



Forecast Accuracy Report Methodology

Consultation paper

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Explanatory statement and consultation notice

This consultation paper commences the first stage of the standard rules consultation procedure conducted by AEMO to review the Forecasting Accuracy Report Methodology (the Methodology). As per the AER Reliability Forecasting Best Practice Guidelines¹, AEMO is required to consult on the methodology at least every four years using a formal written consultation process, including two rounds of written submissions.

Given the preliminary status of the consultation topics, AEMO is not including a draft update to the Methodology with this consultation paper. A draft update to the Methodology will be released with the draft determination.

Consultation notice

AEMO is now consulting on this proposal and invites written submissions from interested persons on the issues identified in this paper to energy.forecasting@aemo.com.au by **5:00 pm (Melbourne time) on 5 February 2024**.

Submissions may make alternative or additional proposals you consider may better meet the national electricity objective in section 7 of the National Electricity Law (NEL). Please include supporting reasons.

Before making a submission, please read and take note of AEMO's consultation submission guidelines, which can be found at <https://aemo.com.au/consultations>. Subject to those guidelines, submissions will be published on AEMO's website.

Please identify any parts of your submission that you wish to remain confidential, and explain why. AEMO may still publish that information if it does not consider it to be confidential, but will consult with you before doing so. Material identified as confidential may be given less weight in the decision-making process than material that is published.

AEMO is not obliged to consider submissions received after the closing date and time. While exceptional circumstances may enable consideration, any late submissions should explain the reason for lateness and the detriment to you if AEMO does not consider your submission.

Interested persons can request a meeting with AEMO to discuss any particularly complex, sensitive or confidential matters relating to the proposal. Please refer to NER 8.9.1(k). Meeting requests must be received by the end of the submission period and include reasons for the request. We will try to accommodate reasonable meeting requests but, where appropriate, we may hold joint meetings with other stakeholders or convene a meeting with a broader industry group. Subject to confidentiality restrictions, AEMO will publish a summary of matters discussed at stakeholder meetings.

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

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1. Stakeholder consultation process

AEMO must maintain its Forecast Accuracy Report Methodology in accordance with the Australian Energy Regulator’s (AER’s) Forecasting Best Practice Guidelines (FBPG)¹. Apart from any minor or administrative changes, any revisions must be consulted on consistent with AEMO’s Reliability Forecast Guidelines². The FBPG require AEMO to consult on this methodology at least once every four years.

This paper commences AEMO’s consultation to review the Forecasting Accuracy Report Methodology.

Note that this document uses terms defined in the National Electricity Rules (NER), which are intended to have the same meanings.

AEMO’s indicative process and timeline for this consultation are outlined below. Future dates may be adjusted and additional steps may be included if necessary, as the consultation progresses. In the event that these dates change, AEMO will clearly identify the timetable on the webpage for this consultation.

Consultation steps	Dates
Notice of first stage consultation and Issues Paper published	5 January 2024
First stage submissions closed	5 February 2024
Draft Determination & Notice of second stage consultation published	4 March 2024
Submissions due on Draft Determination	8 April 2024
Final Determination published	20 May 2024

Prior to the submissions due date, stakeholders can request a meeting with AEMO to discuss the issues and proposed changes raised in this Consultation Paper.

² At <https://www.aer.gov.au/system/files/AER%20-%20Forecasting%20best%20practice%20guidelines%20-%2025%20August%202020.pdf>

2. Background

2.1. Context for this consultation

AEMO is required to publish the Forecast Accuracy Report Methodology under the FBPG³. The previous consultation on the Methodology was undertaken in 2020. AEMO is required to consult on all of its methodologies every four years, in line with the FBPG.

2.2. The national electricity objective

Within the specific requirements of the NER applicable to this proposal, AEMO will seek to make a determination that is consistent with the national electricity objective (NEO) and, where considering options, to select the one best aligned with the NEO.

The NEO is currently expressed in section 7 of the National Electricity Law (NEL) as:

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- (a) *price, quality, safety, reliability and security of supply of electricity; and*
- (b) *the reliability, safety and security of the national electricity system; and*
- (c) *the achievement of targets set by a participating jurisdiction—*
 - i. *for reducing Australia's greenhouse gas emissions; or*
 - ii. *that are likely to contribute to reducing Australia's greenhouse gas emissions.*

³ At <https://www.aer.gov.au/system/files/AER%20-%20Forecasting%20best%20practice%20guidelines%20-%2025%20August%202020.pdf>

3. Possible changes to the Methodology

Changes arising from an external review of the methodology

Consistent with AEMO's Reliability Forecast Guidelines, AEMO has engaged an external expert to review the FAR methodology prior to undertaking this methodology consultation. This review, undertaken by the University of Adelaide⁴, made 26 recommendations, some of which would require amendments to the Methodology if adopted.

Below is a list of the recommendations made by the University and AEMO's proposed response relating to potential methodology changes.

Recommendation	AEMO proposed response
General recommendations	
1. Continue with the use of the forecast categories and reporting methodologies described in Table 4 of the "Forecast Accuracy Report methodology", dated August 2020.	Commendation – continue with existing approach. This requires no specific methodology changes.
2. Continue with the use of forecast accuracy reporting as a tool to drive improvements in the forecasting methodology.	Commendation – continue with existing approach. This requires no specific methodology changes.
3. Continue with the use of Definition 3 for percentage error. It is the more easily interpreted definition given the framing of the report as assessing the accuracy of the forecast against the actual. Ensure that this framing is used consistently throughout.	Commendation – continue with existing approach. This requires no specific methodology changes.
4. Consider providing information for each row in Table 1 of each Annual Report indicating the assessability of that metric, using the three categories defined in Section 2.2.1 of each Annual Report.	Accept and update in methodology
5. Rewrite the description of a box plot to prevent potential confusion between outliers and the maximum/minimum.	Accept and update in methodology
6. Consider the introduction of enhanced representations of weather in the descriptions and the models to enable a more rigorous analysis of accuracy	While AEMO agrees with the recommendation, it predominantly relates to the demand forecast methodology, rather than the accuracy report methodology. AEMO proposes to update the demand forecast methodology to reflect an enhanced representation of weather where this aligns with the relevant demand forecasting methodology.
General recommendations that may not be achievable in the short term	
7. Consider opportunities to benchmark the accuracy of the forecasts against other organisations.	While AEMO acknowledges the value in this recommendation, it considers that the effort required is not proportional to the benefit and does not propose to implement.
8. Consider introducing 2-year and 4-year assessments of the accuracy of certain key elements of the forecasts in the annual reporting process	AEMO agrees with this recommendation in some circumstances and it is related to the forecast accuracy report methodology. AEMO agrees that multi-year assessments of forecast accuracy are beneficial in some circumstances, and proposes to include multi-year assessments only for the most material forecast components, such as energy consumption, maximum demand, and generator outage rates.
Operational energy consumption forecasts	
9. Continue with the use of percentage error and percentage impact on forecast of total consumption and with the use of tables and waterfall diagrams to represent them.	Commendation – continue with existing approach. This requires no specific methodology changes.
10. Replace equation 2 on page 17 of the "Forecast Accuracy Reporting methodology" paper dated August 2020 with the equation	Accept and update in methodology

⁴ At https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/accuracy-report/2023-review-of-forecast-accuracy-metrics-report.pdf?la=en

Recommendation	AEMO proposed response
Error from forecast component = input coefficient (input forecast – input actual)	
11. Reorder all the waterfall diagrams to be consistent with the new equation 2 so that each waterfall figure starts with the Actual and presents all the component errors in the forecast that are required to reach the Forecast.	Accept and update in methodology
12. Ensure that the order and labels of the components in all waterfall diagrams and associated tables are consistent. Consider if it is appropriate to present the three supply-side components (that require a reverse of sign) first in each table and waterfall diagram.	Accept and update in methodology
Extreme demand forecasts	
13. Continue the use of a discussion-based approach and the use of figures that provide meaningful information about the distribution and drivers of the forecast.	Commendation – continue with existing approach. This requires no specific methodology changes.
14. Retain Figure 15, (and its associated versions for each region) in future Annual Reports. Review the choice of driving parameters that are displayed and how each parameter is presented.	Accept and update in methodology
15. Consider whether it would be more appropriate to provide the monthly maximum demand figures based on only 10%, 50% or 90% POE traces, or provide them based on the combination of the 10%, 50% and 90% POE traces all together.	AEMO proposes to update the methodology to reflect alternate options that better reflect a combined distribution, or separate distributions per POE.
Supply forecasts	
16. Continue using the figures for total availability and component generation for each region.	Commendation – continue with existing approach. This requires no specific methodology changes.
17. Restricting the graph to the central 95% is a commonly used and entirely appropriate approach. However, consideration could also be given to other approaches that are designed to achieve a similar degree of interpretability.	Accept and update in methodology to reflect the provision of both the 100% range, and the central 95 th percentile ranges.
18. Forecast and actual generation count and capacity tables should be restructured so that forecasts are provided to the left of the actuals and that the comparison column is calculated as (forecast – actual) so that the final column follows the generic definition of percentage error.	Accept and update in methodology
19. Consider providing an equivalent analysis of the accuracy of supply forecasts in the most important supporting regions based on the top 10 hottest days in the supported region.	AEMO proposes to update the methodology to specify that analysis of supporting region supply forecast assessments will be included where relevant.
20. Consider whether the accuracy of VRE generation forecasts could be presented consistently on a generation basis through both the forecast and reported data.	AEMO proposes to update the methodology to apply VRE generation, rather than availability, in the assessment of both forecasts and actuals.
21. Consider modifying the trigger categories into disjoint categories (eg “>=\$300/MWh AND <\$500/MWh” for the lowest trigger category). Further, consider reducing the number of categories to ensure sufficient events in each (disjoint) category while maintaining signal and interpretability.	While AEMO agrees with the recommendation, it predominantly relates to the demand side participation (DSP) forecast methodology, rather than the accuracy report methodology. AEMO proposes to update the DSP methodology to reflect an enhanced representation of price bands, and will update the forecast accuracy methodology where this aligns with the relevant DSP forecasting methodology.
22. Consider reporting the accuracy of the demand side participation forecasts by comparing the forecast distribution with the observed distribution, this could be achieved using side-by-side box plots or violin plots, for example.	Accept and update in methodology
23. Investigate ways to clarify the presentation in the “DSP response during reliability events” section to assist the reader’s understanding.	AEMO proposes to update the methodology to specify the components that should be described when assessing the DSP response during reliability events.
Potential modelling improvements	

Recommendation	AEMO proposed response
24. Consider the introduction of further industry segmentation to improve consumption forecasting.	While AEMO agrees with the recommendation, it does not relate to this methodology, hence will not be included. This recommendation was discussed in the 2023 Forecast Improvement Plan under consultation as part of the 2023 Forecast Accuracy Report.
25. To increase the robustness of the forecast process, increase the number of weather years that are incorporated. This could be achieved by using more historical data or, preferably, by making use of synthetic weather years.	While AEMO agrees with the recommendation, it does not relate to this methodology, hence will not be included. This recommendation was discussed in the 2023 Forecast Improvement Plan under consultation as part of the 2023 Forecast Accuracy Report.
26. Consider upgrading the accuracy and level of assurance of the assumed scale factors in the Potential adjustment – voluntary load reductions feature.	AEMO proposes to update the methodology to specify the components that should be described when assessing voluntary load reductions during reliability events.

AEMO welcomes stakeholder feedback on AEMO’s proposed response to the recommendations.

Further, AEMO welcomes submissions regarding other potential changes stakeholders consider should be included in the Methodology consistent with NER and AER FPBG requirements.

Minor and administrative changes

AEMO notes that the following minor and administrative changes are required:

- updates to reflect the current NEL, NER and NEO.
- updates to reflect the Integrating Energy Storage Systems (IESS) rule change and to extend all relevant obligations to bidirectional units.
- updates to AEMO’s forecasting approach which have previously been consulted on.
- updates to address minor spelling issues.

AEMO has not included draft or proposed drafting with this consultation paper, which will instead be released with the draft report, once any other stakeholder perspectives are considered.