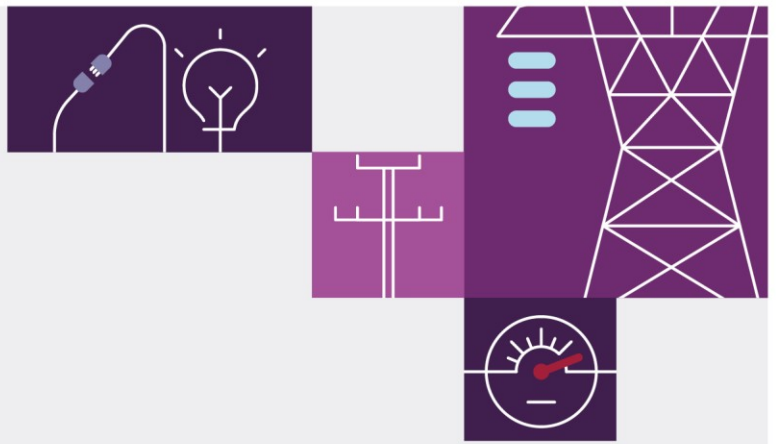


2022 Forecasting Best Practice Approach Report

August 2022

Demonstrating that AEMO has produced the **2022 Electricity Statement of Opportunities** and its **Reliability Forecast** in accordance with the **Forecasting Best Practice Guidelines**





Important notice

Purpose

AEMO prepares this report for the AER in accordance with Section 5.1 of the Forecasting Best Practice Guidelines.

This report is based on information available to AEMO as at 24 August 2022.

Disclaimer

AEMO has made reasonable efforts to ensure the quality of the information in this report but cannot guarantee its accuracy or completeness.

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Version control

Version	Release date	Changes
1	31/8/2022	Initial publication

Executive summary

After reviewing its processes to develop the 2022 Reliability Forecast, including the development of forecast components for the 2022 Electricity Statement of Opportunities (ESOO), AEMO considers it has prepared the forecast in accordance with the Forecasting Best Practice Guidelines (FBPG).

The AER's Forecasting Best Practice Guidelines¹ (FBPG) provide guidance for AEMO's forecasting practices and processes as they relate to the Retailer Reliability Obligations, having regard to the following principles:

- Forecasts should be as accurate as possible, based on comprehensive information and prepared in an unbiased manner.
- The basic inputs, assumptions and methodology that underpin forecasts should be disclosed.
- Stakeholders should have as much opportunity to engage as is practicable, through effective consultation and access to documents and information.

AEMO collaborates with a broad range of stakeholders – including consumer, government and industry representatives – to develop and refine its forecasting models and activities applied in the ESOO and Integrated System Plan (ISP) analysis. Stakeholder input is critical to AEMO's activities and is highly valued, adding rigour and increasing confidence in the forecasts.

This report describes how AEMO has prepared its reliability forecast and indicative reliability forecast presented in the 2022 ESOO in accordance with the FBPG.

¹ Available at <https://www.aer.gov.au/system/files/AER%20-%20Forecasting%20best%20practice%20guidelines%20-%2025%20August%202020.pdf>.



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1 Introduction

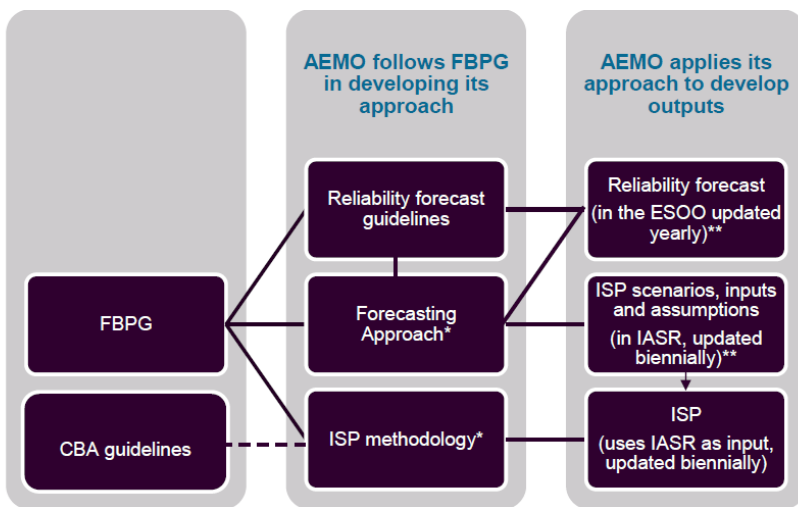
AEMO considers engagement with consumers, market participants, and other stakeholders as foundational to its forecasting activities. Incorporating stakeholder perspectives on the rapidly evolving energy market and systems, along with robust feedback on AEMO's forecasts, makes forecasts more accurate and useful and increases stakeholder confidence in them.

The Australian Energy Regulator's (AER's) Forecasting Best Practice Guidelines (FBPG), introduced in August 2020, provides guidance to AEMO on minimum engagement principles and standards. The FBPG's procedural guidance covers:

- Developing inputs, assumptions and scenarios, and associated forecasting and modelling methodologies applied in the ISP, and the preparation of an ISP update where necessary
- Developing reliability forecasts which are included in AEMO's Electricity Statement of Opportunities (ESOO) and are a critical input to statutory requirements under the Retailer Reliability Obligation (RRO)².

The AER introduces the use of the FBPG in Figure 1 below, which identifies the relationships between the guidelines and methodologies, the ESoo, the Inputs, Assumptions and Scenarios Report (IASR), and the Integrated System Plan (ISP).

Figure 1 Use of the FBPG (from Forecasting Best Practice Guidelines, AER 2020)



* AEMO is required to update this at least every four years as per this FBPG.

** The ESoo and IASR include similar information. The IASR may be included in a document that also provides for the assumptions and inputs to be used in preparing other AEMO publications (such as the ESoo), and follow a joint consultation process. See NER clause 5.22.8(c).

² See <https://www.aer.gov.au/retail-markets/retailer-reliability-obligation>.

2 Applying the FBPG

AEMO considers that the 2022 Reliability Forecast has been prepared in accordance with the FBPG.

The sections below provide clarity on how AEMO considers it has developed the 2022 Reliability Forecast in a manner consistent with the FBPG.

Providing transparency through appropriate stakeholder engagement: Forecasting Reference Group

The FBPG suggests that AEMO should develop its forecasts in a way that provides stakeholders with as much opportunity to engage as is practicable, through effective consultation and access to documents and information. AEMO utilises a number of methods to achieve this. A key method of stakeholder engagement relevant to the Forecasting Approach is the use of the *Forecasting Reference Group (FRG)*³. AEMO engages with this open forum to share preliminary forecasts and key insights on such items as forecasting components, aggregated electricity consumption forecasts, and draft maximum and minimum demand forecasts for each NEM region. While the forum is not a decision-making body, the participants do provide an avenue for targeted stakeholder consultation (“FRG Consultations”) where stakeholder feedback is sought, but where more formal consultation engagement is not required.

For the 2022 ESOO, AEMO brought several relevant presentations to the FRG in May and June 2022, particularly where inputs have been proposed to be updated since the 2021 IASR or 2021 Forecasting Assumptions Update:

- Forced Outage Rates (presented at the January 2022 FRG; consultation from February 2022; finalised by April 2022).
- Demand Side Participation (DSP) forecasts (presented at the June 2022 FRG)

Forecasting Approach and Forecasting Approach Register

AEMO’s overall Forecasting Approach⁴ is consulted on at least once every four years, consistent with the expected frequency of engagement and methodological re-development set out in the FBPG.


AEMO’s Forecasting Approach Register summarises and responds to:

- Matters raised outside formal consultation processes. Note that the register does not duplicate matters raised within formal consultations.
- Feedback on AEMO’s Forecasting Approach and consultation timeline, as per best practice described in section 2.1 of the AER’s Forecasting Best Practice Guidelines.
- Actionable feedback on how AEMO engages with stakeholders on forecasting matters.

AEMO populates the register from any form of engagement or feedback received that meets one or more of the above points. AEMO periodically updates the register to include new matters, provide responses and update the status of matters or other information.

³ Details of the FRG are available at: <https://aemo.com.au/en/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/forecasting-reference-group-frg>.

⁴ At <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-approach>.



This innovative approach to stakeholder transparency and engagement gives stakeholders visibility of key open and closed issues and developments affecting AEMO's Forecasting Approach. The current Forecasting Approach Register maintains a log of all open and in-progress actions.

For the 2022 ESOO, key items raised and logged on the Forecasting Approach Register included:

- Consultation on transmission forced outage rates, which AEMO updated stakeholders (via the Forecasting Reference Group) in January 2022, and provided subsequent transparency on the outage rates to be used in the 2022 ESOO at the June 2022 FRG (in addition to the additional consultation listed in the previous section).
- Demand trace redevelopment approaches, which is yet to commence (and acknowledged as such on the Register)
- Additional items relating to the IASR and Forecasting Accuracy Report measurement and transparency, which aren't strictly relevant to the 2022 ESOO.

Forecasting Accuracy Report and Improvement Plan

AEMO annually reviews the accuracy of its prior year ESOO forecasts. The 2021 Forecasting Accuracy Report (FAR) was published in November 2021, identifying that most forecast components performed as expected, or are explainable by inaccuracies in the relevant inputs and assumptions.

The 2021 FAR also incorporated the Forecasting Improvement Plan that provides transparency of AEMO's proposed improvements to forecasting. AEMO consulted on the Forecasting Improvement Plan⁵ from November 2021, concluding it in February 2022.

Key improvements in 2022 focused on reviewing and monitoring several components, including distributed PV, new generator commissioning, forced outage rates, demand side participation (DSP), and emerging technologies. AEMO updated several of these factors to inform the 2022 ESOO forecasts, including actual PV installations, outage rates (informed from direct engagement with power station operators), and DSP. These items were shared with the FRG (in the January, May, June and July 2022 meetings) prior to finalisation, to ensure sufficient visibility and opportunity for engagement with stakeholders.

In addition, as mentioned below, AEMO increased the frequency of its Generation Information surveying and reporting process for the 2022 ESOO, to ensure the reliability assessment incorporated the most up-to-date information as possible.

Other improvements such as demand trace development, have longer implementation timeframes.


Updated Inputs and Assumptions

The FBPG outlines that updated inputs and assumptions should be consulted on, at least in accordance with the single-stage consultation approach outlined in the Guidelines. For the 2022 ESOO, AEMO applied inputs, assumptions and scenarios from the 2021 IASR and the 2022 *Forecasting Assumptions Update*⁶. The 2021 IASR was extensively consulted on in 2021.

Updates applied to inputs, assumptions and scenarios used for the 2022 ESOO were consulted on through the 2022 *Forecasting Assumptions Update* and various FRG Consultations. The 2022 *Forecasting Assumptions*

⁵ Available at: <https://aemo.com.au/consultations/current-and-closed-consultations/2021-forecast-improvement-plan-consultation>.

⁶ Available at: <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>



Update also identified components that have re-baselined to more recent actual data points, and applying the consulted-on trends from this observed starting point, consistent with the Forecasting Approach. The *Forecasting Assumptions Update* consultation⁷, from December 2021 to February 2022, used the single-stage FBPG Appendix B consultation process.

FRG Consultations were used to update unplanned transmission outage and generator forced outage rate forecasts. The unplanned transmission outage rate methodology was consulted on using the January FRG meeting. Draft forecasts for both update unplanned transmission outage and generator forced outage rates were consulted on in the June FRG meeting. FRG meetings were also used to collect stakeholder feedback on draft DSP, consumption, and maximum and minimum demand forecasts in May and June 2022.

A key input for the ESOO is the capacity of available generation supply, including projects under-development. This is developed through a survey of generators and developers on their generation developments. The Generation Information⁸ page provides at least quarterly updates (in accordance with NER 3.7F(d)).

For the 2022 ESOO, AEMO updated the Generation Information data set each month from May, June and July 2022 to ensure the Reliability Forecasts reflected the most up-to-date information submitted by generators and developers.

2022 ESOO Central Scenario

A significant decision in determining the Reliability Forecast is the selection of the ESOO scenario which is considered the *Central* forecast. The 2022 Reliability Forecast applies the *Step Change* scenario as the ESOO Central scenario, relying on the significant stakeholder engagement that enabled this selection in the development of the 2022 ISP. Justification for this selection is available within the 2022 ISP. No material new information has emerged since the ISP's publication that suggests this scenario should no longer be considered the central scenario. Rather, as outlined in the 2022 ISP, continued policy and other developments continue to validate that selection. For example, the update to Australia's Nationally Determined Contribution to the Paris Agreement to 43% emissions reduction, economy-wide, by 2030 is most representative of *Step Change* than any other AEMO scenario.

The 2022 ESOO also provides relevant updated forecasts for stakeholders regarding the three other scenarios that were identified in the 2021 IASR. This additional information improves the ability of stakeholders to use the ESOO to identify investment opportunities beyond the reliability requirements highlighted in the Central scenario.

Application of the Forecasting Approach to deliver a Reliability Forecast


AEMO consulted on a methodology for defining reliability gap periods, likely trading intervals and reliability gaps in 2019⁹, which is reflected in AEMO's *ESOO and Reliability Forecast Methodology*¹⁰. This methodology incorporates stakeholder feedback that suggested a preference for narrower gap periods. It identifies time periods that form reliability gap periods or indicative likely trading intervals as those that exceed specified loss of load

⁷ Available at <https://aemo.com.au/consultations/current-and-closed-consultations/2022-consultation-on-forecasting-assumptions-update>.

⁸ See <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>

⁹ At <https://aemo.com.au/en/consultations/current-and-closed-consultations/reliability-forecasting-methodology-issues-paper>.

¹⁰ At <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>.



probability (LOLP) thresholds. The defined methodology applies a 10% LOLP threshold unless the reliability gap is incalculable, in which case the LOLP threshold is to decrease in 2% increments until it is calculable.

This methodology may still lead to unexpected outcomes, depending on the risks identified in a reliability assessment. For South Australia, the application of this methodology resulted in a T-1 reliability gap period that only represented half of the forecast USE periods. AEMO considered this inconsistent with the NEL and NER which expect the reliability gap period to identify the periods in which unserved energy is likely to occur. As such, and as documented in the 2022 ESOO, AEMO applied the same fundamental approach of the methodology to lower the LOLP threshold as applies when the reliability gap is incalculable. While this leads to a wider reliability gap period, it also increases the coverage of forecast reliability gaps.

AEMO considers this widening of the gap period to be appropriate, thereby capturing a larger portion of the forecast USE, and does not result in the significant increase in the requirement that would otherwise occur.

AER involvement

AEMO has engaged at regular intervals with subject-matter-experts within the AER to improve engagement and awareness of the Forecasting Approach, key engagement activities relevant to the ESOO (and ISP, as relevant) and to provide sufficient detail regarding possible RRO instruments that will be requested of the AER to review with the publication of the 2022 ESOO. Regular monthly meetings have enabled appropriate transparency of key outcomes, enabling efficient evaluation of the RRO Instrument requests that accompany the 2022 ESOO, and have improved the AER's knowledge of the inputs and consultation that AEMO has conducted in support of the ESOO.

In conducting these meetings, AEMO provided an agenda and meeting minutes to ensure any raised issues or observations were captured and actioned.