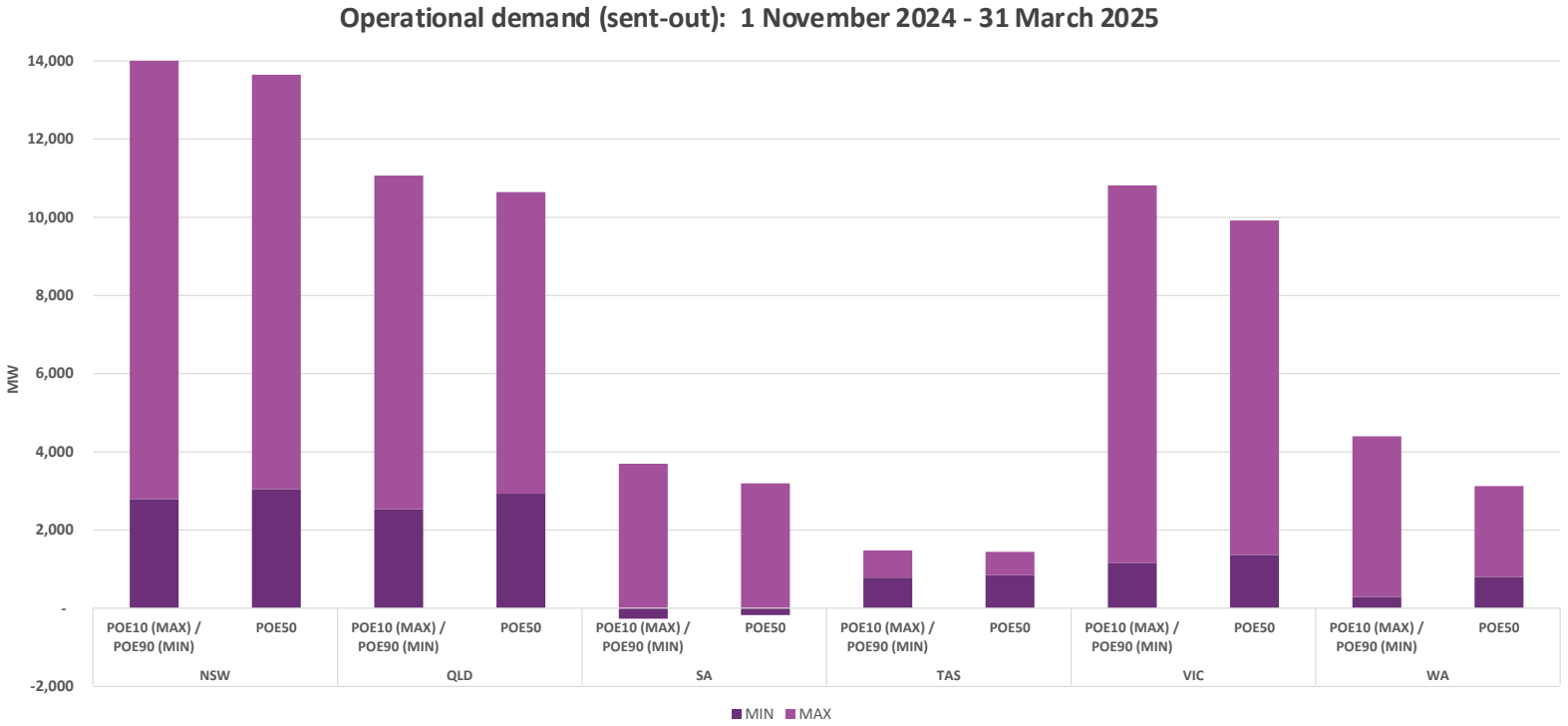
  TAS: Reece 2 and Tribute.

  WA: Pinjar 9 (forced).



Source: MTPASA, analysis includes planned production unit outages.

Operational Demand



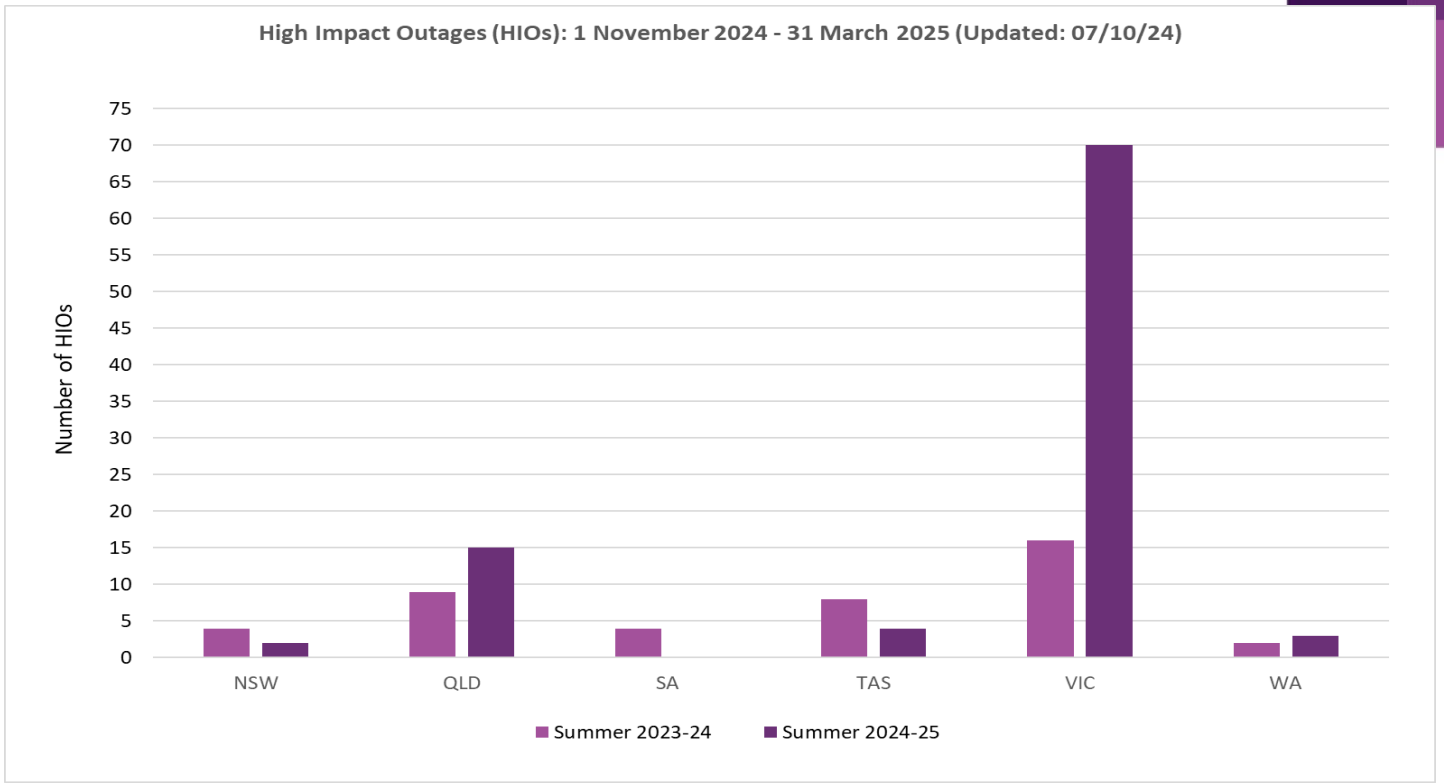
Region	Record Maximum Demand (MW)	Record Minimum Demand (MW)
NEM	35,796 (29/01/09)	10,073 (26/10/24)
NSW	14,744 (01/02/11)	3,121 (26/10/24)
QLD	11,005 (22/01/24)	3,091 (05/10/24)
SA	3,399 (31/01/11)	-205 (19/10/24)
VIC	10,576 (29/01/09)	1,564 (31/12/23)
TAS	1,790 (21/07/08)	732 (21/03/13)
WA	4,233 (18/02/24)	511 (10/11/24)

- There is a possibility of 1 in 10-year maximum demand levels (10% POE - Probability of Exceedance) to occur in the NEM and WEM.
- 10% POE demand combined with periods of low VRE availability and or scheduled generation and network outages could lead to days with increased risk of load shedding. Loss of Load Probability Study on the next slide provides further indication of potential risks.
- Minimum System Load (MSL) risks may arise under some outage conditions, in mainland NEM regions during spring and summer. MSL risks currently not expected in Tasmania and WEM this season. MSL management procedures are in place.
- Underlying demand continues to increase in most regions, with increasing distributed PV reducing the impact on maximum operational demand.

High Impact Outages / Augmentations

- Number of planned HIOs are at similar or reduced levels (compared to previous summer) for most regions, except for QLD and VIC where outage volumes are expected to increase.
- QLD: maintenance/commissioning of 275 kV lines out of Broadsound, Nebo, Ross, Stanwell and Strathmore.
- NSW: maintenance of 330 kV plant in Tamworth area.
- VIC: maintenance/commissioning works of 220kV network at Bulgana, Kerang, Redcliffs and Wemen and 500 kV backbone network at Hazelwood, Moorabool, Rowville, Sydenham, South Morang and Tarrone.
- SA: No HIOs forecast for summer months.
- TAS: maintenance on Gordon – Chapel St and Sheffield – Farrell 220 kV lines.
- WA: Collgar to Yilgarn 220 kV, Neerabup 330 kV Kwinana to Southern Terminal 330 kV lines all are late November to mid December.

Note: HIOs are allowed to proceed if there are no identified system security issues.



Inter-regional augmentations and capacity increases:

- Possible 50 MW increase from NSW to QLD (from 850 MW to 900 MW).
- Possible 50 MW increase from QLD to NSW (from 1400 MW to 1450 MW).
- Possible Project EnergyConnect (PEC) Stage 1 capacity release (up to 150 MW).
- Possible Basslink transfer increases, VIC-TAS up to 478 MW and TAS-VIC up to 594 MW (increases allow short period operation at increased capacity monitored by cable loading prediction system).

Note: capacity increases are dependent on completion of the commissioning tests influenced by prevailing market conditions.

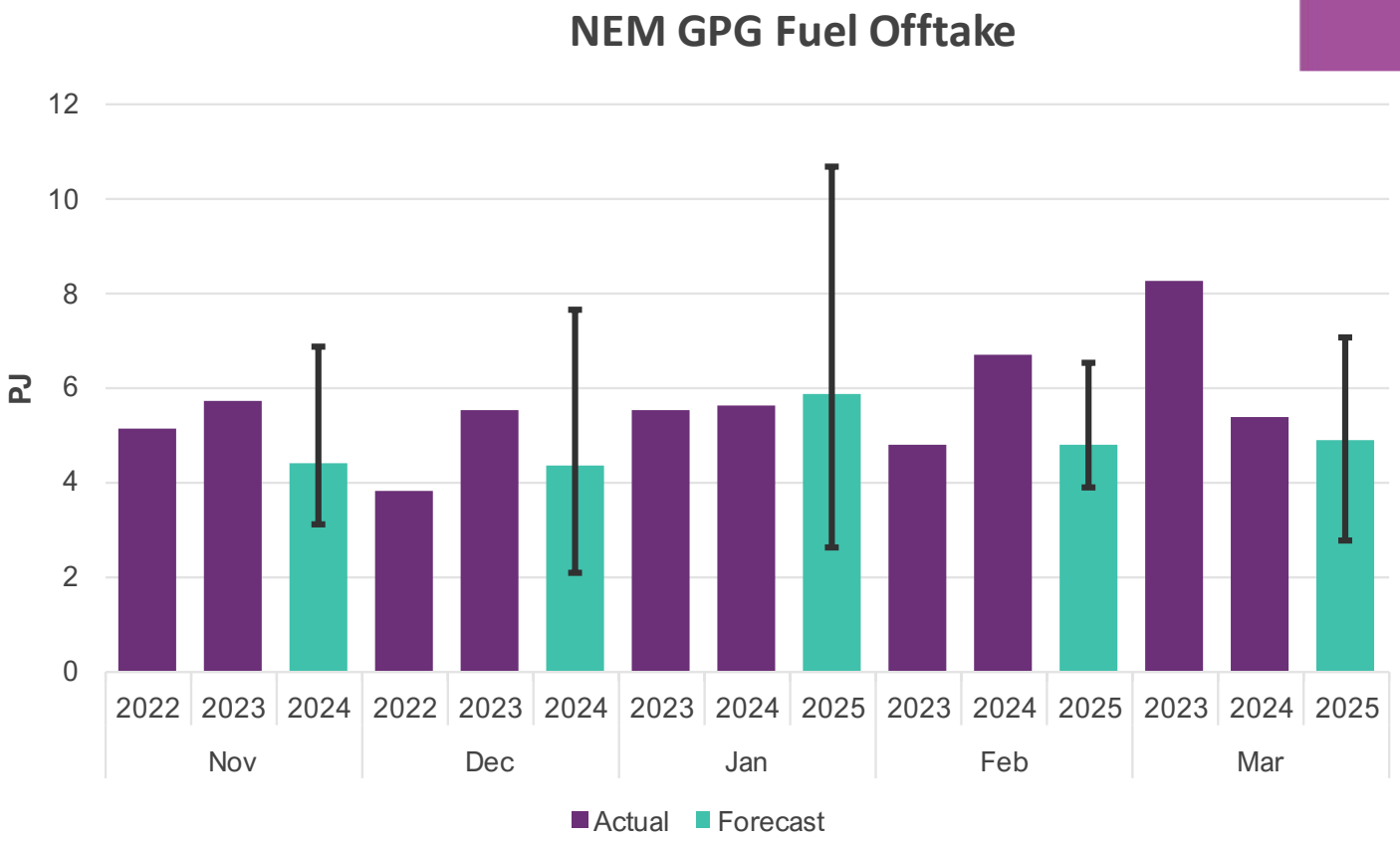
Gas System Readiness

East Coast Gas

- The Longford Gas Plant (the largest gas production facility) undertakes maintenance outages outside of the winter peak demand period. Maintenance this summer is forecasted to have a limited production impact with only a few days of plant capacity at less than 500 TJ/d. This is much less than the three weeks of capacity at under 300 TJ/d at the beginning of this year.
- Regular summer dig-up and inspection maintenance on the Moomba to Sydney Pipeline reduces supply capacity from Queensland during this period. This maintenance can also impact Newcastle LNG storage filling (which commenced refilling on 10 September) as it causes lower pressure in the Sydney gas network.
- Possible high Queensland spot gas supply prices (due to northern hemisphere winter) may result in market participants preferring to use Iona storage gas during periods of reduced Longford production and high GPG demand.
- Refilling of Iona storage inventory is being monitored, as it is every year. AEMO will use its Victorian functions to obtain updated refilling forecast information if required.

GPG Supply Adequacy

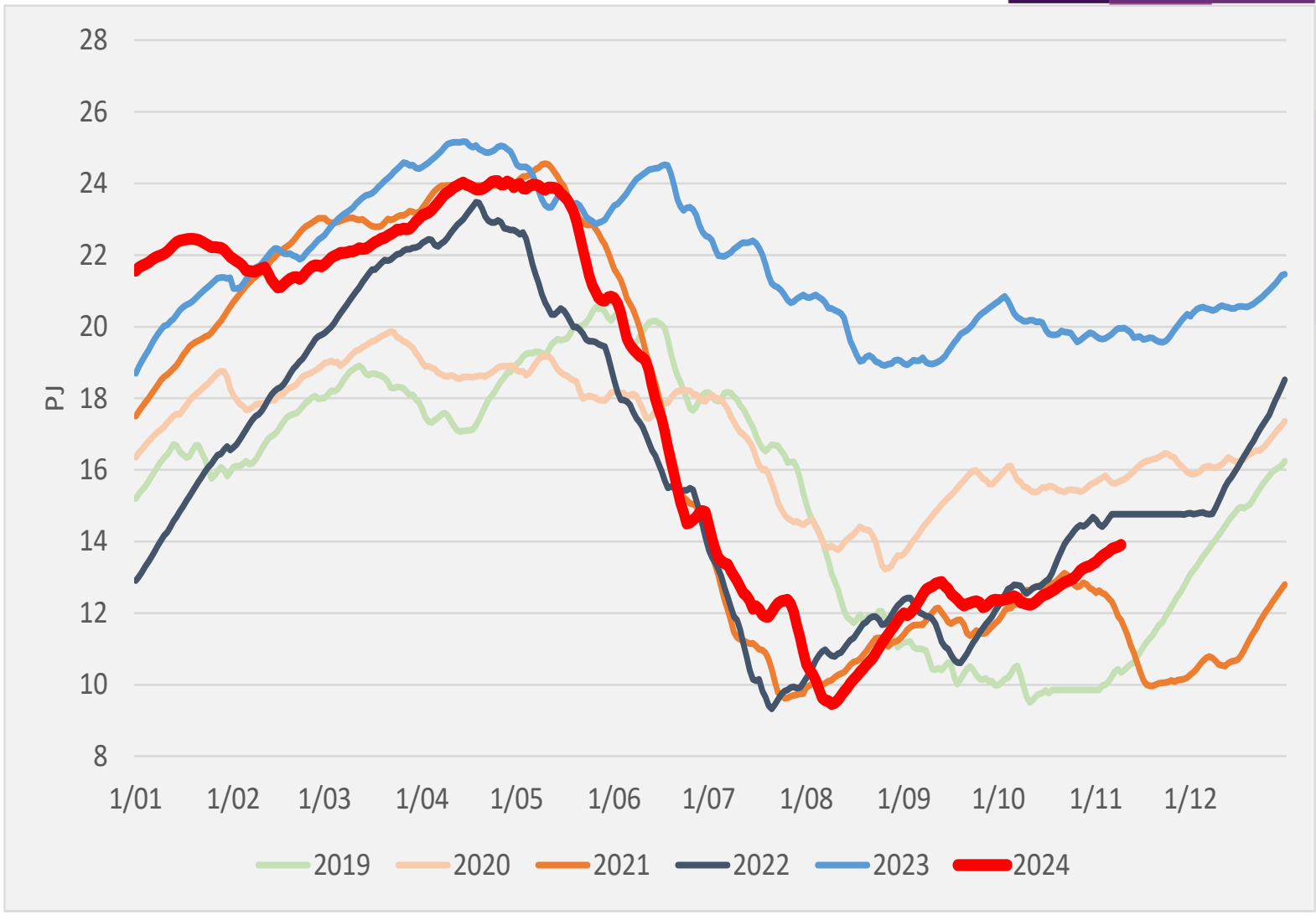
- GPG will be crucial in providing peak generation capacity to the NEM this summer.
- After a particularly cold winter, gas storage levels are low, but refilling is underway, though it still poses a risk.
- With more Variable Renewable Energy (VRE) coming online, there is increased uncertainty around the forecast need for GPG, as this will depend on weather, VRE performance, operational demand and the utilisation of new large-scale battery storage.



Source: AEMO 2024 ISP Step Change scenario

Iona Storage

- Iona storage is at an average level for this time of the year. Refilling has commenced with inventory currently at 13.9 PJ.
- Supply from Queensland has reduced as expected since the start of September with heating demand also reducing.
- Higher Port Campbell production capacity is expected with Otway Gas Plant at or near nameplate capacity.
- This will also be the first summer with the Western Outer Ring Main (WORM) pipeline available, which increases supply capacity to Port Campbell to further support Iona refilling.



West Coast Gas – Draft 2024 GSOO Summary

- AEMO's 2023 WA GSOO forecast up to 11% shortfall between 2024 and 2026, with increasing shortfalls toward the end of the forecast period.
- The draft forecasts for the 2024 WA GSOO, due to be published in December 2024, see near-term shortfalls are likely to be avoided due to:
    - Reduced gas demand in the near-term primarily due to reduced gas consumption from nickel and alumina sectors following announced closures and mothballing of projects.
    - Increased supply from Wheatstone, Waitsia and Pluto along with the progress of Scarborough project and development of Perth Basin supply sources.
- In 2024 the WA Government published a report following a parliamentary inquiry into WA Domestic Gas Policy, identifying new measures to ensure domestic supply adequacy. In response to the Inquiry, the WA Government announced changes to WA Domestic Gas policy to allow 20% export of domestic projects to LNG, prior to 2030. AEMO's 2024 WA GSOO will consider the impacts of this policy change to domestic supply.

Operations Emergency Readiness

Summer Response Capability

1. Prepared resources
   - Generation availability, including fuel
   - Transmission availability
   - RERT/IRR
   - Supplementary Capacity (SC WEM)
   - East Coast Gas System function

2. Operational Improvements
   - Training
   - Lessons Learnt
   - Processes Improvements

3. Contingency Planning and Emergency Management

4. Communications and Stakeholder Engagement

Reliability Emergency Reserve Trader (RERT)
Short Notice RERT

- To mitigate any potential reliability risks AEMO maintains a panel of suppliers that can provide / contract reserves at short notice – the short notice RERT panel.
- Short notice RERT costs are only incurred if reserves are pre-activated or activated, as such reserves are not guaranteed to be available.
- Typically, short notice RERT panel agreements were designed to cover the summer months only, however AEMO is now encouraging 12-month panel membership with extension options.
- It should also be noted that these quantities may reduce as part of the IRR procurement process (discussed next slide).

Reliability Emergency Reserve Trader (RERT)
Interim Reliability Reserves

The latest Electricity Statement of Opportunities (ESOO) published August 2024 has forecast a reliability gap against the interim reliability measure of 200 MW in South Australia, 10 MW in Victoria and 265 MW in New South Wales. As a result, AEMO is seeking to procure IRR in New South Wales and South Australia. The 10 MW gap in Victoria is proposed to be covered by the Short Notice RERT portfolio.

- IRR differs from SN RERT in that AEMO can pay availability payments for IRR to firm up the reserves and have them contractually available.
- Reserves contracted in the IRR program cannot also be offered in the SN RERT program.

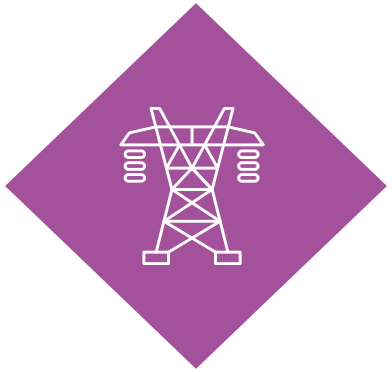
Operations Summer Readiness Training Program Overview

Control Room Training will deliver the following programs of training over the summer period. An indication of topics is provided:

GAS

3x3-day SMS 2-2024:

- NEM and Gas Update
- Curtailment Tool
- Market Suspension
- Learnings from Winter
- SSI/ HVA Masterclass including Culcairn Incident and GCD
- Transmission Scenario
- Ancillary Systems and Alarm Response
- DTS Compressor Training Refresher
- SCADA Architecture and Comms
- MCE Update



NEM

6x3-day SMS 3-2024:

- VIC Minimum Demand
- Unsatisfactory Event (QLD & NSW)
- RTCA Violation Event (NSW)
- SA Role Play
- SA System Restart
- Various Skill Shots (failed semi-scheduled unit SCADA, changing ratings in STNET case, event debrief, ratings)
- BDU Update

NEM

3x1-day Seasonal Readiness:

- Recap on network (including DC interconnectors) and generation
- BDU - Directing BDUs for reserves, updates to procedures, BDU worked examples
- RERT
- Refresh on weather related reclass processes
- Bushfire Management scenario
- Ops Forecasting Update – summer outlook (eLearning/webinar)

WEM

4x2-day SMS 3-2024:

- North Country report
  - Findings and recommendations
  - Changes to EMS overviews
- Interventions Framework
- Constraints – guideline review, construction of constraints
- Batteries – management through summer, constraint requirements, ESS dispatch

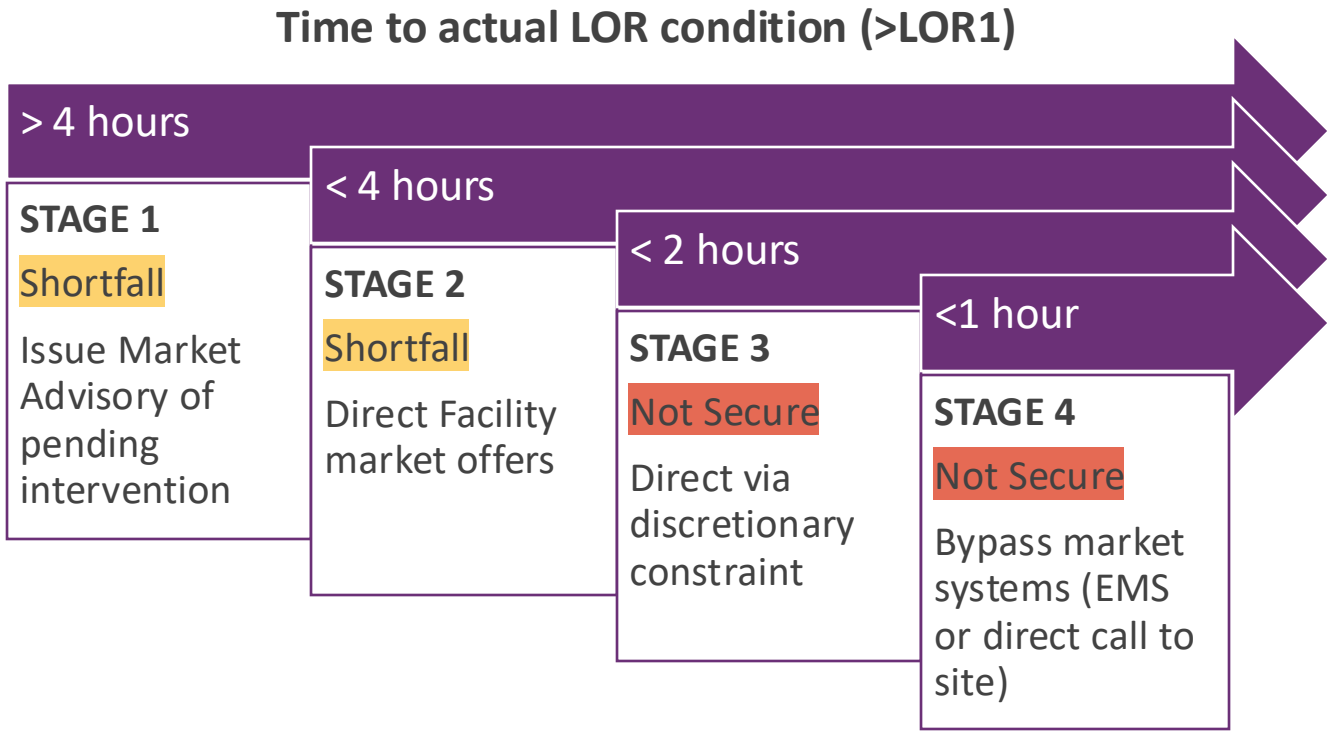
Contingency Planning and Emergency Management (NEM)

- Crisis and Emergency Management Framework, Crisis Management Plan and Emergency Management Plan updated.
- Online training for Responsible Officers, Jurisdictional System Security Coordinators and Jurisdictional Designated Officers provided.
- Internal Crisis and Emergency Management training provided.
- External emergency exercise with National Electricity Market Emergency Management Forum (NEMEMF) and National Gas Emergency Response Advisory Committee (NGERAC) held on Thursday 26 September 2024.
- Various emergency exercises with TNSPs are scheduled for September and October 2024.
- Pre summer briefing conducted as part of the National Electricity Market Emergency Management Forum (NEMEMF) and National Gas Emergency Response Advisory Committee (NGERAC) held on Wednesday 9 October 2024.

WEM: Dispatch Improvements
Interventions under Lack of Reserve Conditions (LRC)

Formalised Intervention Framework deployed to WEM control room October 2024:

- Developed in response to government and industry feedback to interventions to manage 2023/24 heatwaves:
  - Minimise impact to market prices
  - Transparent actions communicated through formal Market Advisory
- Staged intervention escalations based on immediacy (see diagram) and forecast LOR level
- Approved LOR monitoring and assessment tooling, intervention scenarios, and operating checklist



Communications and Stakeholder Engagement (NEM)

Pre Summer

- Targeted Parts of Industry
  - TNSPs/Generators through ACCC interim authorisation.
- Jurisdictional Engagement
  - NEMEMF/NGERAC briefing for all jurisdictions on 9 October 2024.
  - Emergency Exercise conducted 26 September 2024.
  - Targeted briefings.
- Whole of Industry
  - Industry briefing scheduled for mid-November 2024.
  - Consumer forum briefing scheduled for December 2024.

During Summer

- Planned briefings – jurisdictional (weekly) and industry (fortnightly).
- Use of digital platforms, Media engagement.

Communications and Stakeholder Engagement (WEM)

Pre Summer

- Targeted Parts of Industry
  - Network Operator (Western Power)/Generators
- Jurisdictional Engagement
  - Weekly seasonal readiness meetings with Energy Policy WA (Coordinator of Energy) and WA Govt-owned entities (Western Power and Synergy)
- Whole of Industry
  - Summer Outlook and Readiness Briefing at the WA Electricity Consultative Forum.

During Summer

- Continued weekly meetings with WA Government and key stakeholders
- Industry briefings (as required)
- Use of digital platforms, media engagement as required

Key Risks

Network and Generation Risks

Risks	Mitigation
Network and generation forced outages exceeding limits historically observed.	• Similar levels of scheduled generation availability across most regions with some notable increases expected in QLD. Additional renewable resources / energy storage systems capacity across mainland NEM and WEM. • Ensuring regular maintenance activities are carried out and risks identified early by asset owners. • RERT Panel: Short Notice RERT and Interim Reliability Reserves. • WEM's SRC is available for summer 2024/25. • AEMO is monitoring generation availability across all regions.
Bushfires/grassland fires impacting fuel supplies (coal or gas production), generation or network assets.	• Vegetation management by asset owners. • Monitor risks with asset owners. • Contingency plans in place.
Plant cut-out / capacity derating due to extreme heat.	• TNSP plant ratings account for summer conditions. • Market notices issued in advance of extreme temperature days. • PASA availability adjusted based on weather conditions / market notice advice. • Monitoring of wind cut-out potential.
Network and generation maintenance / commissioning activities extending beyond target completion dates.	• AEMO is working closely with TNSPs and Generators to understand delays/modifications to planned maintenance due to resourcing issues, parts sourcing or other reasons. • Risk managed through ACCC interim authorisation maintenance co-ordination for NEM regions. • Aerial imagery and thermographic scanning of network assets to identify "hot-spots". • New NEM MT PASA interface with information on generating unit status and recall times.
Storms / flash flooding impacting coal supply and transmission, particularly in Qld during cyclone season.	• Contracting coal from diverse sources and building up coal stock. • Monitor coal generation availability and stockpile levels. • Monitor risks with asset owners.
Unplanned network events including during high/low demand periods.	• Contingency plans in place. • Minimum Demand Framework.

Threats to system security and reliability

Issues	Impacted Region(s)	Impact
QNI capacity increase - commissioning tests dependent on market conditions.	QLD, NSW	Potential delays to QNI capacity increases.
Project EnergyConnect Stage 1 (release of up to 150 MW transfer capacity) commissioning tests dependant on market conditions.	NSW, VIC, SA	Potential delays to Project EnergyConnect capacity increases.
Under some outage conditions, operational demand may be below secure thresholds in mainland NEM and WEM regions this spring and summer holiday period. Minimum System Load risks currently not expected in Tasmania.	Mainland NEM	System security, customers, market intervention.
Industrial action impacting scheduled transmission and distribution maintenance and project work.	NSW	Increased planned network outages during summer
Potential for delayed return to service of generating units on extended planned outages*, monitor status with asset owners: • Callide B1, 19/07/2024 – 03/12/24 • Tarong 2, 13/9/24 – 29/11/24 • Tarong 1, 18/10/24 – 17/11/24 • Kogan Creek, 1/11/24 – 21/11/24 • Bayswater 2, 14/09/24 – 08/12/24 • Eraring 3, 1/09/24 – 28/11/24 • Tallawarra A, 15/10/24 – 25/12/24 • Vales Point 6, 24/09/24 – 25/11/24 • Loy Yang A4, 30/09/24 – 05/12/24 • Newport, 25/10/24 – 21/11/24 • Yallourn 1, 25/10/24 – 16/11/24 • Yallourn 4, 22/11/24 – 24/01/25	NEM	NEM reserves

*As per MTPASA 12/11/2024.

For more information visit

aemo.com.au