

Consumer Forum

29 November 2023

Emily Duck, Manager,
Consumer and Community



In the spirit of reconciliation, we acknowledge the traditional owners and custodians of this land, who have walked and cared for it for thousands of years, and their descendants who maintain their spiritual connection and traditions.

We thank them for sharing their cultures, spiritualities and ways of living with the land, in this place we all call home.

We pay respect to elders past, present and emerging.

May we walk gently and respectfully, together.

Lands of the Wurundjeri Woi-wurrung and Bunurong Boon Wurrung Peoples of the Eastern Kulin

Today's agenda

Time	Item	Speaker
10:00 am	Welcome and Acknowledgement of Country	Emily Duck, Manager, Consumer and Community
10:05 am	Summer Readiness	Michael Gatt, Executive General Manager, Operations
10:50 am	Update on Project EDGE	Nick Regan, Business Lead, Reform Delivery Anoop Nambiar, EDGE Program Lead, AusNet/Mondo
11:10 am	Draft ISP update and next steps	Samantha Lloyd, Engagement Lead, System Design
11:25 am	NEM Reform update	Chris Muffett, Manager, Wholesale Reform Delivery
11:40 am	Compliance of Distributed Energy Resources with Technical Settings	Daena Ho, Senior Engineer, Operations
11:45 am	Other business and next meeting	Emily Duck, Manager, Consumer and Community

Housekeeping

- This session is being recorded
- Muted unless talking, thank you
- Q&A function available – groups relevant questions and comments
- Ask questions via the chat function throughout
- We will endeavour to follow up questions we do not get to in session
- Respectful and relevant
- Equal opportunity to engage

Last time we met...

- Request for AEMO to brief on summer readiness and Virtual Power Plants (VPP)
 - We will provide an update on both items today
- Available on our website:
 - [Meeting summary](#) of the previous Consumer Forum on 12th September
 - [FY23 Stakeholder Engagement Perception survey results](#)
- Need help with terminology? Here's a handy [list](#).
- Please provide feedback to AEMO on Consumer Forums [via this survey](#).

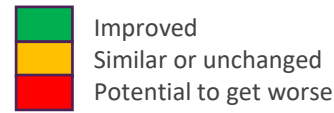
Summer readiness

Ken Harper

Group Manager, Operations



Summer Outlook



Impact	West/East	Comparison to last summer
Extreme heat / heatwaves		El Niño continues and is likely to remain active until autumn 2024. Hotter and drier summer for WEM and NEM.
Bushfire risk		More likely due to hotter and drier outlook.
Widespread flooding		Below average rainfall expected for majority of the country reducing risk of flooding. Increased risk in Qld during cyclone season however early signs suggest below average cyclone activity.
Extreme peak demand		Possible due to increased likelihood of extreme heat. Potential for increased reliance on limited energy storage facilities including Gas-Fired Power Generation (GPG), batteries and pumped storage during peak electricity demand periods or unplanned generation outages. Potential for 10% POE demand combined with low VRE could lead to reserve shortfalls. Potential for coincident 10% POE demands in interconnected regions could lead to reserve shortfalls in multiple regions.
Generation availability		Increased levels of scheduled generation availability across most regions with some notable increases expected in Qld and NSW. Additional renewable resource capacity across mainland NEM regions. Monitoring the potential for delayed return to service of generators on extended outages (Bayswater 1 and Colongra 3 in NSW, Callide B1, C3, C4 and Tarong 4 in Qld and Jeeralang B1 and Yallourn 2 in Vic) and potential commissioning delays at Tallawarra B in NSW.
Network outages		High impact outages are at similar or reduced levels for most regions. Planned gas production facility and pipeline maintenance outages will reduce supply capacity but overall gas demand during summer is lower.
Reliability		Expected Unserved Energy (USE) is forecast to be above the Interim Reliability Measure (IRM, 0.0006%) in Victoria and South Australia. Potential for unplanned electricity/gas plant outages to degrade electricity/gas system reliability in all regions.
Fuel supply		Coal storage levels are at normal levels, monitoring possible supply restrictions at Mt Piper. Environmental restrictions for some hydro stations. Gas storage levels are high, however, any increased drawdown to support peak electricity demand will need to be replenished during summer and autumn for winter 2024. Potential refilling disruptions due to gas production facility and pipeline maintenance, and GPG, need to be managed.
Health of markets		Whilst default and suspension events are still possible due to the unpredictability and volatility of the market, AEMO is relatively better placed for the 2023/24 summer season than at the same time leading into summer 2022/23.

Notes: Summer is defined as 1 Nov 23 to 31 Mar 24. 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. Similarly, towards the end of the season, heatwaves and bushfire risk can extend into March, particularly in the northern parts of the country. 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 plant outages are subject to change.



Weather and Climate

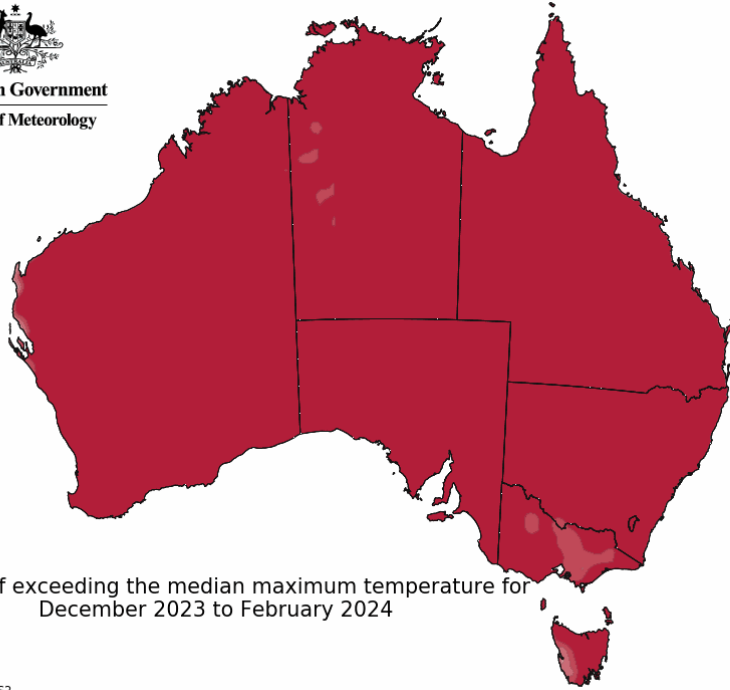


Climate Outlook

December 2023 to February 2024

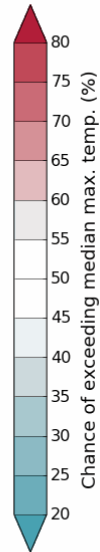
Maximum temperatures


Australian Government
Bureau of Meteorology



Chance of exceeding the median maximum temperature for December 2023 to February 2024

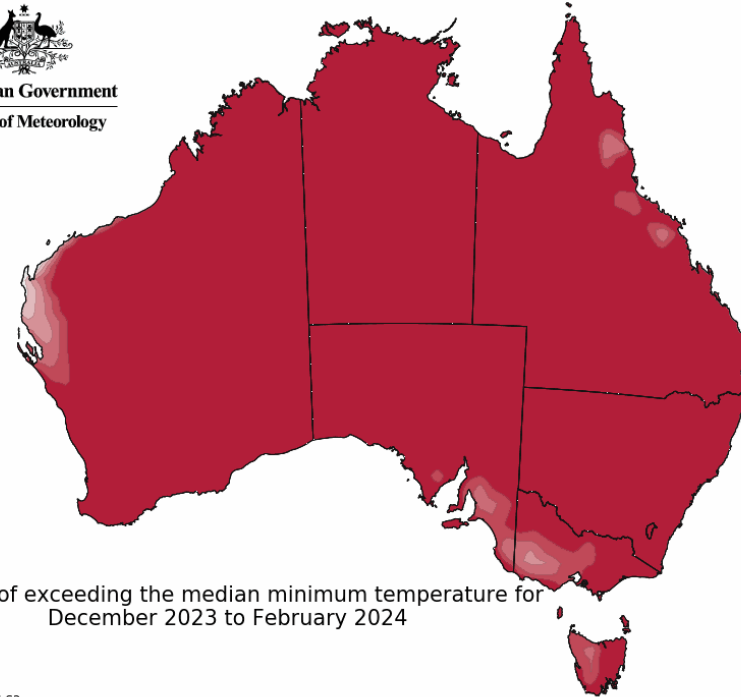
Model: ACCESS-S2
Base period: 1981-2018



Model run: 20/11/2023
Issued: 23/11/2023

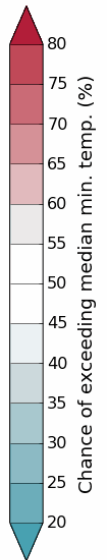
Minimum temperatures


Australian Government
Bureau of Meteorology



Chance of exceeding the median minimum temperature for December 2023 to February 2024

Model: ACCESS-S2
Base period: 1981-2018



Model run: 20/11/2023
Issued: 23/11/2023

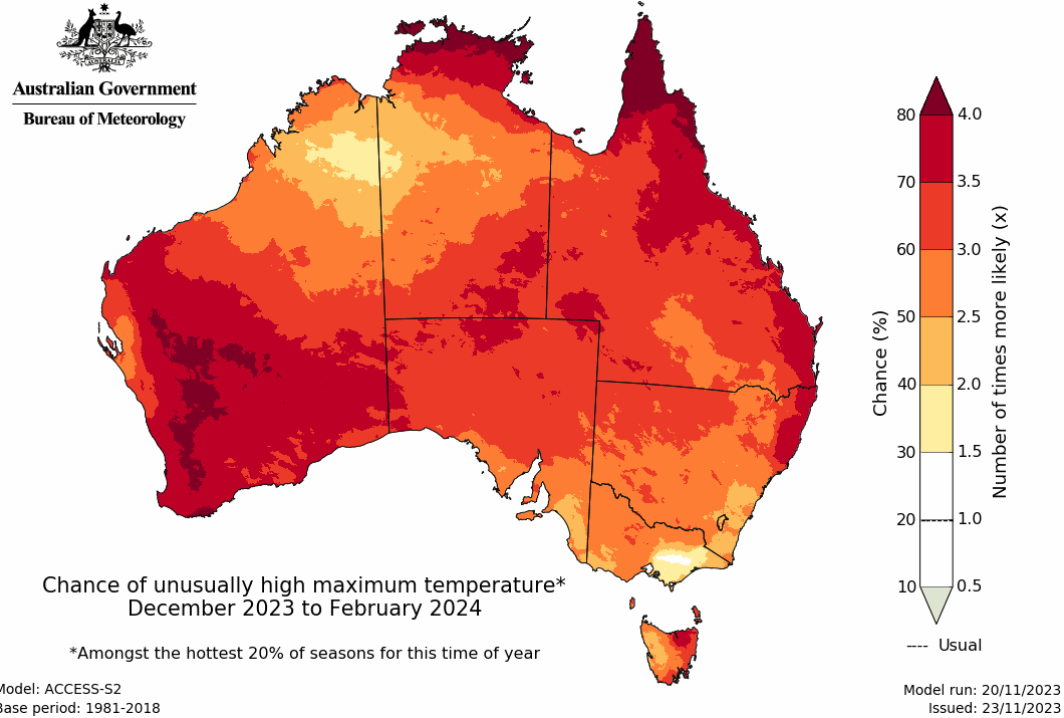
High chance of maximum temperatures being above median for all of the country.

High chance of minimum temperatures being above median for majority of the country.

Climate Outlook

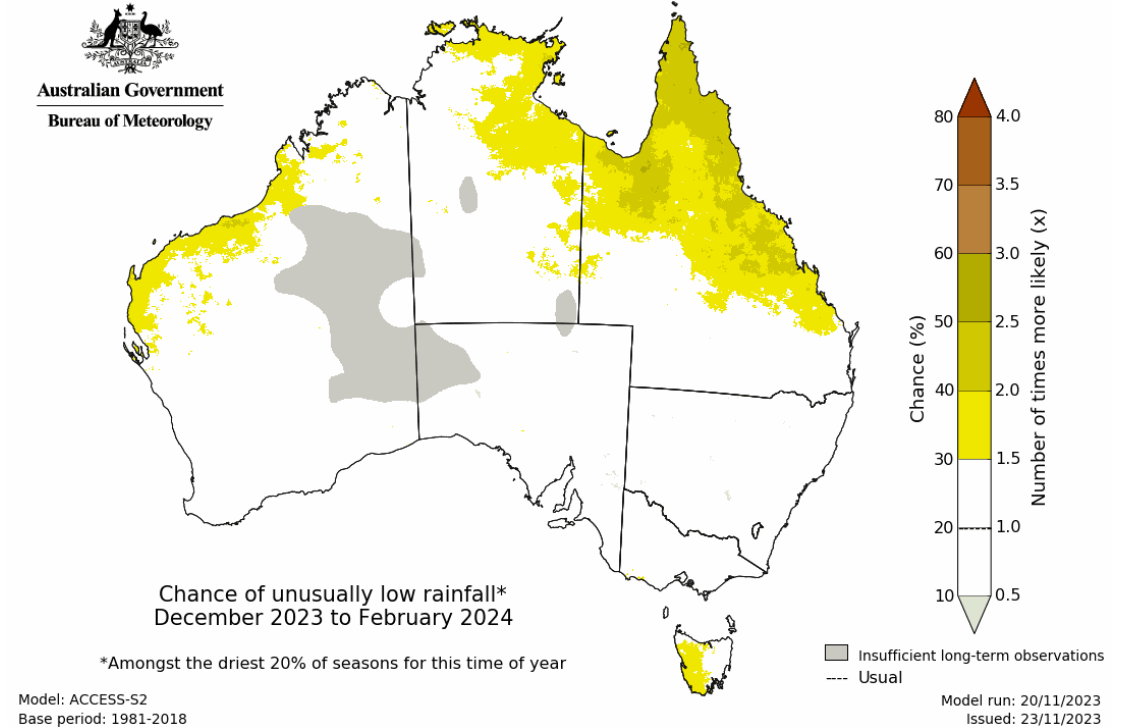
December 2023 to February 2024

Chance of unusually warm



High likelihood of unusually warm conditions across the country particularly for WA and northern parts of Australia.

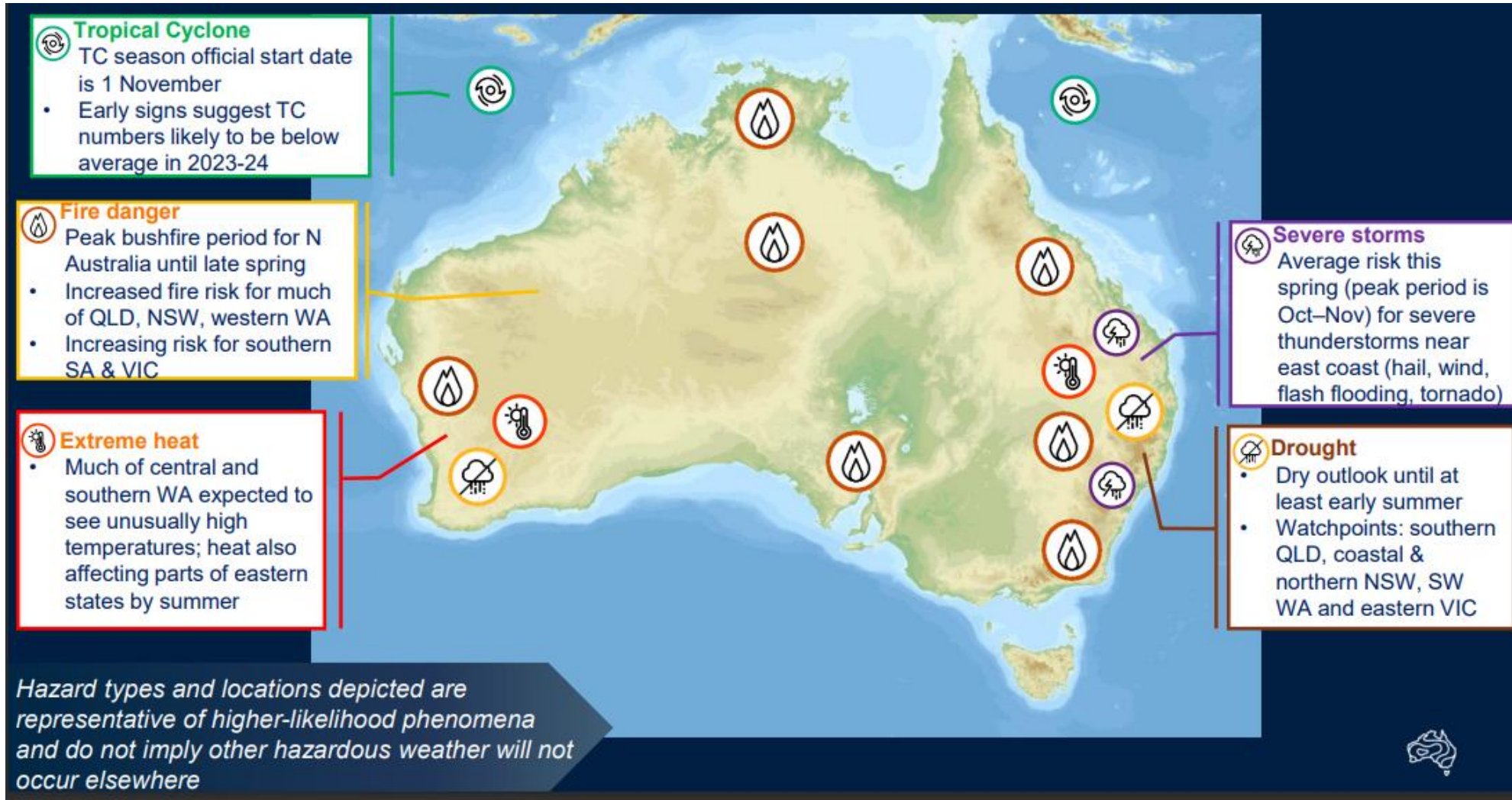
Chance of unusually dry



High likelihood of unusually dry conditions for parts of WA, northern Queensland and western Tasmania.

Regional Hazard Risk

November 2023 to January 2024



Source: Bureau of Meteorology (2 Nov 2023)

Electricity System Readiness



Generation Availability

On average, additional 1500 MW of scheduled generation is expected to be available in the NEM compared to summer 2022/23, mainly attributable to Queensland and NSW regions. In the WEM, additional 46 MW of scheduled generation is PASA available compared to summer 2022/23.

• Hydro generation

- Limited by water licence, dam levels, available airspace, and riverbank capacity. Generation outages/reductions include:

VIC: Murray at reduced capacity by up to 600 MW during mid Nov 23 to mid Dec 24 and by up to 400 MW during mid Jan to early March.

TAS: John Butters and Tribute

• Coal generation

- Coal stockpiles in the NEM and WEM are returning to normal levels.
- Several large generating units are on longer term outages mostly in Nov-Dec period:

QLD: Callide B1,C3/C4, Tarong 4

NSW: Bayswater 1

VIC: Yallourn 2

WA: Bluewater U2

• Gas/diesel generation

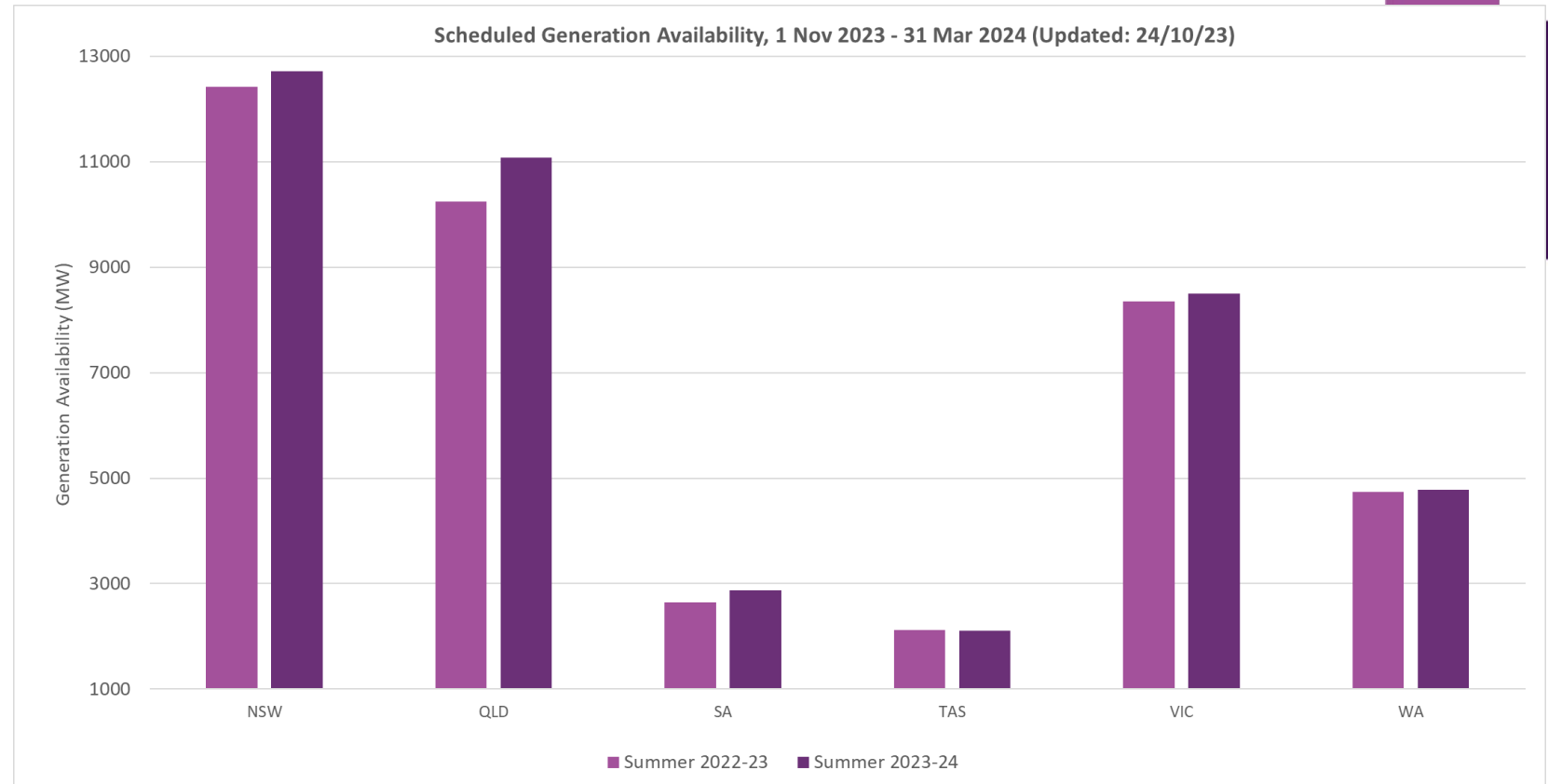
- East Coast gas usage will need to be monitored. Supply from Queensland may be required due to gas production maintenance outages. Generation outages include:

NSW: Colongra 3

VIC: Newport, Jeeralang B1

SA: Torrens Island B2, B3 and B4 (staggered)

WA: Alinta Wagerup U2, Newgen Neerabup GT

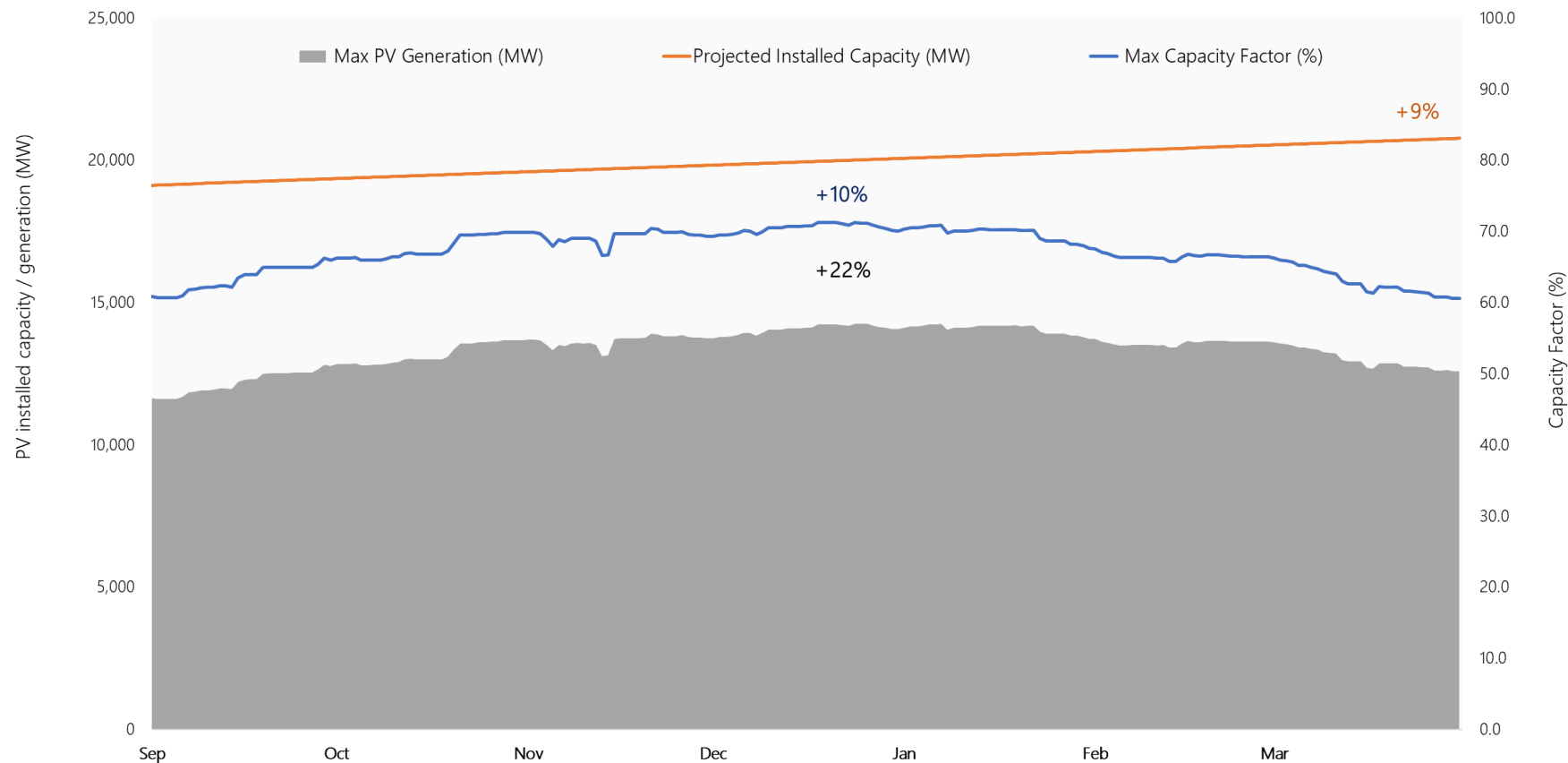


In the NEM, its estimated that additional 1500 MW (on average) of dispatchable generation is expected to be available for summer 2023/24, mainly attributable to NSW and Queensland regions. Analysis includes planned generator outages and already operational / committed scheduled generator capacities including Tallawarra B (320 MW) gas turbine, and energy storage facilities at Torrens Island (250 MW), Hazelwood (150 MW), Riverina (150 MW) and Capital (100 MW). There is additional 46 MW of scheduled generation considered in WA which includes Kwinana (100 MW) energy storage facility.

Rooftop PV Generation

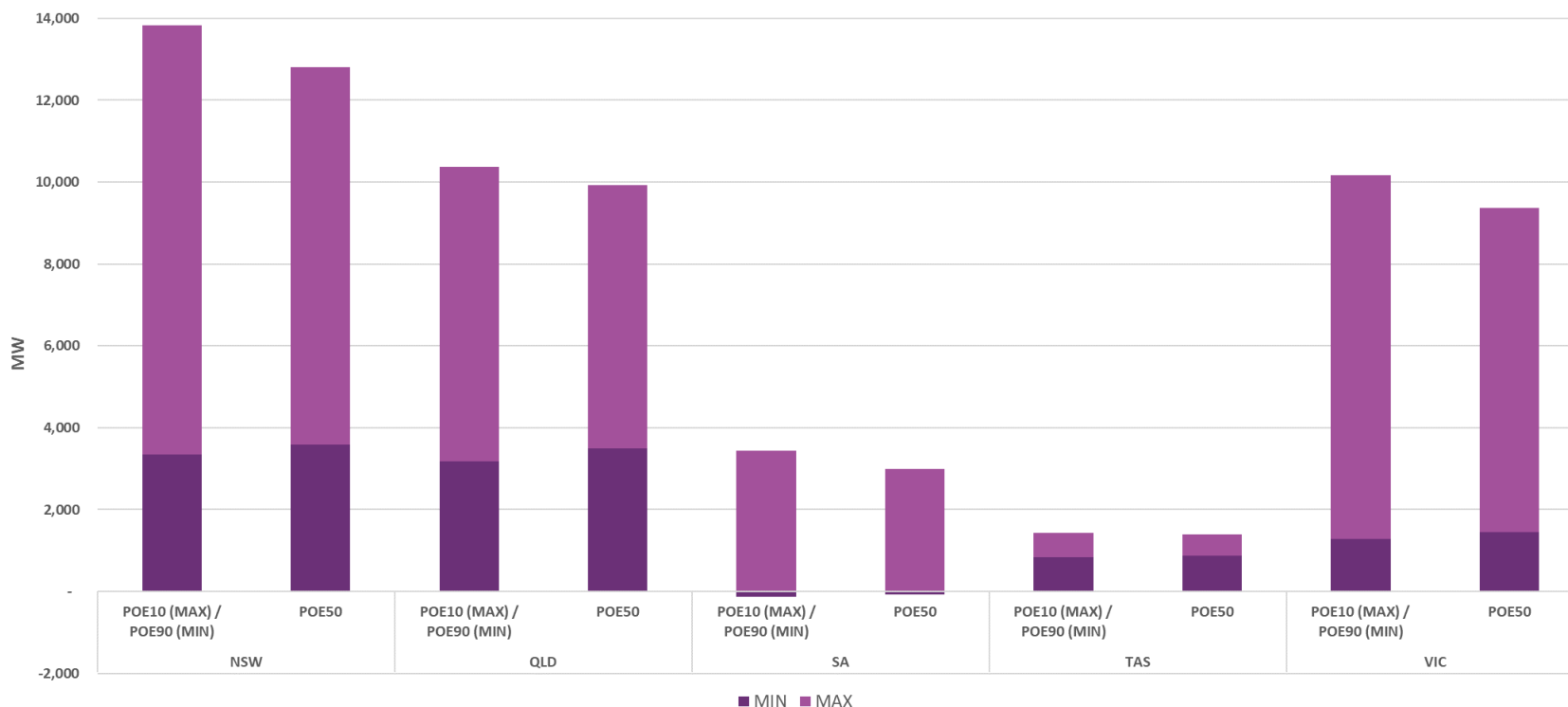
As we move from spring into summer solar irradiance and maximum capacity factors increase to the highest levels, therefore increasing the maximum theoretical rooftop PV generation.

- Maximum theoretical rooftop PV generation is estimated to increase by 2100 MW this summer compared to last summer.



Operational Demand

Operational demand (sent-out): 1 November 2023 - 31 March 2024

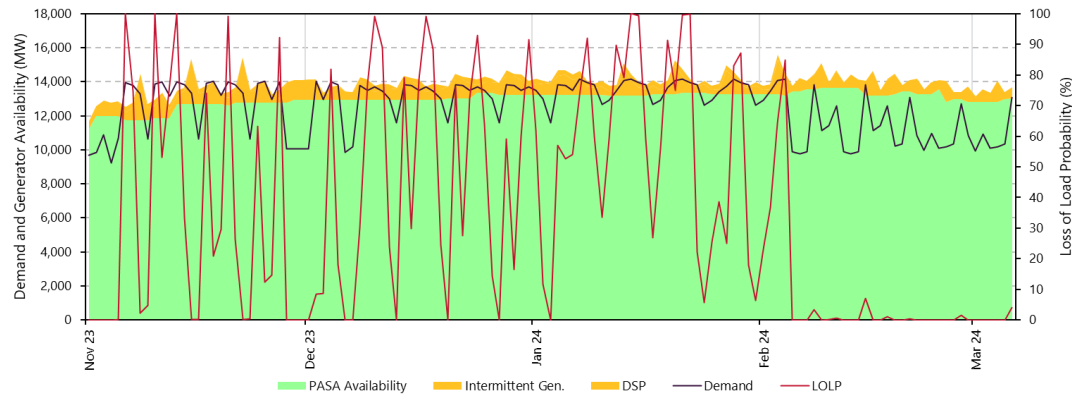


Region	Record Maximum Demand (MW)	Record Minimum Demand (MW)
NEM	35,796 (29/01/09)	11,009 (29/10/23)
NSW	14,744 (01/02/11)	3,719 (29/10/23)
QLD	10,070 (17/03/23)	3,131 (1/10/23)
SA	3,399 (31/01/11)	5 (1/10/23)
VIC	10,576 (29/01/09)	1,915 (29/10/23)
TAS	1,790 (21/07/08)	732 (21/03/13)
WA	4,041 (23/11/23)	595 (25/09/23)

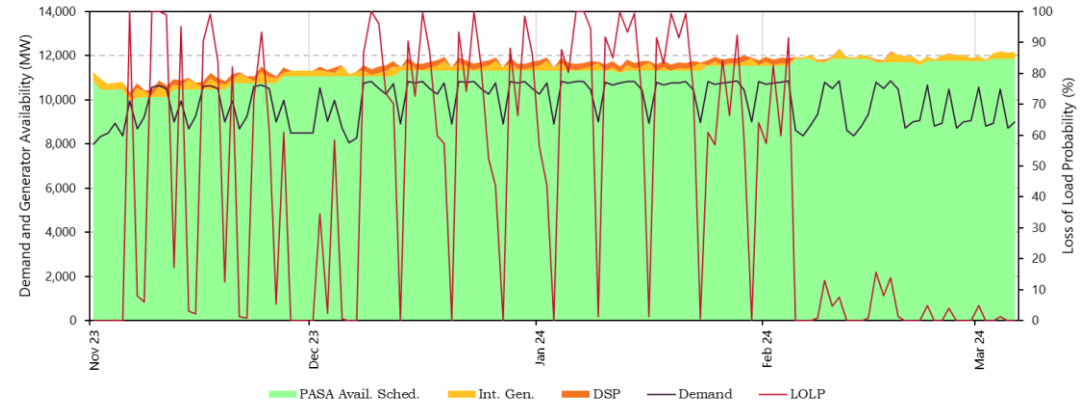
- Hotter and drier outlook suggests an increased likelihood of 1 in 10-year maximum demand levels (10% POE - Probability of Exceedance) in the NEM and WEM.
- Expected Unserved Energy (USE) is forecast to be higher than the Interim Reliability Measure (IRM, 0.0006%) in Victoria and South Australia. Risk of load shedding remains in all regions where high demand days combine with low VRE availability and or scheduled generation and network outages as indicated by Loss of Load Probability Study.
- Historically minimum record demands occurred during shoulder seasons. Low demand periods during summer are more likely to occur during weekends and public holidays.

Loss of Load Probability Study

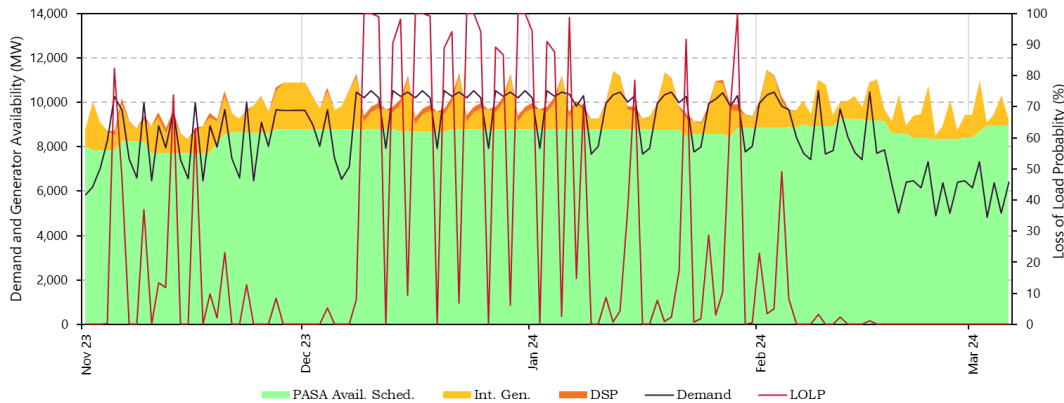
NSW



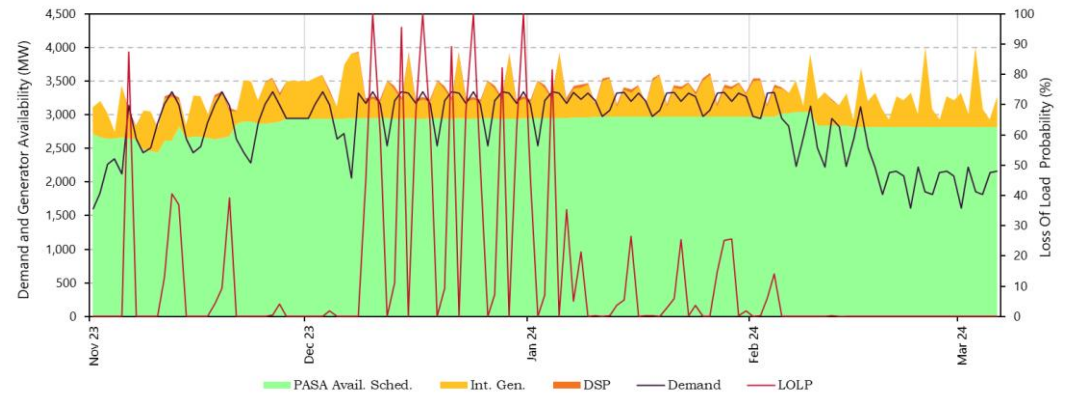
Queensland



Victoria



SA



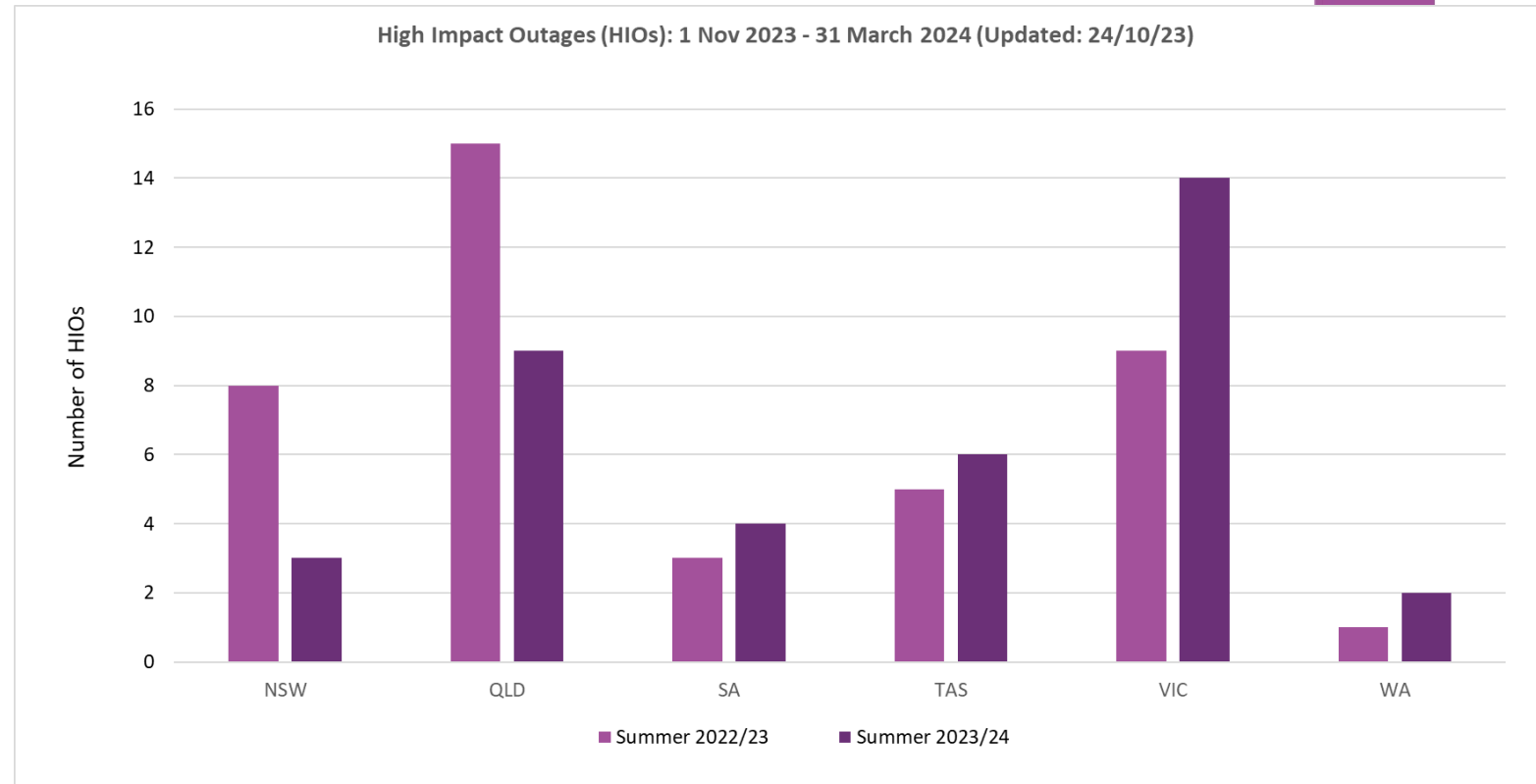
The study shows significant number of days with high LOLP in all NEM mainland regions. Tasmania has no LOLP periods during summer and for that reason no chart is provided.

Note: MTPASA run 742 (21 Nov 2023), period shown is 1 Nov 2023 to 31 Mar 2024.

High Impact Outages and Augmentations

- Number of planned HIOs are at similar or reduced levels (compared to previous summer) for most regions, however Victoria is showing noticeable increase.
- QLD: maintenance/commissioning of 275kV feeders out of Nebo, Broadsound and Strathmore.
- NSW: maintenance of Wagga - Jinderra 330kV and Balranald - Buronga 220kV lines.
- VIC: maintenance works Heywood – Mortlake and Keilor – South Morang 500kV lines and project works at Red Cliffs (March 2024).
- Multiple VIC-NSW interconnector related outages are scheduled in February and March 2024.
- SA: maintenance activities on South-East to Heywood and South-East to Tailem Bend 275kV lines.
- TAS: maintenance on Gordon to Chapel Street and Sheffield – Farrell 220kV lines.
- WA: Muja BTT1 and Muja 132kV Busbar short outages

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



Inter-regional augmentations:

- QNI transfer capacity increases:
 - Additional 150 MW NSW to QLD capacity compared to summer 2022/23.
 - Possible 100 MW QLD to NSW capacity increase during summer 2023/24.

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

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 in next slide).

Reliability Emergency Reserve Trader (RERT) Interim Reliability Reserves

- The latest Electricity Statement of Opportunities (ESOO) published on 31 August 2023 has determined that the forecast reliability of supply in South Australia and Victoria exceeds the interim reliability measure in the Financial Year 2023-24.
- As a result, AEMO opened up a tender for the procurement of Interim Reliability Reserves (IRR) on 1 September.
- IRR differs from SN RERT in that AEMO can pay availability payments for Interim Reliability Reserves 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.
- The amount of IRR that AEMO can procure is the amount required to fill the reliability gap identified in the latest ESOO (118MW and 120MW in SA and Vic respectively).

Gas System Readiness

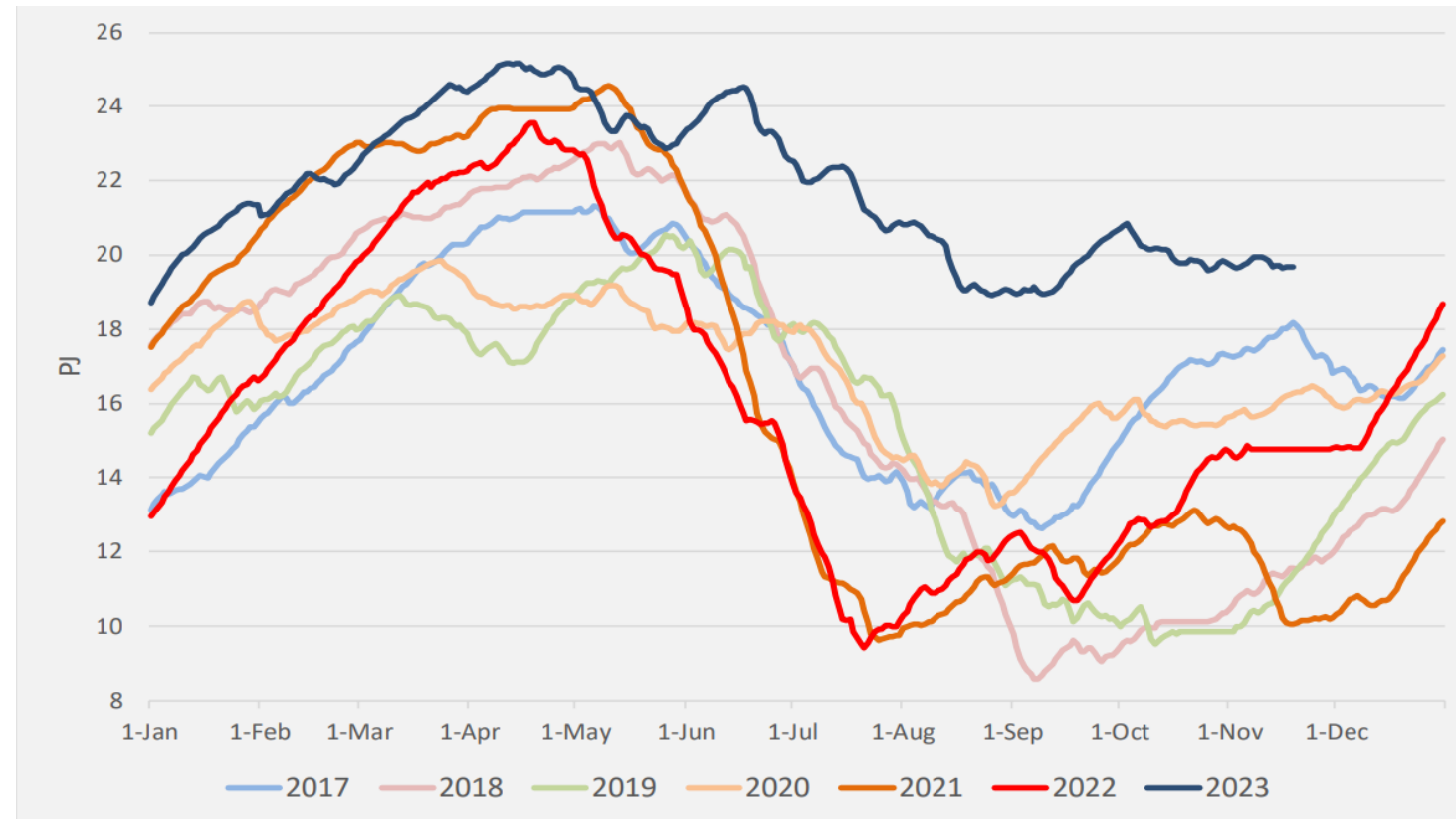


East Coast Gas

- The Longford Gas Plant (the largest gas production facility) undertakes maintenance outages outside of the winter peak demand period, with production down to 350 TJ/d (40% of winter 2023 capacity) from mid-January to early February.
- The main Victorian gas supply pipeline, Longford to Melbourne Pipeline (LMP), will also have to be operated at reduced pressure and capacity throughout spring and summer for urgent dig-up, inspection, and possible repair works. The lower pressure operation will reduce the capability to support un-forecasted GPG demand – AEMO market intervention could be required.
- 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.
- 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.

Iona Storage

- Iona storage is at high level for this time of the year. Refilling has commenced with inventory at around 20 PJ.
- Supply from Queensland reduced since the start of September with heating demand also reducing.
- Iona refilling will need to be monitored during summer due to reduced Longford gas production and forecast high gas generation demand - existing processes are in place for managing this.



Key Risks



Network and Generation Risks

Risks	Mitigation
Network and generation forced outages exceeding limits historically observed.	<ul style="list-style-type: none"> • Similar levels of scheduled generation availability across most regions with some notable increases expected in QLD and NSW. Additional renewable resources / energy storage systems capacity across mainland NEM regions. • RERT Panel: Short Notice RERT and Interim Reliability Reserves. • WEM's SRC is available for summer 2023/24. • AEMO is monitoring generation availability across all regions. • Aerial imagery and thermographic scanning of network assets to identify "hot-spots".
Bushfires/grassland fires impacting fuel supplies (coal or gas production), generation or network assets.	<ul style="list-style-type: none"> • Vegetation management by asset owners. • Monitor risks with asset owners. • Contingency plans in place.
Plant cut-out / capacity derating due to extreme heat.	<ul style="list-style-type: none"> • TNSP plant ratings account for summer conditions. • Revision and update of local temperature alerts for generation centres. 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.	<ul style="list-style-type: none"> • 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 QLD, NSW, SA and VIC. • New 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.	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Contingency plans in place. • Minimum Demand Framework.

For more information

- [AEMO website | Summer operations 2023-24](#)
- Summary infographic (part of pre-reading pack)
- Questions? Please contact StakeholderRelations@aemo.com.au



Update on Project EDGE

Nick Regan

Business Lead, Reform Delivery (AEMO)

Anoop Nambiar

EDGE Program Lead (AusNet & Mondo)



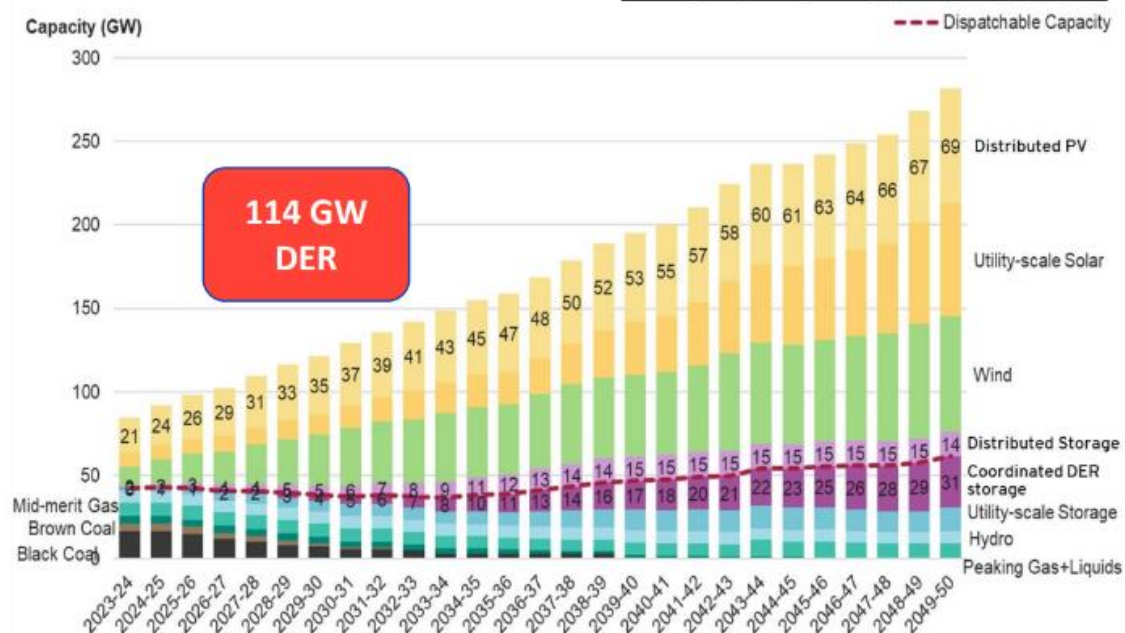
The National Electricity Market is experiencing its largest transformation ever with fossil fuel exits, rapid uptake of renewables and DER



The rapid uptake and anticipated scale of DER in the NEM represents both challenges and opportunities for the power system and electricity consumers

The scale of change

AEMO 2022 ISP Most Likely Scenario



- In 2050, **40% of total NEM installed capacity** may be distribution connected
- Electricity usage from the grid **to nearly double**
- Rooftop solar PV to **increase 5-fold**

Challenges and opportunities

Uncoordinated DER at this scale will impact power system security.

We are already experiencing challenges with NEM dynamics and power system security today.

Current forecasts show gaps in electricity reliability

AEMO's 2023 Electricity Statement of Opportunities (ESOO) forecasts numerous reliability gaps (the ability of the system to meet energy demand levels)

But Coordinated DER can improve NEM reliability

Sensitivity modelling found:

- **Reliability risk**
The reliability forecast improves considerably with coordinated DER
- **Cost impacts**
Integrating DER could avoid costs along the electricity supply chain
- **Influencing factors**
Consumer trends could influence the degree of DER uptake and coordination
- **Support**
Policy and consumer support for coordinated DER is key

Project EDGE can inform this transformation to be one where voluntarily coordinated DER supports more affordable, reliable and cleaner electricity for all consumers

Project EDGE overview

Project EDGE demonstrated a proof-of-concept two-sided arrangement that enables efficient & secure coordination of aggregated DER, and facilitates the delivery of both wholesale and local network services at the grid edge in the NEM

Target outcome: provide a practical evidence base to inform Australia's National Electricity Market (NEM) reforms regarding an efficient DER integration pathway that benefits of all consumers



Project EDGE : 3-year cross-industry collaboration, part funded by ARENA delivered in partnership between AEMO, AusNet Services and Mondo



Tech. vendors



DSO capability
Develop DERMS Platform



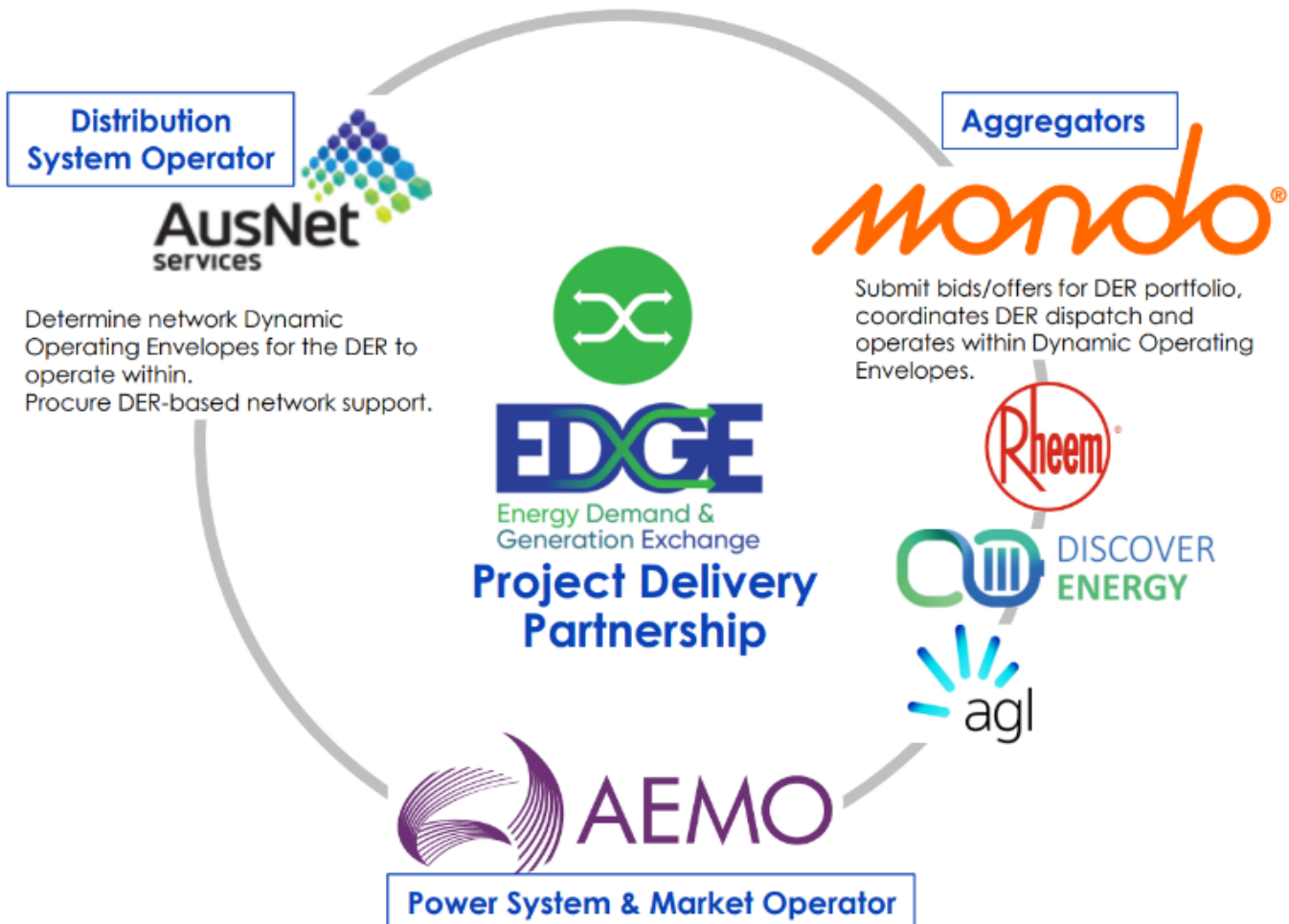
Digital identity & data exchange
Develop EDGE trial data exchange technology solution

PXiSE
Energy Solutions, LLC
Market logic/intelligence
Develop EDGE trial dispatch operating logic



ARENA
Funding Partner

Project sponsorship and funding



Determine network Dynamic Operating Envelopes for the DER to operate within.
Procure DER-based network support.

Submit bids/offers for DER portfolio, coordinates DER dispatch and operates within Dynamic Operating Envelopes.

Clears bids/offers and dispatches DER portfolios via EDGE Aggregators.
Facilitates data exchange between AEMO, DSO and Aggregators to enable DER-based services.

Supporting vendors



Networks and Research
Develop Research Plan and Develop OE algorithms



Customer Insights
Advance customer insights research

Deloitte.
Independent Cost Benefit Analysis

Determine if EDGE concepts are economically in the long-term interests of consumers and under which conditions



Independent Project Manager
Coordinate and manage the Project



Knowledge Sharing
Facilitate development of Knowledge Sharing Deliverables

Project EDGE trialled an evolution of the NEM where price-responsive DER can be efficiently integrated into market arrangements

Project EDGE is complete, supplying a practical evidence base to inform Australia's DER integration reforms to benefit all consumers

ROBUST FIELD TRIAL



54

Platform Functionality releases occurred:
 • 8 major
 • 46 minor



INNOVATIVE CONCEPTS

Project EDGE tested innovative concepts:

Aggregator participation in multiple markets

Value stacking of multiple services

A scalable DER data exchange approach

RICH SAMPLE

320+

Residential and Commercial & Industrial Customers



22



Field Tests conducted, including:
 • Decentralised data exchange
 • Participant and communication failures
 • Market interventions, contrasting networks and AEMO
 • Extreme wholesale prices

12

Enrolment cycles including:
 • AusNet & AEMO validations
 • Enrolment in Marketplace



400+

DER assets including Rooftop Solar, Batteries, controlled Hot Water systems and other loads

Project EDGE brings together:

- Diverse mix of customers
- DER equipment
- Manufacturers
- DER device control systems

333 Days in Operational Trial

- 10 Organisations working across 6 time zones
- Operated 24/7 to data collection to support research outcomes
- Provided LSE & Wholesale services using single platform

3.5MW+

Flexible capacity available



EDGE includes Retailer and Non-Retailer Aggregator business models.

University designed Research Plan



150+

Over formal Stakeholder Engagements

INFORMING REFORM

Past, Current, Future:

- Scheduled Life
- Integrating Energy Storage Systems
- DEIP DOE WG
- AER Flexible Export Limits (DOE)
- Flexible Trading Arrangements
- DER Data Exchange
- DER Network Services

A COMPREHENSIVE EVIDENCE BASE



Customer insights study



Independent Cost Benefit Analysis



Independent technology & cyber security assessment



Specialist techno-economic analysis



Robust end-to-end field trial with real customers

STAKEHOLDER ENGAGEMENT

25+

Released Knowledge Sharing Reports and Presentations

Key Findings

All consumers stand to benefit from the accelerated, optimised integration of DER via Virtual Power Plants (VPPs) in the NEM

1. DER coordination via VPPs is **technically feasible** today
2. And **economically feasible**, benefitting all consumers
3. It requires **clearly define industry roles**
4. And **sharing benefits with customers**

Project EDGE identified a practical framework of roles and capabilities to scale DER integration today, with the flexibility to facilitate new innovations as industry needs evolve

There is an immediate opportunity to unlock the benefits of DER



Timely action in implementing the capabilities identified in Project EDGE will help realise considerable consumer value, drive emissions reduction and help secure, reliable operation of the NEM as we move towards a higher DER future.

Foundational priorities identified



Removing customer constraints

- **Social licence** needs to be built across industry to **foster customer trust**
- Reduce constraints on solar exports for as many customers as possible
- Achieved through broad customer coverage of **DOEs, starting simple**
- All consumers can benefit from VPPs coordinating their DER



Setting the rules

- Clear set of roles and responsibilities for market participants
- Aggregators optimise DER for customers and **value stack**
- DSO capabilities confirmed and identified a path to implementation
- The EDGE hybrid model roles drive the net benefit identified by the CBA



Laying the foundations

- A **DER data exchange hub architecture** lays the foundations for DER market enablement, DOE coverage and visibility
- Is flexible to evolve and scale with industry needs over time

AEMO, AusNet and Mondo are committed to taking coordinated action on DER integration with policy makers and industry leaders using the practical evidence base delivered by Project EDGE

Links to EDGE publications and other webinars are available



For any questions, comments or feedback please contact: EDGE@aemo.com.au



[Project EDGE reports](#)



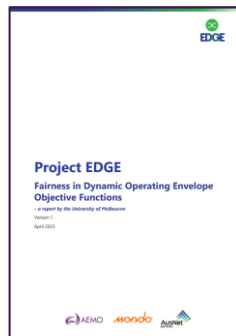
[Customer insights](#)



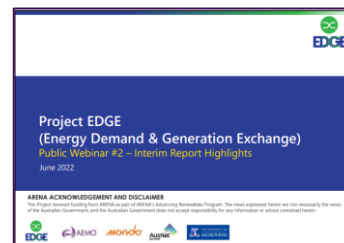
[DER data exchange](#)



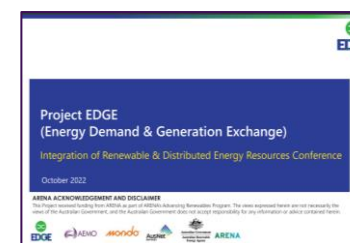
[Cost Benefit Analysis](#)



[Dynamic operating envelopes](#)



[Project EDGE webinars](#)



[Project EDGE industry forums](#)



[Project EDGE technical specifications](#)

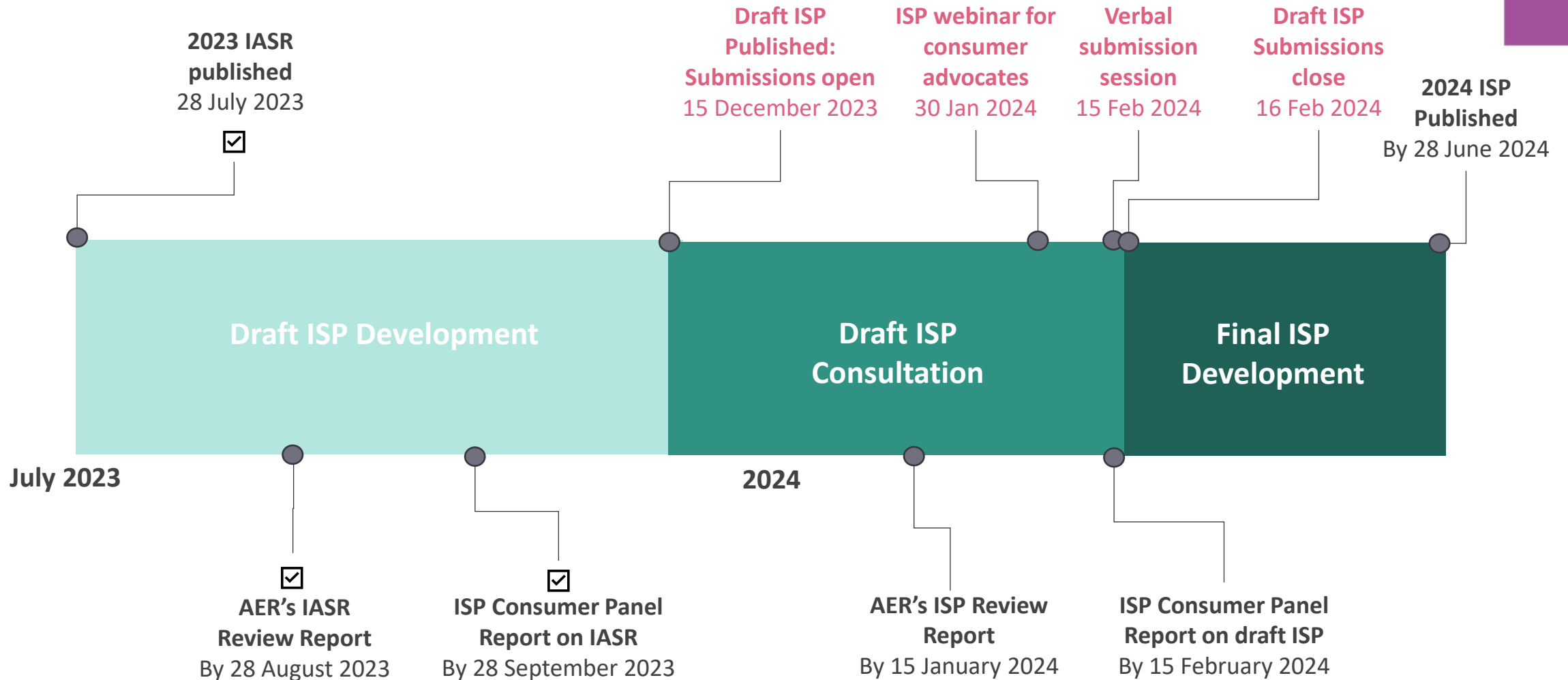
Draft ISP update and next steps

Samantha Lloyd

Engagement Lead – System Design



Draft 2024 ISP consultation timeline



Key draft 2024 ISP dates

Date	Time (AEDT)	Item	Notes
15 December 2023	9 am	Publication of the draft 2024 Integrated System Plan	2024 ISP page
20 December 2023	12.30 - 2 pm	Draft 2024 ISP post publication webinar	Register here
30 January 2024	11 am - 12.30 pm	Draft ISP Consumer Advocate pre-submission webinar to ask AEMO questions before consultation submissions are due	Register here
15 February 2024	10.30 am - 12 pm	Consumer Advocate verbal submission session	Register here
16 February 2024	5 pm	Deadline for written submissions in response to the Draft 2024 ISP	Please send submissions to ISP@AEMO.com.au
8 March 2024	5 pm	Deadline to provide a submission for a non-network proposal in response to the Draft 2024 ISP	Please send submissions to ISP@AEMO.com.au
2 April 2024	11.30 am - 12.30 pm	Submission reflection webinar	Register here <i>Date subject to change</i>

For more information

- [Join the ISP mailing list](#) to never miss an update.
- The 2024 ISP stakeholder engagement strategy and past engagements including webinar recordings can be found on the [2024 ISP Stakeholder Engagement](#) webpage.
- Questions? Please contact the AEMO ISP team: ISP@aemo.com.au

NEM Reform Delivery Update

Chris Muffett

Manager, Wholesale Reform Program Delivery



Program Benefit Snapshot

Reform Initiative	Benefits	Implementation Update
Integrating Energy Storage Systems (IESS)	Allows IESS participants access to additional value streams and promote competition in the contingency Frequency Control Ancillary Services (FCAS) markets	Ability to provide contingency FCAS delivered in March 2023. Aggregated Dispatch Conformance (ADC) is now live
Fast Frequency Response (FFR)	Fosters innovation in faster responding technologies that will help lower costs for consumers	Market commenced on 9 October 2023. 19 facilities across 7 participants have registered to supply Very Fast Frequency Control Ancillary Services. Currently, there is approximately 498MW of raise capacity and 337MW of lower capacity available.
Increased Medium-Term Projected Assessment of System Adequacy (MT PASA) Information	Allows better management of the NEM generation fleet as aging thermal plants exit and renewable energy enter the market	Requirement commenced 9 October 2023. Participants have now supplied the new MT PASA information for 189 of the 190 measuring points and there were no open technical issues.
Frequency Performance Payments (FPP)	Helps reduce the frequency deviations which would otherwise require the use and purchase of regulation Frequency Control and Ancillary Services (FCAS)	Non-financial operation of the market to commence at the end of 2024 with market commencement in June 2025

An overview of these reform initiatives was shared in Consumer Forums earlier in 2023. You can also find more information on [AEMO’s NEM Reform website](#).

Program Update

Good progress made in the following areas.

- 2023 draws to a close with successful deployment of November releases
- Our attention will now turn to focus on initiatives being delivered in 2024

Key areas receiving management attention:

- IESS June 24: Overall tracking on schedule. Project status to be reviewed at November checkpoint
- Identity Access Management, Industry Data Exchange, Portal Consolidation (IDAM/IDX/PC): Business Case preparation work continues. First round of estimates released 2 Nov. Review workshops scheduled.

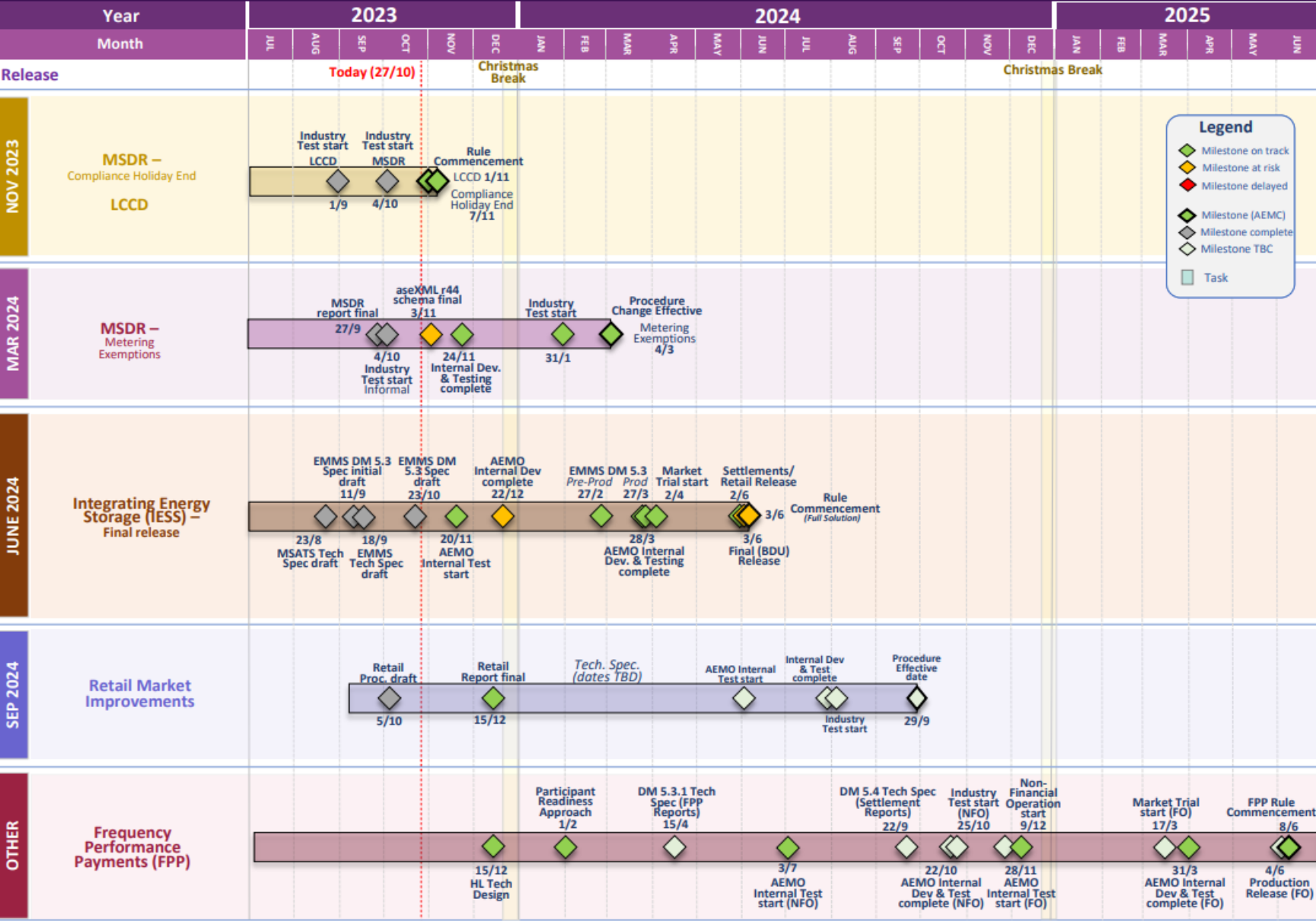
Release	Initiatives (ESB Reforms in purple)	Previous Status	Current Status	Key Points	Impacted Stakeholders
OCT-23	Fast Frequency Response	Green	Delivered	Market commenced 9 October 2023	Generators, Market Customers
	5 Minute load profile	Green	Delivered	Project went live on 1 October 2023.	Market Customers / Financially Responsible Market Participants (FRMPs)
	Increased Medium-Term Projected Assessment of System Adequacy (MT-PASA) Information	Green	Delivered	Rule commenced 9 October 2023	Scheduled Generators
NOV-23	MSATS Standing Data Review (MSDR) Compliance	Red	Delivered	Release Successfully Delivered , Changes Effective 1/11 and 7/11	Retailers, Market Customers and Meter Coordinators/ Meter Data Providers (MP/MDPs), Distribution Network Service Providers (DNSP)
	Consumer Data Right (Last Consumer Change Date)	Green	Delivered	Release Successfully Delivered, Changes Effective 1/11	FRMPs, DNSP
MAR-24	Metering Exemptions (MSDR)	Red	Green	Re-baselined with new schedule. Rescheduled to 4 March, includes schema update (3/3). Early release (to pre-prod) of APIs to support participant development, Schema Tech Spec (3/11) rescheduled for ASWG (aseXML Standards Working Group) consideration.	Retailers, Market Customers and MP/MDP, DNSP
JUN-24	Integrating Energy Storage Systems [Final]	Yellow	Yellow	Overall IESS remains on track. The schedule is tight, overall project status will be reviewed at a November checkpoint. Results from checkpoint will feed into a status update.	Integrated Resource Providers, Network Service Providers, FRMP, MP/MDP, Vendors
SEP-24	Retail Market Improvements	N/A	Green	Proposed scope to include Net System Load Profile (NSLP) and metering substitutions Issues and Change Forms (ICF), Retail Electricity Market Procedures (REMP) consultation underway. Proposed release date is 29 Sept 2024 to be confirmed via procedure consultation.	Market Customers, Metering Data Providers, FRMPs, DNSPs
DEC – 24 & JUN-25	Frequency Performance Payments	Green	Green	Project progressing to schedule. High level tech design on track for 15 December.	Generators, Market Customers

NEM Reform Key Milestones



NEM Reform Level 1&2 Milestones - Timeline

version 31.0



Key call outs:

- MSDR commenced Industry Testing from 4/10. The Compliance Holiday End Rule effective date is on 7/11.
- The Metering Exemptions internal development and testing of the r44 schema is planned to complete by 24/11. Publication of the final version of the r44 Schema Specification has been delayed to 3/11.
- The LCCD Rule Commencement is on 1/11/23. Industry Testing has concluded on 27/10.
- IESS Project – Internal Development and System Testing is planned to complete during December. Testing of the Retail solution is on track to start in November. The EMMS Data Model 5.3 Spec second draft was published on 23/10.
- FPP Project – the High-Level Technical Design is planned to be available on 15/12.
- Retail Market Improvements – the Retail Report final version is due to be published on 15/12. Planning is in progress.

NEM Reform Forums Update

Channel	Current focus	Next meeting
NEM Reform Electricity <u>Wholesale</u> Consultative Forum (EWCF)	<ul style="list-style-type: none"> The current focus is on regular updates for inflight reform IESS, FPP, and the strategic and foundational initiatives (IDAM IDX and PC). 	21 November 2023
Electricity <u>Retail</u> Consultative Forum (ERCF)	<ul style="list-style-type: none"> The current NEM Reform focus is on considering retail and metering procedural impacts associated with the introduction of the IESS Rule. 	27 November 2023
NEM Reform Implementation Forum	<ul style="list-style-type: none"> Focus on 2024 Releases – progress and implementation updates for all inflight initiatives for and 2024. Metering Exemptions delivery progress and Industry Testing Initial IESSs Readiness Checkpoint IESS Transition Planning FPP - participant scoping for Non-Financial operation 	28 November 2023
Information Exchange Committee (IEC) and Business-to-Business Working Group (B2BWG)	<ul style="list-style-type: none"> The current NEM Reform focus is on considering and preparing for the upcoming consultation regarding B2B procedural impacts associated to the introduction of the IESS Rule. 	29 November 2023
NEM Reform Industry Testing Working Group (ITWG)	<ul style="list-style-type: none"> Metering Exemptions Informal Industry Testing progress and approach to formal industry Test IESS – Market Trial Planning approach and key considerations 	30 November 2023
NEM Reform Executive Forum	<p>Agenda:</p> <ul style="list-style-type: none"> AEMOs Foundational & Strategic Initiatives update Overall program delivery status and costs. 	6 December 2023

For more information and meeting papers for each of the forums, please refer to the [NEM Reform program](#) website

Upcoming Engagements

November						
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December						
S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

NEM Reform Program Committees/Forums	
NEM Reform Program Consultative Forum	
NEM Reform Delivery Committee	
NEM Reform Delivery Committee - Collaborative Workshop	
NEM Reform Implementation Forum	
NEM Reform Electricity Wholesale Consultative Forum	
NEM Reform Industry Testing Working Group	
Other Forums	
Electricity Retail Consultative Forum	
Other	
State/Territory Public Holiday	
AEMO Office Closed	

To learn more about these events, please visit AEMO's [Industry meeting calendar](#) or contact the program at NEMReform@aemo.com.au.

Compliance of Distributed Energy Resources with Technical Settings

Daena Ho
Senior Engineer, Operations



Background to inverter standards

- All grid-connected inverters installed in Australia after 18 December 2021 are required to comply with AS/ NZS4777.2:2020 (the 2020 Standard).
- The standard defines “**disturbance ride-through capabilities**”, meaning that inverters are designed to remain connected and continue operating following a power system disturbance
- This becomes very important for power system security if distributed resources are supplying a substantial proportion of regional demand (it prevents sudden disconnection of a large proportion of a region’s supply)
- Distributed PV is now supplying >99% of demand in South Australia, and >50% of demand in the mainland NEM in some periods.

The current challenge

- AEMO data from manufacturers found that compliance with the new standard was only ~40% in early 2022
- AEMO has been working with manufacturers and other parties to improve compliance to 75-80%, targeting 90% by December 2023.

Examples of activities underway

Manufacturers:

- Removing legacy grid codes
- Setting default grid codes
- Marking legacy codes “obsolete” and/or hiding in menus
- Contacting installers that apply incorrect settings
- Remotely updating settings on internet connected devices
- Supplying data to AEMO and DNSPs

Distributors:

- Introducing compliance monitoring programs
- Contacting installers that apply incorrect settings
- Contacting manufacturers to rectify inverters that have been set incorrectly
- Exploring improved commissioning processes

CER & CEC:

- Exploring options through existing roles managing accredited product listing, installer accreditation and training, audits

AEMC and jurisdictions:

- Considering long term governance frameworks

What does this mean for consumers?

What are the impacts

- Work is going on by industry to progressively update customers' inverter settings where currently incorrect, and ensure compliant settings are applied for new inverter installs. This work will continue into 2024.
- Non-compliant settings do not impact customer safety and should not impact on bills. They may however cause the inverter to disconnect in response to a power system disturbance. In some cases it also may not be performing power quality functions properly (helping to support a healthy distribution network and therefore increase hosting capacity of the network).

What do they need to know / do

- Existing inverter owners do not need to take proactive action as manufacturers will attempt to process the updates remotely.
- Many are also unlikely to notice changes in their inverter display after updates are made. In some rare cases, consumers may observe a small change in inverter behaviour (e.g. performing Volt-VAr/Volt-Watt power quality functions with updated settings), which may improve its performance.
- In cases where required updates cannot be processed remotely by the manufacturer, customers may be contacted to arrange an in-person visit by an accredited installer
- If customers want to check their inverter status (at or after the point of install) they can contact their manufacturer/installer.

Next meeting



Potential agenda items

2024 meetings

- Proposed Consumer Forums in March, June, September, November

Survey for feedback

<https://forms.office.com/r/fKZ06zepb4>

Thank you

