Energy Adequacy Assessment Projection

November 2022

Important notice

Purpose

The purpose of this publication is to make available to market participants and other interested persons an analysis that quantifies the impact of energy constraints on energy availability over a 24-month period under a range of scenarios.

AEMO publishes the Energy Adequacy Assessment Projection in accordance with rule 3.7C of the National Electricity Rules. This publication is generally based on information available to AEMO as at 31 October 2022 unless otherwise indicated.

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Acknowledgement

AEMO acknowledges the support, cooperation and contribution of participants in providing data and information used in this publication.

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Version control

Version	Release date	Changes
1	30/11/2022	Initial release

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Executive summary

The Energy Adequacy Assessment Projection (EAAP) forecasts electricity supply reliability in the National Electricity Market (NEM) over a two-year outlook period. The EAAP complements AEMO's other reliability assessments, such as the Medium Term Projected Assessment of System Adequacy (MT PASA) and the Electricity Statement of Opportunities (ESOO), with a primary focus on the impact of energy constraints on reliability in the next two years.

Potential energy constraints include water availability for hydro generation and as cooling water for thermal generation during drought conditions, and constraints on fuel supply for thermal generators. Consistent with the EAAP guidelines[1], the EAAP publication has focused on the impact of water availability, with limited consideration for coal and gas adequacy issues. This EAAP considers three rainfall scenarios:

- Low rainfall – based on rainfall between 1 July 2006 and 30 June 2007 for all regions except New South Wales. New South Wales is based on rainfall between 1 June 2006 and 31 May 2007.
- Short-term average rainfall – based on the average rainfall recorded over the past 10 years.
- Long-term average rainfall – based on the average rainfall recorded over the past 50 years, or the longest period for which rainfall data is available, if less than 50 years.

Energy limitations affecting coal and gas generation sources are emerging as a material source of reliability risk in the NEM, having been a contributor to market events in June 2022[2]. This 2022 EAAP provides some analysis of fuel/energy limitations provided via MT PASA in the June market event, which highlights the need for more flexible GELF data collection. AEMO is currently consulting on modifications to relevant guidelines and methodologies to better represent scenarios relating to fuel availability to improve their representation in future publications[3].

Generator updates

Since the ESOO was published in August 2022, numerous generator projects have provided new information:

- Bolivar Power Station in South Australia is now considered committed.
- 400 megawatts (MW) of new battery storage is now considered committed.
- 168 MW of new wind generation is now considered committed.
- 56 MW of new large-scale solar generation is now considered committed.
- Mintaro Power Station in South Australia has provided updated return to service expectations, from 1 January 2023 to 17 March 2023.
- In Queensland, Callide C3 remains unavailable until 2 January 2023, and Callide C4 until 6 April 2023.

Based on the commissioning information and energy limitations information provided by participants relating to the three EAAP scenarios, this 2022 EAAP highlights that:

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[1] At https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/rsig/final-documents/eaap-guidelines.pdf.

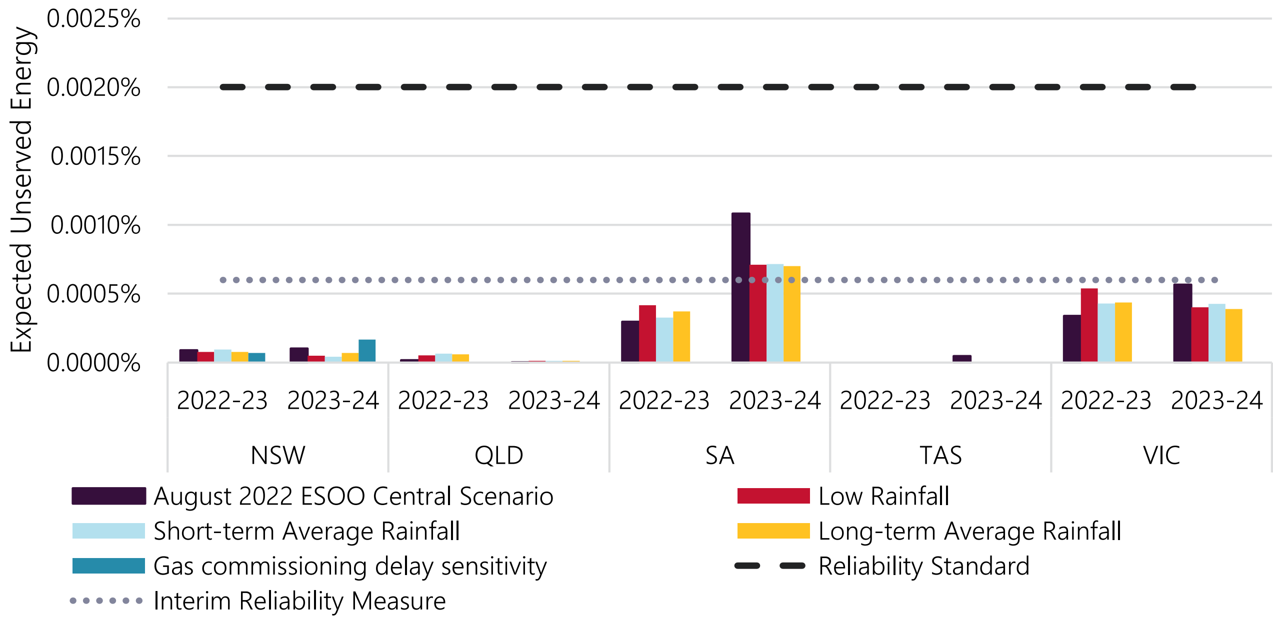
[2] See https://www.aemo.com.au/-/media/files/electricity/nem/market_notices_and_events/market_event_reports/2022/nem-market-suspension-and-operational-challenges-in-june-2022.pdf.

[3] See https://www.aemo.com.au/consultations/current-and-closed-consultations/2022-reliability-forecasting-guidelines-and-methodology.

- Expected unserved energy (USE) is forecast to be within the reliability standard and interim reliability measure (IRM) for **all regions** in the coming summer[4].
- Reliability risks have reduced for **South Australia** and **Victoria** relative to the 2022 ESOO, following the commitment of Bolivar Power Station and other new units, however expected USE remains above the IRM in **South Australia** in 2023-24.
- Drought conditions, should they emerge, are unlikely to result in increased USE compared to normal rainfall conditions as shown by outcomes under the low rainfall scenario.
- While expected USE remains below the reliability standard, risks of load shedding remain possible, particularly if maximum demands reach 10% probability of exceedance (POE)[5] levels and coincide with low renewable generation, or prolonged generation outages occur.
- AEMO has also included a sensitivity to assess the potential impact of delays to generator commissioning in New South Wales following the retirement of the Liddell Power Station. The sensitivity demonstrates that expected USE is forecast to remain within the IRM should both Tallawarra B and Kurri Kurri gas-fired power stations be unavailable in summer 2023-24 when Liddell Power Station has retired.

Figure 1 shows the results of the three EAAP scenarios relating to rainfall, and the sensitivity, relative to the 2022 ESOO Central scenario forecast.

Figure 1 Expected USE under EAAP scenarios and sensitivities relative to 2022 ESOO



[4] Expected USE is the amount of energy projected to be demanded, but not supplied, due to factors such as insufficient levels of generation capacity, demand response, or inter regional network capability. The IRM specifies USE of no more than 0.0006% of energy demanded in a region in any year, and the reliability standard specifies USE in each region of no more than 0.002% of energy demanded in any year.

[5] POE is the probability a forecast will be met or exceeded. The 10% POE forecast is mathematically expected to be met or exceeded once in 10 years and represents demand under more extreme weather conditions than a 50% POE forecast.

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1 Introduction

The Energy Adequacy Assessment Projection (EAAP) report provides information on the impact of potential energy constraints on supply adequacy in the National Electricity Market (NEM) across the two-year study period. Potential energy constraints include, but are not limited to, the impact of depleted water storages during drought conditions and constraints on fuel supply or cooling water available for thermal generation.

Consistent with the current EAAP Guidelines[6], AEMO calculated expected unserved energy (USE) for each region under the three EAAP rainfall scenarios which are assessed against the reliability standard and the Interim Reliability Measure (IRM). The reliability standard is a measure of USE in each region of no more than 0.002% of energy demanded in any year. The Interim Reliability Measure (IRM) is a measure of USE in each region of no more than of 0.0006% of energy demanded in any year and is included for completeness.

AEMO implements the reliability standard using forecasts and projections over different timeframes. AEMO uses the following processes that each identify the risk of USE for a slightly different purpose and therefore use slightly different inputs and approaches, further discussed in the Reliability Standard Implementation Guidelines[7] (RSIG):

- **Electricity Statement of Opportunities (ESOO)** – to provide market information over a 10-year projection to assist planning by existing and potential market participants. The ESOO is also used to implement the IRM.
- **EAAP** – to forecast USE for energy constrained scenarios over a two-year projection, published at least once every 12 months.
- **Medium Term Projected Assessment of System Adequacy (MT PASA)** – to forecast USE over a two-year projection, published on a weekly basis based on participants' best expectation of generation availability and outage scheduling.
- **Short Term Projected Assessment of System Adequacy (ST PASA)** – to forecast capacity reserve over a six-day projection.

1.1 Scenarios

For the 2022 EAAP, AEMO assessed the potential for USE under three different rainfall scenarios in accordance with the current EAAP Guidelines. Each scenario forecasts the period October 2022 to September 2024. The three scenarios are:

- **Low rainfall** – based on rainfall between 1 July 2006 and 30 June 2007 for all regions except New South Wales. New South Wales was based on rainfall between 1 June 2006 and 31 May 2007[8].
- **Short-term average rainfall** – based on the average rainfall recorded over the past 10 years.
- **Long-term average rainfall** – based on the average rainfall recorded over the past 50 years, or the longest period for which rainfall data is available, if less than 50 years (depending on the data available to participants).

[6] At https://www.aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/rsig/final-documents/eaap-guidelines.pdf.

[7] For more on PASA and the RSIG, see https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data/Market-Management-SystemMMS/Projected-Assessment-of-System-Adequacy.

[8] The inflows into the major hydro schemes in 2006-07 were impacted by severe drought.

Energy limitations relating to coal and gas availability are emerging as a material source of reliability risk in the NEM, having been a contributor to market events in June 2022[9]. AEMO is currently consulting on guidelines and methodologies that will improve the consideration of thermal fuel energy limits, that will better inform future EAAP publications. For this 2022 EAAP, AEMO has included analysis that looked at the impact of energy limits in the NEM during the June 2022 period to help highlight that tight energy balances do occur and these types of scenarios are not represented in the current EAAP guidelines or current GELF data collection.

Information such as natural water inflows, energy constraints and the level of hydro storage reservoirs at the start of the EAAP modelling horizon is provided by participants through their Generator Energy Limitation Framework (GELF) submissions for each scenario.

In addition to the three scenarios above, AEMO has included a sensitivity looking at New South Wales reliability if Kurri Kurri commissioning is delayed.

[9] See https://www.aemo.com.au/-/media/files/electricity/nem/market_notices_and_events/market_event_reports/2022/nem-market-suspension-and-operational-challenges-in-june-2022.pdf.

2 Methodology and assumptions

The EAAP is based on a probabilistic, time-sequential model that simulates future supply shortfalls for the three rainfall scenarios, taking account of any energy limitations provided by participants. This model also accounts for uncertainties in generator availability and weather-sensitive demand and supply from intermittent resources.

The following documents provide further information on the inputs, assumptions and methodology used in the 2022 EAAP.

Table 1 Input and methodology documents relevant to the EAAP

Document	Location
EAAP guidelines	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/rsig/final-documents/eaap-guidelines.pdf
2022 Forecasting Assumptions Update	https://aemo.com.au/-/media/files/major-publications/isp/2022-forecasting-assumptions-update/final-2022-forecasting-assumptions-update.pdf
Demand Side Participation Forecast Methodology	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/demand-side-participation/final/demand-side-participation-forecast-methodology.pdf
Forecasting Approach – Electricity Demand Forecasting Methodology	https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2022/forecasting-approach-electricity-demand-forecasting-methodology.pdf
ESOO and Reliability Forecast Methodology	https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2022/esoo-and-reliability-forecast-methodology-document-2022.pdf
Forecast Accuracy Report Methodology	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2020/forecast-accuracy-report-methodology/forecast-accuracy-reporting-methodology-report-aug-20.pdf
Reliability Standard Implementation Guidelines	https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/rsig/reliability-standard-implementation-guidelines.pdf

For the 2022 EAAP modelling, AEMO:

- Performed 1,200 simulations for each scenario with 10% probability of exceedance (POE) demand traces (the 10% POE simulation case) and with 50% POE demand traces (the 50% POE simulation case).
- Used 12 historical reference years to represent variable patterns of intermittent generation and demand under both the 10% POE and 50% POE simulation cases.
- Assumed zero USE using 90% POE demand traces.

The model used a probability-weighted USE assessment to identify whether expected USE is likely to exceed the reliability standard in each region of the NEM. Expected USE was derived by applying the following weightings to results from the 10%, 50% and 90% POE demand traces:

- 30.4% for 10% POE.
- 39.2% for 50% POE.
- 30.4% for 90% POE.

2.1 Electricity demand

As Australia transitions towards a net zero emissions economy by 2050, electricity consumption and demand forecasts are influenced by a range of new and continuing drivers. The Step Change scenario – considered the most likely, or Central scenario, in the 2022 ESOO – incorporates each of these drivers, including a strong influence from electrifying business and residential sectors, and captures continued uptake of distributed energy resources (DER), including distributed photovoltaics (PV) and batteries, as well as growing uptake of electrified transport (primarily via electric vehicles). These drivers are forecast to deliver a future with greater underlying consumption, and more consumer-driven generation and storage behind the meter, than exists today.

See the 2022 ESOO and 2022 Forecasting Assumptions Update[10] for more information.

2.2 Generation capacity

AEMO's modelling used the latest information on generation commitments in the NEM from the October 2022 Generation Information publication[11]. It includes all scheduled and semi-scheduled and significant non-scheduled generation that is either existing or assumed to be committed or committed*[12] in the modelling period.

Noteworthy changes to generation availability since the ESOO published in August 2022 are:

- Bolivar Power Station in South Australia is now considered committed.
- 400 megawatts (MW) of new battery storage is now considered committed.
- 168 MW of new wind generation is now considered committed.
- 56 MW of new large-scale solar generation is now considered committed.
- Mintaro Power Station in South Australia has provided updated return to service expectations, from 1 Jan 2023 to 17 March 2023.
- In Queensland, Callide C3 remains unavailable until 2 January 2023 and Callide C4 remains unavailable until 6 April 2023.

The capacity of existing generation is sourced from MT PASA[13]. The EAAP assessment of USE assumes any planned generation outages that have timing flexibility will be shifted to avoid potential USE. If USE is forecast during periods where the MT PASA capacity offer reflects a planned generator outage and the generator participant has not advised that this outage is inflexible, this outage is removed from the EAAP forecast. The EAAP assessment of USE therefore assumes any planned generation outages that have timing flexibility will be shifted to avoid potential USE.

[10] See https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios.

[11] At https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information.

[12] Commitment criteria relate to land, contracts, planning, finance, and construction. Committed projects satisfy all five criteria, and committed* projects are highly likely to proceed, satisfying the land, finance and construction criteria, plus either the planning or contracts criteria. Definitions are under the 'Background information' in the Generation Information file at https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information.

[13] Capacity based on MT PASA run 595 with offers submitted by 31 October 2022. Updates to availability of Callide C3 were adjusted in line with submissions on 3 of November to include this extended outage.

2.3 Transmission capability

Interconnector information includes, but is not limited to, inter-regional loss factor models and marginal loss factors. Network constraints, which represent technical limits on operating the power system, are expressed as a linear combination of generation and interconnectors, which are constrained to be less than, equal to, or greater than a certain limit. Only network constraints associated with system normal conditions are modelled.

2.4 GELF parameters

GELF parameters are confidential information submitted by scheduled generators including limitations on their ability to supply energy relating to the EAAP scenarios, such as hydro storage (including pump storage), thermal generation fuel supply, cooling water availability, and gas supply. These parameters are classified into two categories:

- Static GELF parameters:
  - Technical specifications of the power stations, such as power station name, type of power station, number of generating units at the power station, and their capacities.
  - Additional components associated with hydro power schemes such as maximum and minimum active reservoir storage, the reservoirs to which the tunnels are connected, water utilisation factor for generation and pumping for each generating unit or for the power station, and reservoir connections (for example, upstream reservoir and downstream reservoir).
- Variable GELF parameters include:
  - Monthly forecast generation capability and monthly capacity profiles to be submitted by non-hydro power stations.
  - Active reservoir storage at the beginning of the study period, monthly inflows to reservoirs during the study period, minimum reservoir level that can be reached in each month of the study period without violating long-term reservoir management policy, and any other limitations on reservoir capacities or levels that should be considered within the study period to be submitted for hydro power schemes.

Please see the EAAP Guidelines[14] for the details of the GELF parameters.

[14] At https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/energy-adequacy-assessment-projection-eaap

3 Results

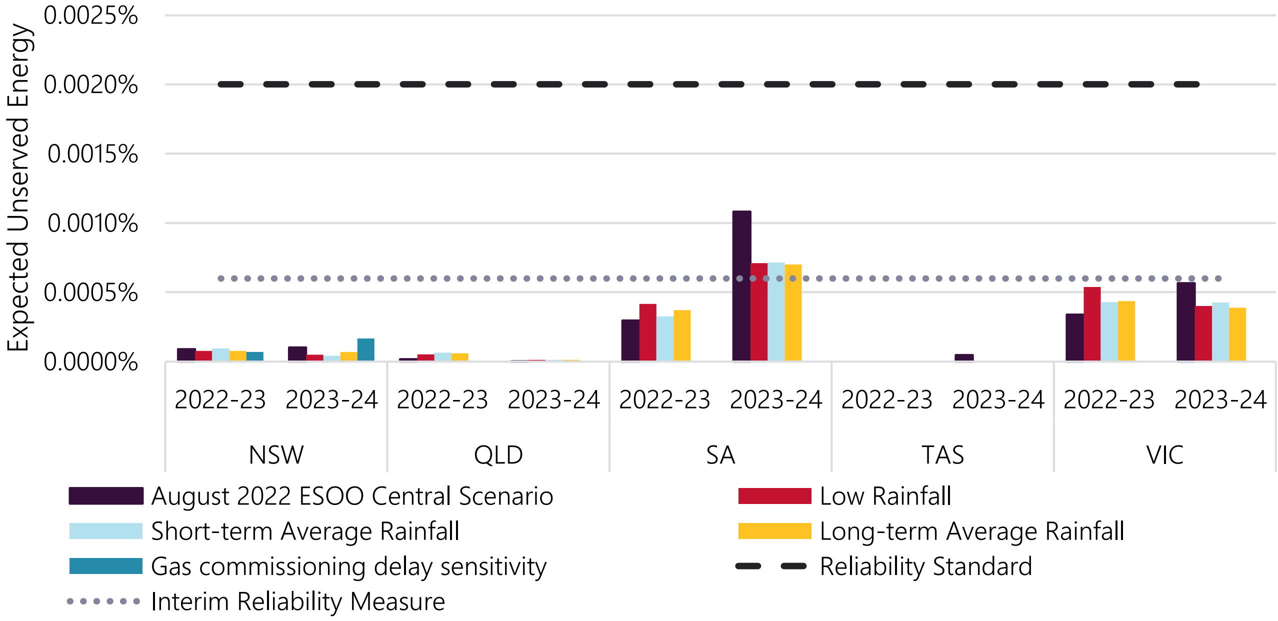
The EAAP reliability assessment indicates that, regardless of rainfall scenarios, there is some risk of supply interruption over the next two years, particularly in South Australia and Victoria during peak summer periods, however expected USE is not forecast to exceed the reliability standard in any region over the next two years.

These results are similar to, but slightly improved from, those observed in the 2022 ESOO[15] for most regions, due to new generation now being considered committed, including the Bolivar Power Station in South Australia, 224 MW of new large-scale solar and wind, and 400 MW of new battery storage. Reliability risks have improved most for South Australia and Victoria in the second year following the commitment of Bolivar Power Station and other new units, however expected USE remains above the IRM in South Australia in 2023-24, consistent with the 2022 ESOO.

Risks of load shedding remain possible in all regions, particularly if maximum demands reach 10% probability of exceedance (POE)[16] levels and coincide with low renewable generation, or prolonged generation outages.

Figure 2 shows expected USE under each of the three scenarios for the forecast horizon relative to the 2022 ESOO, published in August 2022.

Figure 2 Expected USE under the three EAAP scenarios



The EAAP scenarios were designed to assess the impact of differing rainfall conditions but indicate that USE is relatively unaffected by potential drought at this time given current water storage levels; the observed reliability outcomes are similar across all three rainfall scenarios. Furthermore, reduced rainfall may be unlikely given that the

[15] At https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2022/2022-electricity-statement-of-opportunities.pdf

[16] POE is the probability a forecast will be met or exceeded. The 10% POE forecast is mathematically expected to be met or exceeded once in 10 years and represents demand under more extreme weather conditions than a 50% POE forecast.

2022-23 summer is forecast to be La Niña[17] and high rainfall levels have been observed across much of the NEM in 2022. Almost all variation observed between the scenarios is attributable to minor variability in simulation iteration outcomes (that is, different combinations of forced outages), not variation in rainfall.

Supply scarcity risk is primarily driven by increased vulnerability to climatic conditions such as extended periods of high temperature, corresponding with low wind or solar availability and unplanned generation outages, as already highlighted in the 2022 ESOO[18] and MT PASA.

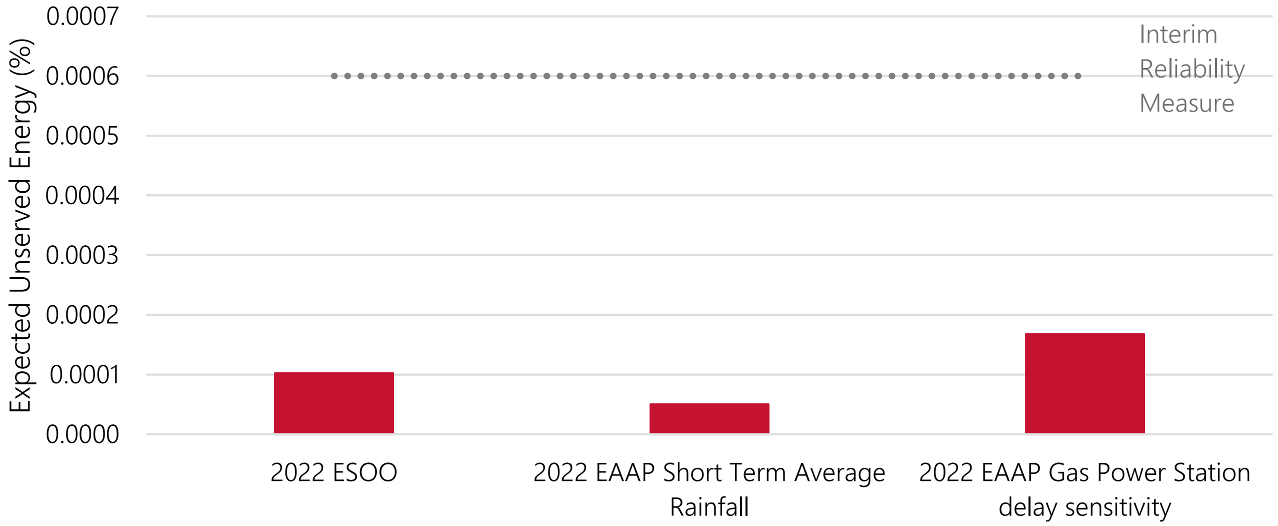
Drought is forecast to have a low impact on reliability in the two-year outlook, due to the ability of generators to schedule limited energy resources for use at times of highest demand.

3.1 New South Wales commissioning delay sensitivity

There are two future developments in New South Wales that are now considered committed or committed*; these are the 320 MW Tallawarra B and 750 MW Kurri Kurri gas-fired power stations. The Tallawarra B Power Station has advised an expectation that it will be fully commissioned by October 2023, and the Kurri Kurri Power Station has advised an expectation it will be fully commissioned by December 2023. Tallawarra B is considered committed* using AEMO's commitment criteria, and consistent with AEMO's methodologies is modelled in this EAAP from July 2024, after the key 2023-24 summer period. The following sensitivity considers the risks in summer 2023-24 should the Kurri Kurri Power Station be unavailable over this summer period in addition to the unavailability assumed for Tallawarra B.

The sensitivity results, shown in Figure 3, demonstrate that while reliability risks increase in this sensitivity against the EAAP scenario, expected USE is forecast to be within the IRM in 2023-24 should both Tallawarra B and Kurri Kurri power stations be unavailable.

Figure 3 New South Wales 2023-24 Expected USE for ESOO and EAAP scenarios and sensitivities



[17] See http://www.bom.gov.au/climate/model-summary/#region=NINO34.

[18] At https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/nem_esoo/2022/2022-electricity-statement-of-opportunities.pdf

3.2 Differences between EAAP, MT PASA and ESOO

AEMO uses EAAP, MT PASA and ESOO to identify the risk of USE but each has a slightly different purpose and therefore use slightly different inputs and approaches. The main differences between the forecasts are summarised below.

The main differences between EAAP and MT PASA

The EAAP is assessed under a range of predefined energy scenarios and is published at least once every 12 months. It assumes:

- Generation and transmission outages will be rescheduled to avoid load shedding unless participants have indicated that the timing of these outages is inflexible.
- System normal network conditions, assuming any network outage is rescheduled if need be to avoid capacity shortfalls.

The MT PASA is based on participants' best expectation of generation availability, including some energy limitations, and is published on a weekly basis. It is an operational planning tool that informs market participants of tight supply conditions and allows them to reschedule planned generation outages to avoid potential supply shortfalls.

MT PASA incorporates:

- The impact of transmission outages according to the 13-month Network Outage Schedule (NOS).
- The impact of scheduled generation outages which may be flexible. Generation may be unavailable in MT PASA due to recall times that exceed the required 24 hours, but be considered available for the purpose of EAAP.

The main differences between EAAP and ESOO

The ESOO provides technical and market data that informs the decision-making processes of market participants, new investors, and jurisdictional bodies as they assess opportunities in the NEM over a 10-year outlook period, focusing on information about future supply adequacy. It also provides reliability forecasts for the purposes of the Retailer Reliability Obligation. The ESOO adopts similar Monte Carlo modelling techniques to EAAP, but uses slightly different inputs to reflect the greater uncertainty inherent in longer-term outlooks. Many of these differences relate to future assumptions on generation availability and capacity, and transmission constraints.

3.3 Energy limitations analysis

Currently the EAAP guidelines specify that AEMO must include three scenarios in the EAAP based on different rainfall conditions. Recent market events have demonstrated that these scenarios are not capturing the full range of energy adequacy risks which the market now faces. During 2022, a range of circumstances created coal and gas supply constraints, contributing to lack of reserve (LOR) events and operational issues in the NEM. AEMO is currently consulting on the EAAP guidelines and has proposed that they be adjusted to capture different scenarios to capture a broader range of energy issues that the market may face in the future, including coal and gas supply constraints.

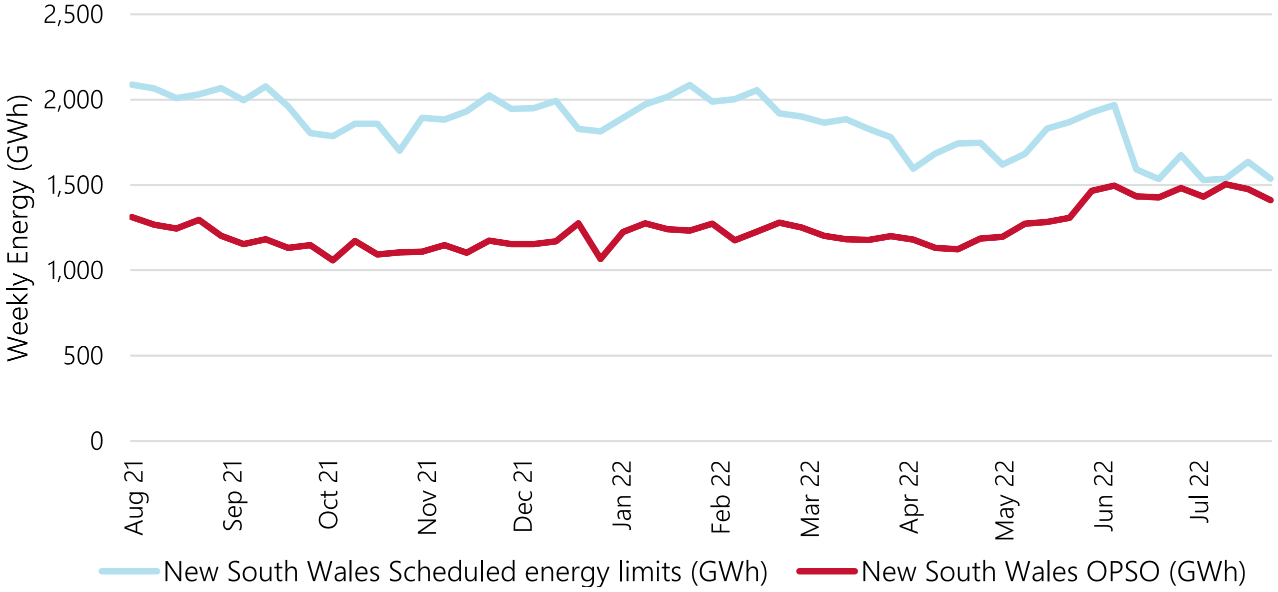
As an example, AEMO has examined the energy (and capacity) limitations faced during the June-July 2022 period, and compared this to the weekly energy limits submitted to the weekly MT PASA process.

Figure 4 shows the New South Wales weekly energy limitations provided by scheduled generator participants for MT PASA across the year from August 2021 to July 2022, compared to actual operational sent out (OPSO) demand in New South Wales. In June-July 2022, energy limits for scheduled New South Wales generators decreased (due to energy limitations and outages) at a time when demand increased, creating an extremely tight energy balance. This is observed in the last weeks of the figure, with a significant reduction in the weekly energy limit, nearing the operational demand.

AEMO believes that by collecting appropriate fuel data in future GELF submissions, the EAAP will better capture energy adequacy risks such as these. This will have the additional benefit of increasing the operational understanding of generators' fuel supplies and allow greater consideration of situations that may lead to energy inadequacy.

It is also noted that these fuel limitations were not predicted months in advance. EAAP scenarios are likely to include situations where unexpected but plausible situations occur to limit fuel supply to some generators.

Figure 4 New South Wales scheduled weekly energy limits compared to weekly OPSO demand (GWh)



A1. Detailed results

This section contains annual and monthly USE values for each region for the three rainfall scenarios modelled. Monthly forecast USE values are provided for the full modelling horizon October 2022 to September 2024, noting that at the time of publication the first two months of the forecast have already occurred and the values in the table remain as per forecasted values. They do not represent actual outcomes.

A1.1 Low rainfall scenario

Table 2 Annual forecast USE in low rainfall scenario

	2022-23 USE		2023-24 USE	
	(Megawatt hours [MWh])	(% of regional demand)	(MWh)	(% of regional demand)
New South Wales	50	0.0001%	33	0.0000%
Queensland	27	0.0001%	6	0.0000%
South Australia	51	0.0004%	89	0.0007%
Tasmania	0	-	0	-
Victoria	235	0.0005%	180	0.0004%

Table 3 Monthly forecast USE in low rainfall scenario, megawatt hours (MWh)

Month	New South Wales	Queensland	South Australia	Tasmania	Victoria
Oct-22	0.0	0.0	0.0	0.0	0.0
Nov-22	18.3	4.1	1.4	0.0	1.4
Dec-22	2.8	10.3	0.1	0.0	27.2
Jan-23	11.2	7.2	43.4	0.0	135.8
Feb-23	11.9	4.5	3.0	0.0	47.8
Mar-23	0.0	1.3	3.2	0.0	23.0
Apr-23	0.0	0.0	0.0	0.0	0.0
May-23	0.0	0.0	0.0	0.0	0.0
Jun-23	1.5	0.0	0.0	0.0	0.0
Jul-23	2.6	0.0	0.0	0.0	0.0
Aug-23	1.4	0.0	0.0	0.0	0.0
Sep-23	0.5	0.0	0.0	0.0	0.0
Oct-23	0.0	0.0	0.0	0.0	0.0
Nov-23	4.4	0.0	0.0	0.0	0.2
Dec-23	13.3	0.1	0.0	0.0	1.4
Jan-24	6.2	2.5	84.9	0.0	143.1
Feb-24	7.5	3.0	4.4	0.0	23.1
Mar-24	0.0	0.4	0.0	0.0	11.9
Apr-24	0.0	0.0	0.0	0.0	0.0
May-24	0.0	0.0	0.0	0.0	0.0
Jun-24	1.1	0.0	0.0	0.0	0.0

Month	New South Wales	Queensland	South Australia	Tasmania	Victoria
Jul-24	0.3	0.0	0.0	0.0	0.0
Aug-24	0.0	0.0	0.0	0.0	0.1
Sep-24	0.0	0.0	0.0	0.0	0.0

A1.2 Short-term average rainfall scenario

Table 4 Annual forecast USE in short-term average rainfall scenario

	2022-23 USE		2023-24 USE	
	(MWh)	(% of regional demand)	(MWh)	(% of regional demand)
New South Wales	61	0.0001%	28	0.0000%
Queensland	34	0.0001%	7	0.0000%
South Australia	40	0.0003%	90	0.0007%
Tasmania	0	-	0	-
Victoria	187	0.0004%	191	0.0004%

Table 5 Monthly forecast USE in short-term average rainfall scenario, MWh

Month	New South Wales	Queensland	South Australia	Tasmania	Victoria
Oct-22	0.0	0.0	0.0	0.0	0.0
Nov-22	29.2	3.8	0.5	0.0	2.3
Dec-22	0.4	15.0	0.0	0.0	10.1
Jan-23	13.1	8.9	34.3	0.0	121.0
Feb-23	8.5	5.6	2.9	0.0	38.6
Mar-23	0.0	1.0	2.3	0.0	15.3
Apr-23	0.0	0.0	0.0	0.0	0.0
May-23	1.0	0.0	0.0	0.0	0.0
Jun-23	1.5	0.0	0.0	0.0	0.0
Jul-23	4.4	0.0	0.0	0.0	0.0
Aug-23	3.0	0.0	0.0	0.0	0.0
Sep-23	0.1	0.0	0.0	0.0	0.0
Oct-23	0.0	0.0	0.0	0.0	0.0
Nov-23	1.2	0.0	0.0	0.0	0.5
Dec-23	10.4	0.1	0.0	0.0	1.9
Jan-24	8.8	3.3	85.7	0.0	148.2
Feb-24	6.5	3.1	4.2	0.0	30.3
Mar-24	0.0	0.0	0.0	0.0	9.6
Apr-24	0.0	0.0	0.0	0.0	0.0
May-24	0.0	0.0	0.0	0.0	0.0
Jun-24	0.8	0.0	0.0	0.0	0.0
Jul-24	0.6	0.0	0.0	0.0	0.1
Aug-24	0.0	0.0	0.0	0.0	0.1
Sep-24	0.0	0.0	0.0	0.0	0.0

A1.3 Long-term average rainfall scenario

Table 6 Annual forecast USE in long-term average rainfall scenario

	2022-23 USE		2023-24 USE	
	(MWh)	(% of regional demand)	(MWh)	(% of regional demand)
New South Wales	50	0.0001%	46	0.0001%
Queensland	32	0.0001%	6	0.0000%
South Australia	46	0.0004%	88	0.0007%
Tasmania	0	-	0	-
Victoria	191	0.0004%	175	0.0004%

Table 7 Monthly forecast USE in long-term average rainfall scenario, MWh

Month	New South Wales	Queensland	South Australia	Tasmania	Victoria
Oct-22	0.0	0.0	0.0	0.0	0.0
Nov-22	17.8	4.9	0.6	0.1	2.0
Dec-22	1.8	13.4	0.0	4.0	11.5
Jan-23	10.7	8.1	39.3	0.3	123.1
Feb-23	10.0	4.4	2.9	0.0	40.2
Mar-23	0.0	0.9	2.8	0.0	14.3
Apr-23	0.0	0.0	0.0	0.0	0.0
May-23	2.9	0.0	0.0	0.0	0.0
Jun-23	1.9	0.0	0.0	0.0	0.0
Jul-23	1.2	0.0	0.0	0.0	0.0
Aug-23	2.4	0.0	0.0	0.0	0.0
Sep-23	0.7	0.0	0.0	0.0	0.0
Oct-23	0.0	0.0	0.0	0.0	0.0
Nov-23	4.0	0.0	0.0	0.0	0.5
Dec-23	21.0	0.0	0.0	0.0	2.2
Jan-24	8.0	2.3	83.0	0.0	139.2
Feb-24	11.8	4.0	5.1	0.0	26.1
Mar-24	0.0	0.1	0.0	0.0	6.8
Apr-24	0.0	0.0	0.0	0.0	0.0
May-24	0.0	0.0	0.0	0.0	0.0
Jun-24	1.1	0.0	0.0	0.0	0.0
Jul-24	0.1	0.0	0.0	0.0	0.0
Aug-24	0.0	0.0	0.0	0.0	0.0
Sep-24	0.0	0.0	0.0	0.0	0.0