

2022 Electricity Statement of Opportunities

Release webinar
1 September 2022



We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders past, present and emerging.

Asking questions in today's webinar

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Today's webinar

Purpose: inform stakeholders of the ESOO's Reliability Forecast outcomes and answer stakeholder questions

Agenda

- Introduction
- Demand Outlook
- Supply Outlook
- ESOO Central scenario
- ESOO Anticipated and actionable sensitivity
- Question and answer session



Please note that this forum will be recorded

Urgent need for investment to support the energy transition

- **Urgent development is needed** of anticipated generation and storage projects, as well as actionable transmission investments, to support the energy transition and maintain reliability amidst a cluster of coal retirements this decade.
- A strong pipeline of announced projects currently exists, however **insufficient capacity response has become committed** to address emerging shortfalls, while programs to increase investments are progressing.
- The coming summer (2022-23) is forecast to remain within the Interim Reliability Measure in all regions, however reliability risks are emerging in many regions across the 10yr horizon due to:
 - Scheduled generator retirements
 - Growing energy consumption and peak demands
 - Project commissioning risks
 - Deteriorating reliability of ageing generators

Definitions

Unserved energy (USE) is energy that cannot be supplied to consumers, resulting in involuntary load shedding (loss of customer supply). For example, this may be caused by insufficient levels of generation capacity or demand response.

The **Interim Reliability Measure (IRM)** was introduced to reduce the risk of load shedding across the NEM providing a trigger for the Retailer Reliability Obligation (RRO) of 0.0006% of energy demanded in a region in any year. It applies until 30 June 2025.

The **reliability standard** is a measure of USE in each region of no more than 0.002% of energy demanded in any year. For the purposes of the RRO, it applies after 30 June 2025.

Any **forecast reliability gap** is based on forecast USE in excess of the IRM or reliability standard in a region in a year.

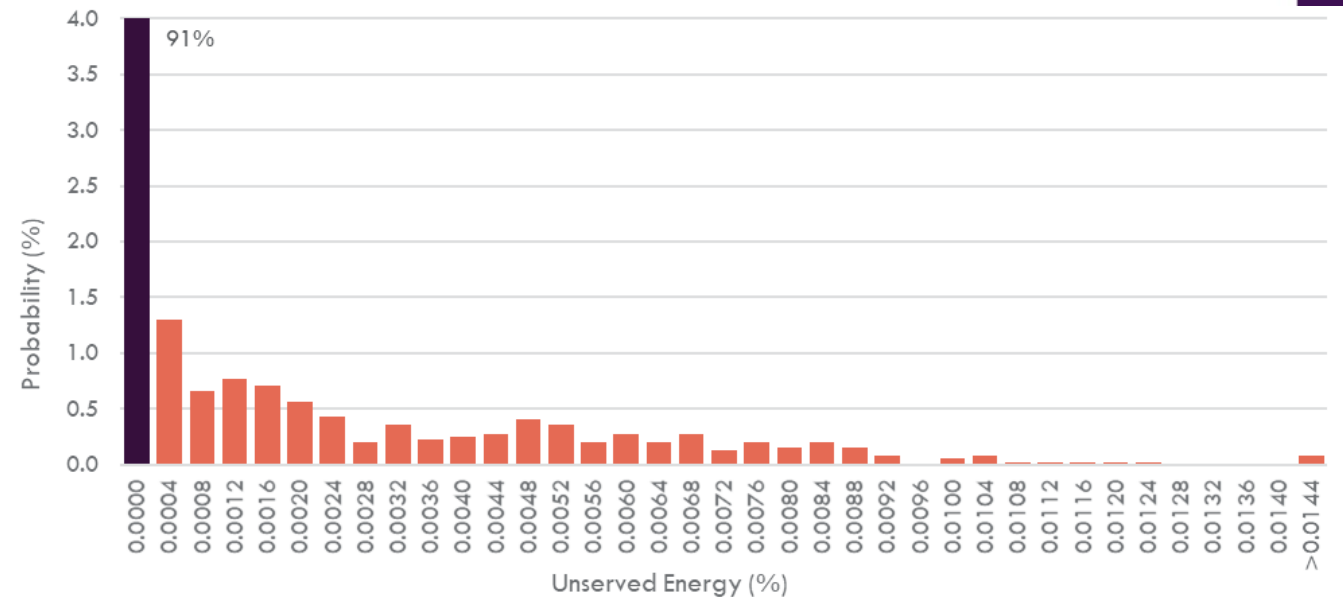
If AEMO reports a forecast reliability gap, this may trigger a reliability instrument request under the **RRO**.

The IRM is forecast to be met in all NEM regions this summer, however risks to supply remain.

Risks include:

- Prolonged periods of unavailability of generation or transmission, including forced outages, planned maintenance and/or potential mothballing.
- Delays to the commissioning of new renewable generation, dispatchable capacity and/or transmission.
- Extreme temperatures affecting the output from all generation sources.
- The ongoing potential for gas and coal fuel shortfalls, particularly if generators need to operate more frequently to cover prolonged outages of major power stations.

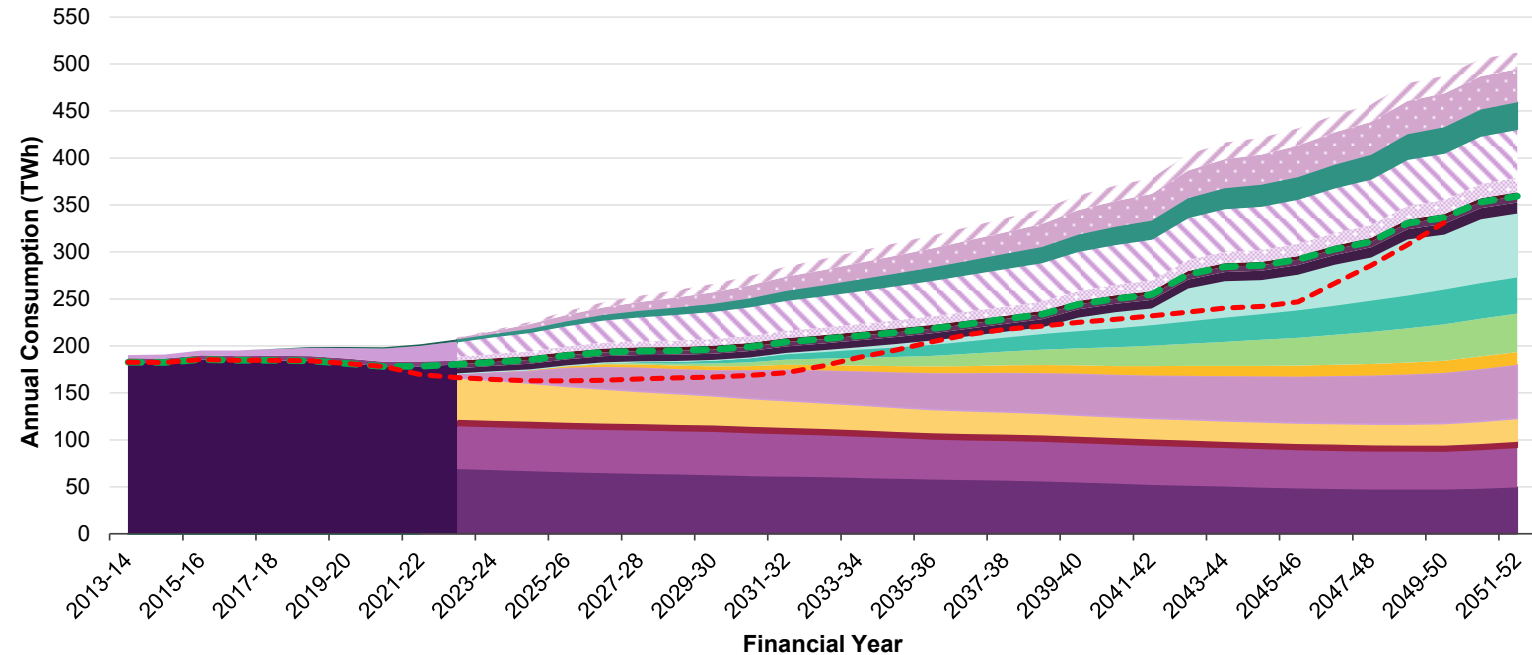
Probability density of forecast USE in South Australia 2022-23, Central scenario



The figure shows a 91% probability that no USE will occur in the coming year, but there is a 9% probability of an incident. It shows a ‘long-tail’ of possible outcomes that may be infrequent but impactful. For example there is a 1% probability of an outage greater than four hours for 100,000 households.

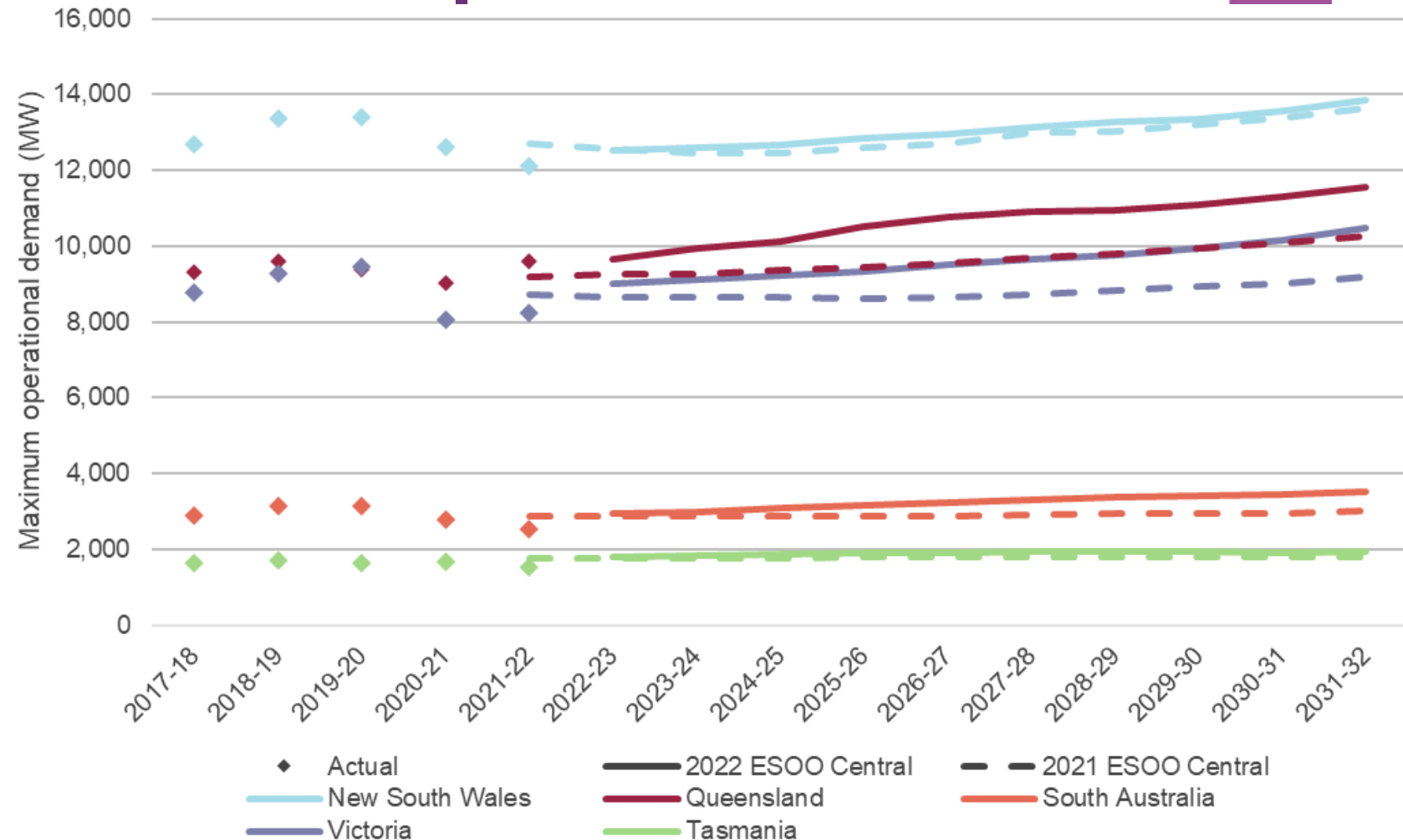
Electricity consumption forecasts are higher than the 2021 ESOO

- AEMO now considers the Step Change scenario most likely.
- The Step Change scenario incorporates expectations regarding electrification including electric vehicles and rapid DER uptake.
- The 2022 ESOO operational consumption forecast is higher than the 2021 ESOO.
- A small upward revision is noted against previous Step Change forecasts, including those used in the Update to the 2021 ESOO.



Maximum demand forecasts follow the similar trends to consumption

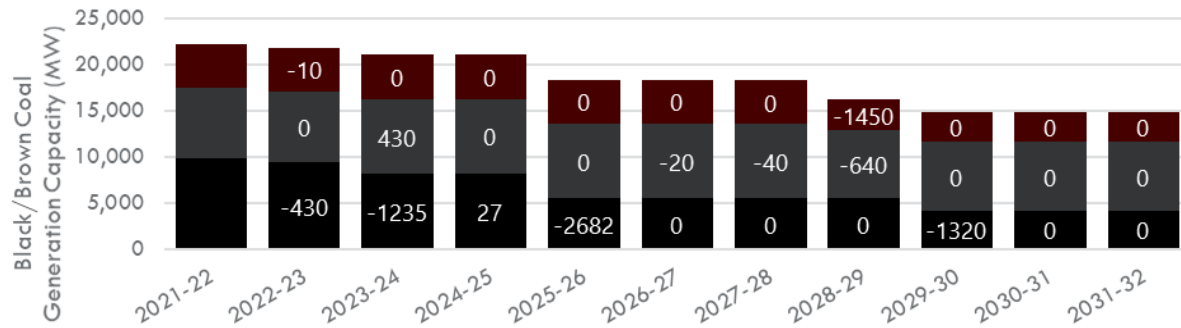
- Similarly, maximum demand forecasts have been revised upwards since previously issued.
- The change of scenario is the primary driver for the increase, however revisions on large industrial loads, and base load (non-temperature sensitive load) have resulted in a 2022 forecast that is higher than the 2021 Step Change forecast.
- While the Step Change scenario results in higher demand, the additional DER forecast somewhat offsets the additional impact on the reliability forecast.



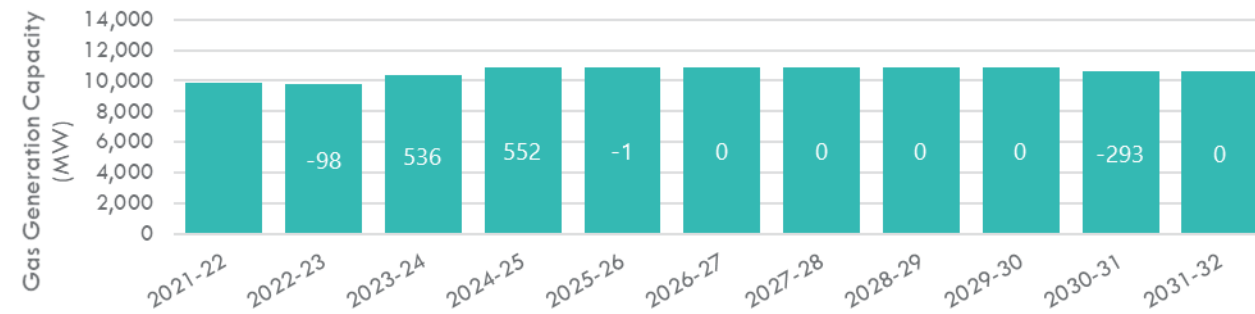
Expected changes to existing and committed supply

The 'reliability forecast' or ESOO Central scenario considers only existing generators which are assumed to retire at the expected date provided by the owner, and developments that meet AEMO's commitment criteria.

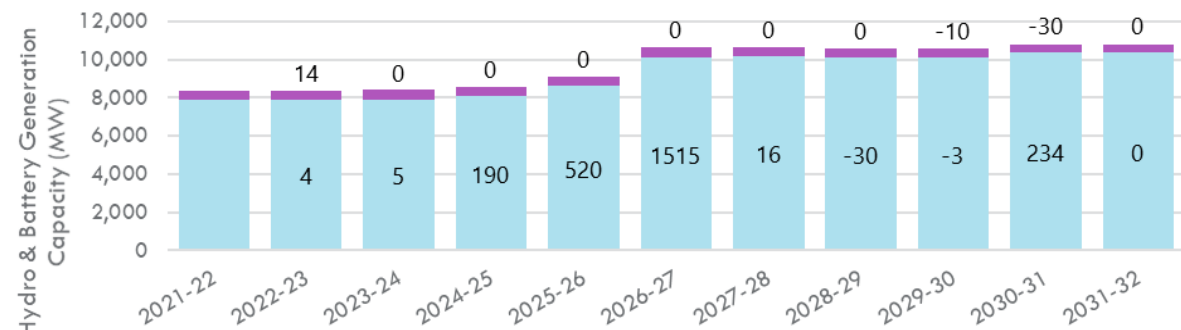
Assumed capability during typical summer conditions, by generation type, 2021-22 to 2031-32



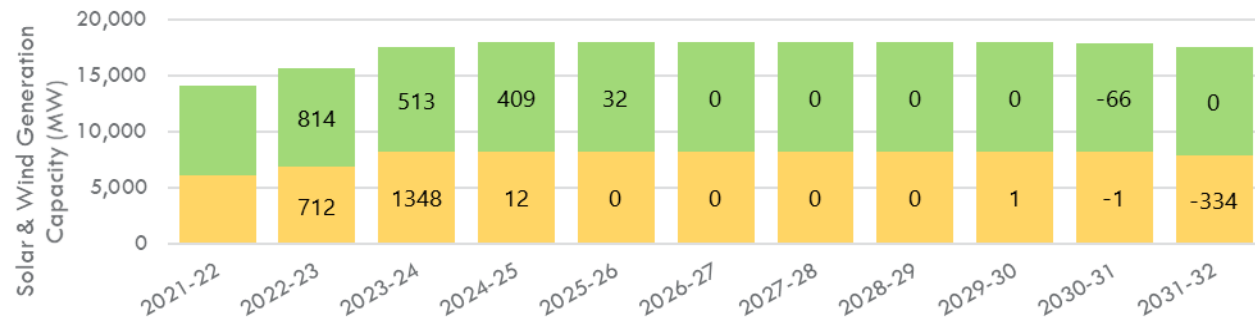
■ Black coal NSW ■ Black coal QLD ■ Brown coal VIC



■ Gas



■ Water ■ Battery



■ Solar ■ Wind

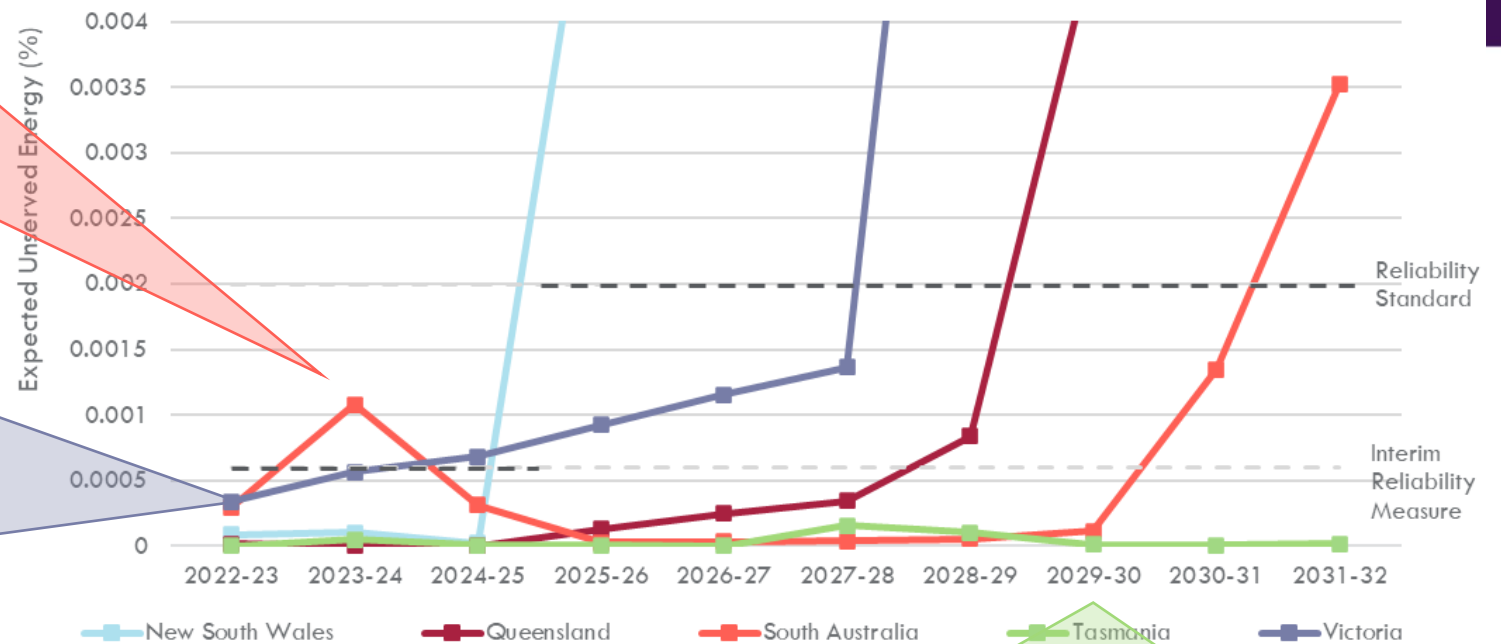
Reliability gaps are forecast in all mainland NEM regions without more committed developments.

Reliability gaps are forecast in South Australia in 2023-24, against the IRM of 0.0006% USE. This gap is emerging due to delayed commissioning of committed generation and transmission developments, including a later release of the first stage of the Project EnergyConnect transmission project, and also expected expansions of industrial loads.

Reliability gaps are forecast in Victoria from 2024-25, against the Interim Reliability Measure of 0.0006% USE. This gap is attributed to forecast expansions of industrial loads, and updated projected outage rates and ratings on the inter-regional transmission flow paths that supply Victoria during times of high demand.

* Since modelling was undertaken, the Mortlake South Wind Farm become committed, and would improve outcomes in Victoria if considered.

Expected unserved energy, 2022-23 to 2031-32, Central outlook



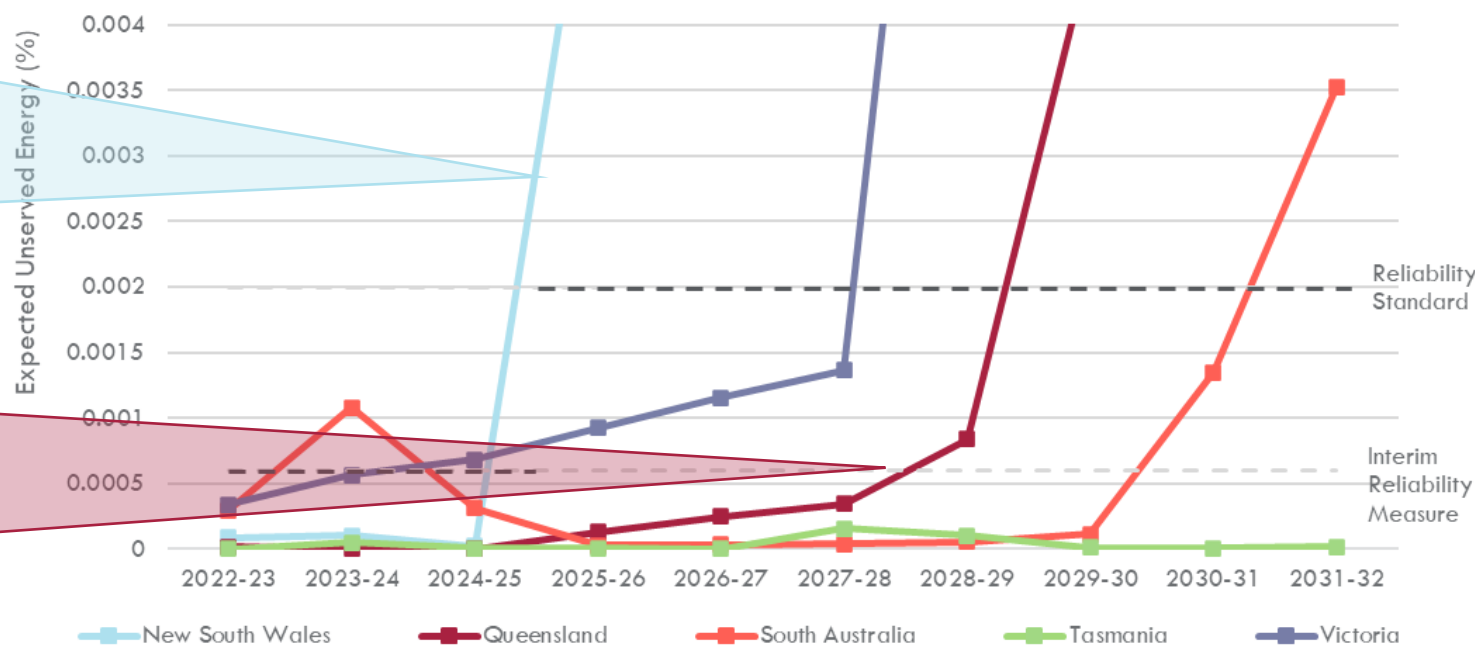
Reliability risks remain with the IRM in **Tasmania** over the ESOO horizon

Reliability gaps are forecast in all mainland NEM regions without more committed developments.

Reliability gaps are forecast in New South Wales from 2025-26, against the reliability standard of 0.002% USE. Consistent with the Update to the 2021 ESOO, this reliability gap is four years earlier than forecast in the 2021 ESOO, following changes in generation including the announced earlier closure of the Eraring Power Station.

Reliability risks in Queensland increase from 2029-30, above the reliability standard of 0.002% USE. Risks arise when Vales Point Power Station in New South Wales is expected to retire (and after the expected closure of Callide B Power Station in Queensland), as expected USE is shared across the two regions.

Expected unserved energy, 2022-23 to 2031-32, Central outlook



Retailer Reliability Obligation (RRO) requests are required for relevant reliability gap periods

In this 2022 ES00, the following reliability gaps meet the requirements for RRO instrument requests:

- AEMO is requesting a T-1 reliability instrument for **South Australia** in **2023-24**.
- AEMO is requesting a T-3 reliability instrument for **New South Wales** in **2025-26**.

Additionally, AEMO is advising that a reliability gap is no longer forecast in New South Wales in 2023-24.

The AER will begin consultation on the reliability instruments soon.

<https://www.aer.gov.au/retail-markets/retailer-reliability-obligation/register-of-reliability-instruments>

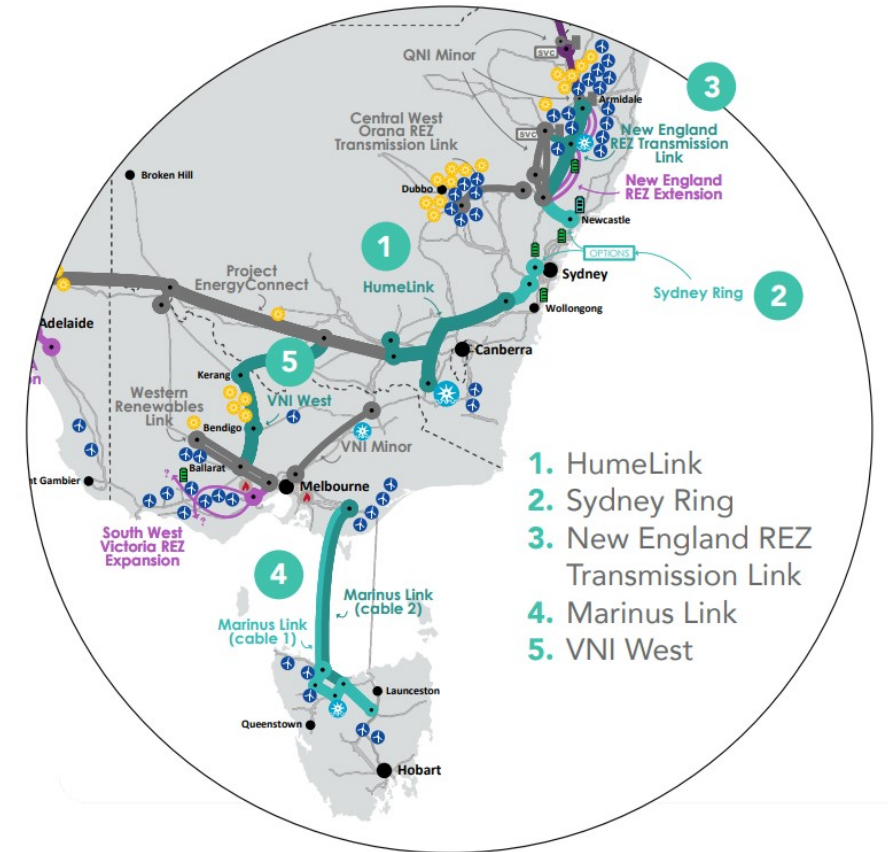
Anticipated and actionable developments are included in a sensitivity

The pipeline of anticipated generation and storage developments currently are:

- Almost 1,200 MW of wind generation.
- Approximately 850 MW of solar generation.
- Approximately 1,200 MW of battery energy storage systems.
- Approximately 100 MW of peaking capacity operated with gas or diesel fuels.

The range of transmission developments are included in the sensitivity:

- Central West Orana and New England renewable energy zone (REZ) transmission links, and the Hunter Transmission Project (including potentially earlier investments to support the system integrity protection scheme [SIPS]) in New South Wales, and the Western Renewables Link in Victoria.
- Actionable transmission developments identified in the 2022 Integrated System Plan

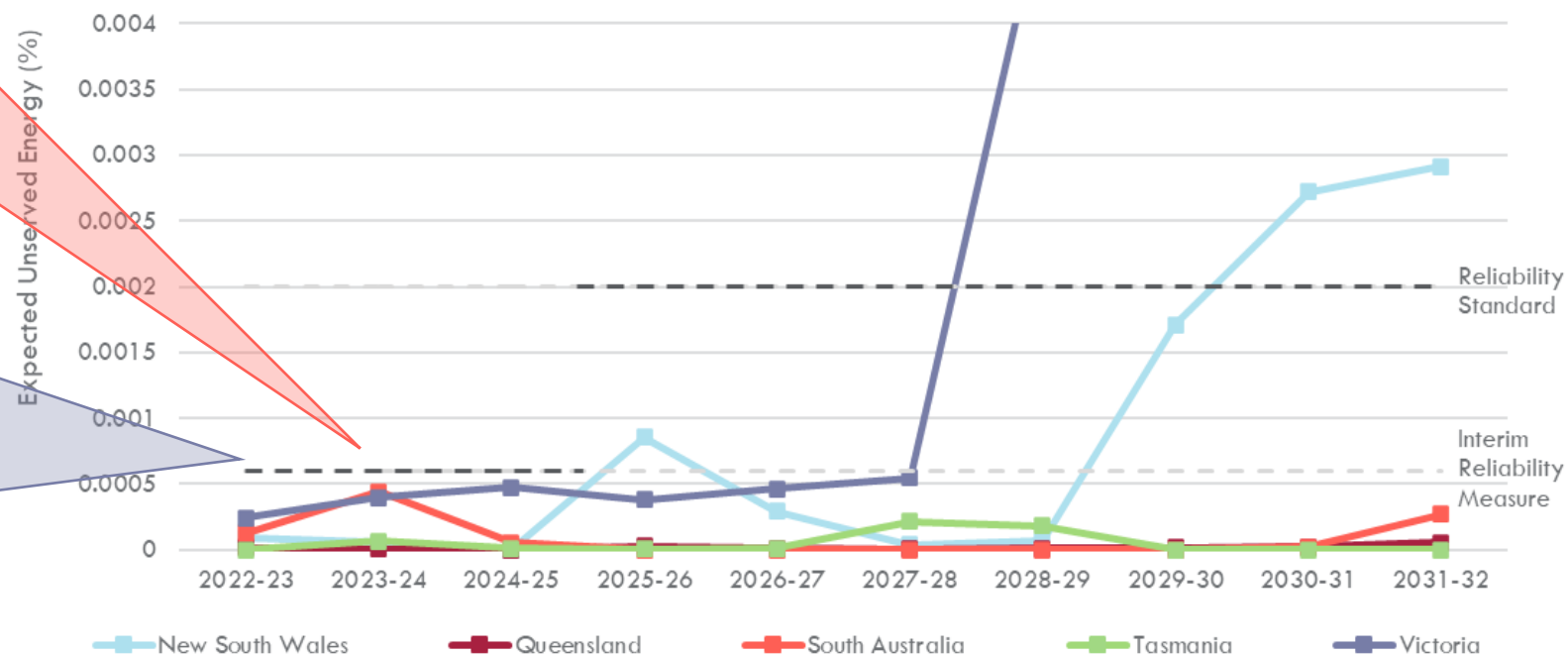


Significant improvements are forecast if anticipated and ISP actionable developments are included

Expected USE in South Australia is forecast to remain within the IRM. The forecast reliability gap is able to be addressed with the development of Bolivar Power Station, and 3 Battery Energy Storage Systems. These developments help offset gaps forecast in later years also.

Reliability is forecast within the IRM until the expected retirement of Yallourn Power Station. While ISP actionable developments significantly improve the outlook, further generation developments are required at this point. Developments associated with the second auction of the Victorian Renewable Energy Target will assist and are not included in this forecast.

Expected unserved energy, 2022-23 to 2031-32, Central outlook, with anticipated and actionable developments

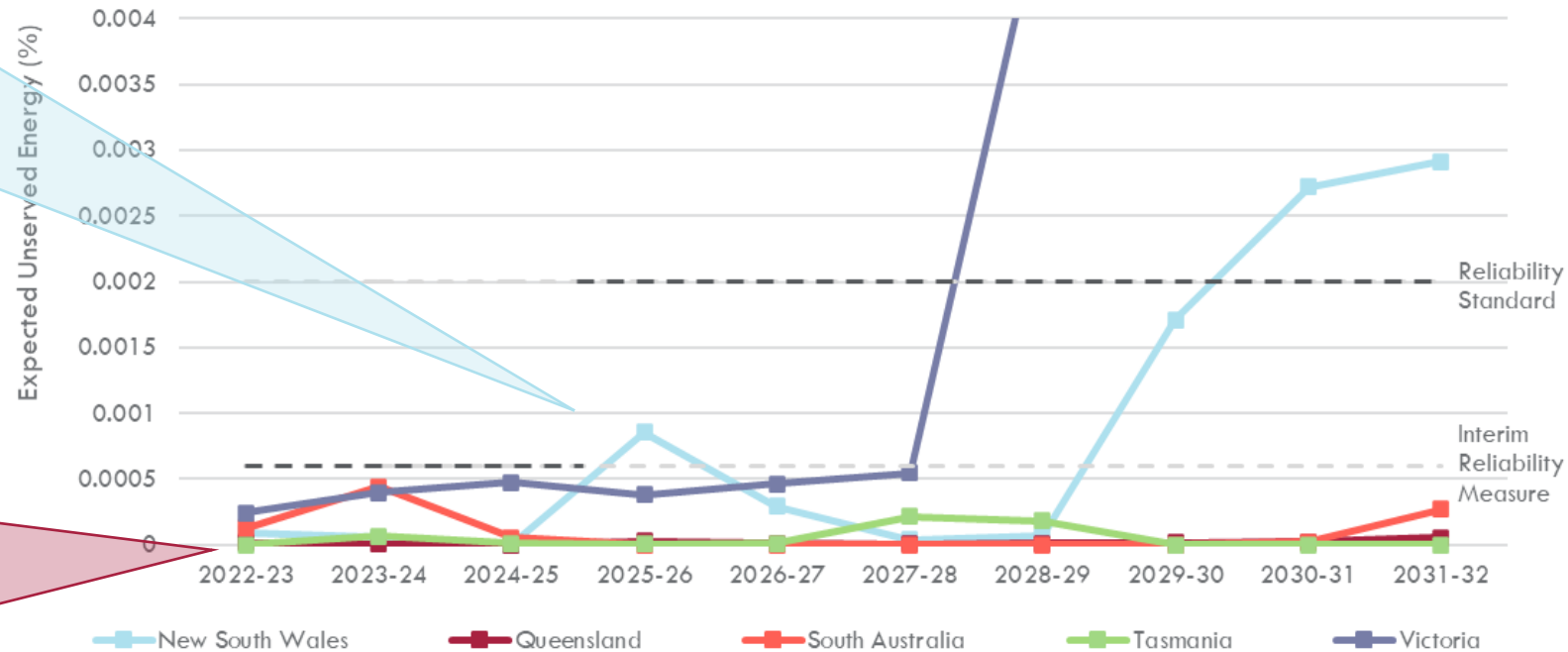


Significant improvements are forecast if anticipated and ISP actionable developments are included

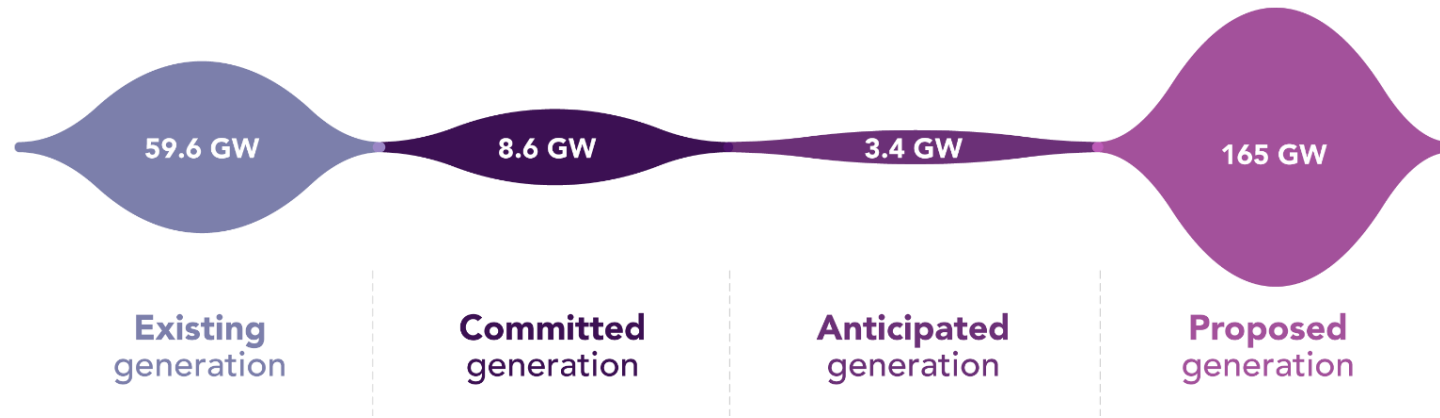
The reliability outlook for New South Wales improves significantly in this sensitivity, as transmission developments allow generation from further afield to reach the Sydney, Newcastle and Wollongong area. Developments associated with the IIO pathway and firming tender will further improve reliability outcomes and are not included in this forecast.

The majority of forecast risks for Queensland are resolved in this sensitivity. This occurs when the reliability improvements in New South Wales lead to less sharing of USE across the two regions.

Expected unserved energy, 2022-23 to 2031-32, Central outlook, with anticipated and actionable developments



While additional capacity is required, many proposed projects are known



New capacity modelled in the 2022 ISP Step Change scenario additional to that considered in the 2022 ES00 anticipated and actionable sensitivity by 2031-32

	New South Wales	Queensland	South Australia	Tasmania	Victoria
VRE capacity (MW)	12,588	8,586	2,144	2,497	4,232
Firming capacity (MW)	2,000	872	0	390	0
DSP capacity (MW)	206	300	119	24	267

Question and answer session



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