AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Interim Reliability Forecast Guidelines

December 2019

Final Report

Executive summary

The publication of this Final Report concludes the consultation process conducted by AEMO on its Interim Reliability Forecast Guidelines[1].

This Report discusses the stakeholder submissions to the draft interim guidelines and explains the amendments AEMO has made in response.

The reliability forecasts are a critical input to triggering obligations under the Retailer Reliability Obligation (RRO) introduced on 1 July 2019. AEMO is required to develop and publish Interim Reliability Forecast Guidelines no later than 31 December 2019. These interim guidelines had to take into account the Australian Energy Regulator's (AER) Interim Forecasting Best Practice Guidelines.

AEMO began consultation on 3 October 2019 with the publication of the Draft Interim Reliability Forecast Guidelines and accompanying consultation paper. AEMO sought industry feedback on whether the proposed interim guidelines appropriately captured the National Electricity Rules requirements and the principles in the AER's Interim Forecasting Best Practice Guidelines.

AEMO held an industry workshop on 17 October 2019 to assist interested parties understand the choices made by AEMO in developing the guidelines and facilitate more informed submissions.

AEMO received six submissions from stakeholders. AEMO appreciates the engagement from industry throughout the process, which has greatly assisted AEMO in developing the final form of the interim guidelines.

Substantive changes between the draft and final interim guidelines include:

- Commitment by AEMO to develop and consult on a Forecast Accuracy Report Methodology Paper during the first half of 2020.
- Supporting material for the Electricity Statement of Opportunities (ESOO) should be published no later than the ESOO itself.
- Establishment of an issues register to capture issues raised by stakeholders on an ongoing basis.
- Providing more time for stakeholders to effectively engage (through changes to the Forecasting Reference Group (FRG) Terms of Reference.

AEMO's final determination is to make the ***Interim Reliability Forecast Guidelines***[2] in the form published with this Final Report.

[1] For a copy of the draft interim guidelines, submission, and other related information, see https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Interim-reliability-forecast-guidelines.

[2] See https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/NEM-Consultations/2019/Interim-reliability-forecast-guidelines/Interim-Reliability-Forecast-guidelines.pdf.

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1. Stakeholder consultation process

AEMO has been consulting on the development of its Interim Reliability Forecast Guidelines[3] to be published in accordance with the National Electricity Rules (NER) clause 11.116.4(a) by 31 December 2019. These guidelines explain how AEMO will produce reliability forecasts and indicative reliability forecasts for the 2020 Electricity Statement of Opportunities (ESOO) for the National Electricity Market (NEM).

The table below outlines the consultation steps AEMO has undertaken.

Table 1 Consultation timeline

Consultation steps	Dates
Consultation Paper and Draft Interim Reliability Forecast Guidelines published	Thursday 3 October 2019
Industry Workshop	Thursday 17 October 2019
Submissions due on Draft Guidelines	Thursday 31 October 2019
Final Report published	Thursday 19 December 2019
Final Interim Reliability Forecast Guidelines published	Thursday 19 December 2019

All written submissions to AEMO's consultation paper and draft guidelines have been published on AEMO's website with this Final Report[4].

The publication of this Final Report marks the completion of the consultation and presents AEMO's response to the feedback received.

From 2021, the reliability forecasts and indicative reliability forecasts will be produced in accordance with final Reliability Forecast Guidelines to be published by AEMO by 28 February 2021 after a full rules consultation process as per NER clause 11.116.4(c). Consultation on the Reliability Forecast Guidelines is expected to commence in the second half of 2020.

[3] See https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/NEM-Consultations/2019/Interim-reliability-forecast-guidelines/Draft-Interim-Reliability-Forecast-guidelines.pdf.

[4] See https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Interim-reliability-forecast-guidelines.

2. Background

The implementation of the Retailer Reliability Obligation (RRO) was agreed at the Council of Australian Governments (COAG) Energy Council meeting on 26 October 2018. The necessary legislative and NER changes took effect on 1 July 2019.

A key component of the RRO is the calculation of a five-year reliability forecast and five-year indicative reliability forecast for each NEM region, to be published in AEMO's annual ESOO. If the reliability forecast identifies a material reliability gap three years ahead, AEMO will submit a reliability instrument request to the AER.

The purpose of the Interim Reliability Forecast Guidelines is to:

- explain to liable entities and other interested parties how a reliability forecast is prepared, and the underlying procedures, information requirements and methodologies that govern its preparation and operation; and
- describe how AEMO will implement the Interim Forecasting Best Practice Guidelines[5] produced by the AER in preparing a reliability forecast.

[5] See: https://www.aer.gov.au/retail-markets/retail-guidelines-reviews/retailer-reliability-obligation-interim-forecasting-best-practice-guideline.

3. Summary of material issues

AEMO received feedback on a wide range of topics. At a high level, the material issues raised can be grouped as follows:

- Industry engagement.
- Data inputs, assumptions and methodology.
- Forecasting accuracy and improvements.
- Reliability forecast.

AEMO received feedback from six stakeholders (see Table 2) in the form of written submissions[6], and additional feedback through the workshops and one-on-one discussions. AEMO would like to thank all stakeholder who engaged with AEMO throughout this process.

Table 2 List of stakeholders providing feedback

Organisation
Energy Users' Association of Australia (EUAA)
ENGIE
Ergon Energy Queensland (EEQ)
ERM Power
Major Energy Users (MEU)
Queensland Electricity Users Network (QEUN)

A detailed summary of issues raised in the submissions in relation to the Interim Reliability Forecast Guidelines, together with AEMO's responses to each issue, is contained in Section 4.

Section 5 lists a number of issues that are relevant to other AEMO processes along with a brief response.

[6] The submissions are available on AEMO's consultation website: https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Interim-reliability-forecast-guidelines.

4. Discussion of material issues

This section summarises the material issues raised in relation to the consultation paper and draft Interim Reliability Forecast Guidelines, along with AEMO's assessment of each issue and overall conclusions.

4.1 Industry engagement

4.1.1 Issue summary and submissions

Section 2 of the draft guidelines covered industry engagement and attracted a number of comments.

One submission (ERM) questioned the timeline for engagement with stakeholders, in particular that it would commence at the beginning of each annual cycle, typically at the end of January, and noted that this would leave insufficient time for effective consultation in preparation of inputs into the reliability forecast.

Several submissions (ERM, QEUN, Ergon) asked for more clarity around how effective consultation would be undertaken, in particular around ensuring sufficient time for stakeholders to provide feedback and including more two-way engagement.

One submission (EUAA) specifically suggested using a framework like IAP2 Spectrum[7] to better describe the intent of the stakeholder engagement.

The use of an issues/action register was proposed by two (ENGIE, EUAA), including capturing issues raised between meetings and more rigour when closing off issues/actions, by providing sufficient justification for doing so.

Finally, one submission (EUAA) indicated that the Forecasting Reference Group (FRG) members need more time than currently given them to review presentations ahead of meetings to be able to discuss these effectively at meetings, and AEMO also should ensure sufficient time is available at the meetings themselves for stakeholders to ask questions to AEMO subject matter experts.

4.1.2 AEMO's assessment

AEMO agrees that the engagement for the coming year's reliability forecast should start as soon as possible after the publication of the current year's forecast. It is better reflected as an engagement cycle, as summarised below:

1. Publish reliability forecast.
2. Review performance.
3. Identify and investigate improvements.
4. Consult on inputs and improvements.
5. Implement improvements.
6. Produce reliability forecast.
7. Publish reliability forecast.

This will give more time for engagement, in particular early in the process. The engagement plan should be brought forward from the stated January publication in the draft Guidelines.

[7] An overview is available on: https://www.iap2.org.au/wp-content/uploads/2019/07/IAP2_Public_Participation_Spectrum.pdf.

AEMO also agrees that the Guidelines should clarify the intent of the engagement at the various stages and through the different forms of engagement listed.

The idea of an issues register is in line with recent feedback received at FRG meetings and AEMO is currently looking at options for how this can best be implemented.

Similarly, the request for more time to review FRG material ahead of meetings is in line with recent feedback there. AEMO acknowledges this and the need to ensure sufficient time to engage on the various topics during the meetings. AEMO also considers it important to set expectations for FRG members. Both will be formalised in an update to the FRG Terms of Reference, which should be reviewed annually in the future.

4.1.3 AEMO's conclusions

- AEMO will remove reference to the engagement starting typically late January.
- AEMO will add more detail to the purpose of engagement for each stage and for various inputs.
- AEMO will establish an issues/action register.
- AEMO will update the FRG Terms of Reference, including target timeframes for AEMO to provide material ahead of meetings. The FRG should review these annually.

4.2 Data inputs, assumptions and methodology

4.2.1 Issue summary and submissions

Section 3 of the Guidelines covered AEMO's draft approach to source, validate and use input data, assumptions and forecast methodologies in the production of reliability forecasts and indicative reliability forecasts. The following submissions related to this section.

Two submissions (ERM, EUAA) proposed that AEMO should add a reference document on how AEMO will validate material inputs and assumptions.

Regarding specific inputs, ERM, ENGIE and Ergon raised assumptions around generator forced outage rates (FOR) as an issue. In particular:

- ERM suggested using a longer-term outlook regarding generator forced outage data as the basis for the probabilistic modelling of generator forced outages.
- ENGIE asked AEMO to re-examine the statistical methods for analysing FOR. ENGIE considered that the results of the analysis and full documentation of the methodology must be published as a matter of urgency, and this analysis must inform AEMOs periodic reliability updates.
- Ergon suggested that:
  - Historical outages alone may not be a good predictor of forward looking FOR and that generators should be required to provide both a whole of life maintenance and overhaul plan to AEMO, together with analysis of the reasons for historical forced outages and a forecast of those reasons continuing over the 10 year forecast period taking into account forecast maintenance expenditure.
  - AEMO should publish a three-year forecast of generator FOR based on forecast plant operations rather than historical plant operations.
  - AEMO should publish the Medium Term Projected Assessment of System Adequacy (MT PASA) to the generator level.

In addition, Ergon suggested regions accommodating increased capacity from renewable generation may need to assume forecast changes to current Marginal Loss Factors (MLFs).

ERM also noted concern about including unplanned outages of intra-regional transmission network infrastructure in AEMO's current modelling of expected unserved energy (USE) in the ESOO, MT PASA and

Energy Adequacy Assessment Projection (EAAP), as the NER indicate that only unplanned outages of inter-regional transmission network infrastructure can be included in the assessment of unserved energy (USE).

In relation to information requests from AEMO:

- ERM suggested that the information requests should be restricted to only that required for AEMO to fulfil its reliability forecasting obligations.
- ERM proposed that the Guidelines should also include a process for stakeholders to request data from AEMO.

Finally, in terms of supporting material:

- The majority of the submissions (ENGIE, ERM, EUAA, QEUN) were against the proposed ability for AEMO to publish supporting material up to 20 business days after an ESOO.
- ENGIE suggested that any relevant reports and material from consultants should be published as early as possible.
- Ergon suggested that the guidelines should emphasise providing transparency in the reporting of this information to participants, allowing them to improve the reliability of their individual forecasts while preserving certain data confidentiality.

4.2.2 AEMO's assessment

AEMO agrees that transparency of validation material inputs and assumptions is important. Rather than creating an additional document, AEMO will instead add additional guidance on how this will be achieved as an appendix to the Guidelines themselves.

For generator FOR, AEMO intends to continue to use the approach outlined which uses the previous four years of generator performance. AEMO reiterates previous statements that the use of longer-term averages has routinely overestimated generator reliability, particularly of brown coal generation.

The RRO industry briefing[8] on 21 June 2019 provided the reasoning behind this approach, most notably:

- That a statistical analysis of unplanned outages rates showed that there was less than a 1% probability that the rates from 2010-11 to 2014-15 and 2015-16 to 2018-19 were from the same population.
- The use of a rolling four-year average has routinely outperformed the long-term average.

Furthermore, the methodology outlined allows generators the ability to provide evidence to AEMO that the recent performance of their generator is not a reliable indicator of future performance. If substantiated, AEMO would apply an alternative set of FOR assumptions for that generator. This process therefore accounts for any anomalies or outliers in historical performance that are proven to be of sufficiently low probability that they should not be included in the forward-looking assessment.

AEMO agrees with Ergon that there are limitations in using historical performance, particularly given the deterioration in reliability of some aging generators. However, at this stage this is a limitation that AEMO considers better to work with given the difficulty in projecting forward future changes in plant reliability. AEMO is continuing to review this methodology and may undertake future analysis that considers capital expenditure on generators. AEMO will consult on future improvements to projecting plant reliability.

For electricity losses, including MLFs, AEMO is currently assuming the most recent loss factors represent a reasonable expectation of future losses. With both the growth in distributed energy resources and location of larger renewable generators further away from synchronous generation centres, MLFs may change over time. In AEMO's modelling, MLFs are a financial parameter and generally affects generator's economic viability. As the reliability forecast is based on existing and committed projects only, these are assumed to be viable. Physical losses, including at time of maximum demand, however do matter and are forecast as part of AEMO's demand forecasting approach and will be reviewed annually.

[8] The presentation from the briefing is available at https://www.aemo.com.au/Stakeholder-Consultation/Consultations/Reliability-Forecasting-Methodology-Issues-Paper.

AEMO acknowledges that unplanned outages on one major intra-regional transmission line was included in the calculation of USE in the 2019 ESOO, though the impact on expected USE was minimal. However, AEMO considers that these unplanned outages contribute to supply scarcity risks and should be considered in reliability assessments. For completeness, the 2020 assessment will report USE with and without including these unplanned intra-regional transmission outages.

With regard to information requests, AEMO notes that NER clause 3.13.3A(d) specifies that the information AEMO requests must be reasonably required for the preparation of an ESOO. This is reinforced in the interim guidelines (section 3.3.2(b)), which state that the information must be relevant to ensure the quality of the matters required to be included in the ESOO.

AEMO does not agree with the suggestion that the guidelines should provide for stakeholders to be able to request information from AEMO. AEMO already makes large quantities of information available publicly, and stakeholders are able to request information that is not confidential to another participant via AEMO's support hub at any time.

AEMO has taken onboard the feedback on supporting material. The draft interim guidelines opened up the option for AEMO to delay the publication of supporting material for up to 20 business days. While the aspiration was to publish alongside the ESOO whenever possible, it would provide flexibility in case late changes had to be incorporated in the forecast and the publication of the forecast could then be prioritised over the supporting material, in particular the large data files used in the modelling that takes time to upload. AEMO recognises that stakeholders regard that information as critical, and accepts that all supporting material should be published no later than the ESOO.

AEMO will seek to publish key consultancy reports, and other non-confidential material that is available, earlier than the ESOO itself when this is possible.

Finally, AEMO will limit the use of aggregation to what is essential to preserve confidentiality.

4.2.3 AEMO's conclusions

- AEMO will add additional detail in the interim guidelines on how data and assumption validation will be undertaken.
- AEMO will continue to base generator reliability on the previous four years of historical performance, adjusted for any substantiated evidence provided by generator operators that indicate that future performance will differ from this historical period. AEMO will continue to review this methodology as new information comes to hand, and will consider how to extrapolate beyond past performance for forecasting generator reliability.
- AEMO continue to evaluate its current approach to estimating losses though its Forecast Accuracy Report.
- From the 2020 ESOO onwards, AEMO will not account for any USE from intra-regional transmission outages in the reliability forecast, but will provide additional analysis including these outages to improve accuracy of the supply scarcity risk assessment.
- AEMO will publish supporting material as early as possible and no later than the publication of the ESOO itself.
- AEMO will only aggregate supporting data to the extent it considers reasonably necessary to provide adequate protection of data confidentiality.

4.3 Forecasting accuracy and improvements

4.3.1 Issue summary and submissions

Section 4 of the draft guidelines outlined AEMO's proposed process for assessing forecast accuracy and identification of forecast improvements.

ERM stated that the Guidelines should contain a reference to a Forecasting Accuracy Report Methodology to be consulted on, developed and prepared for review and comment by AEMO no later than mid-2020 and after that form part of the suite of forecasting process methodologies requiring regular review and update by AEMO.

ERM supported the proposal in the Guidelines to include the forecast improvement plan as a separate area within the Forecast Accuracy Report and proposed that the format for the forecast improvement plan should form part of the consultation process for the Forecast Accuracy Report Methodology.

A number of submissions discussed what should be in the Forecast Accuracy Report:

- At a higher level, MEU noted that an assessment of whether forecasts are conservative can only come from a review of past forecasts compared to actual outcomes; this review is a critical element to inform changes that might be required to the forecasting process to improve the quality of the forecasting process.
- ERM considered that it is no longer sufficient to look at a single value for the entire summer or winter. Rather, the Forecast Accuracy Report should contain details of the accuracy of AEMO's maximum demand forecasts on a monthly basis. ERM also proposed that each year's actual monthly outcomes should be compared to the immediately preceding ESOO and aligned with maximum monthly MT PASA daily 50% and 10% demand forecasts. Similarly, forecasts of available regional supply, taking into account modelled generator availability from the ESOO process, would be compared to actual generator availability on a percentage of time and megawatt of reported available capacity basis.
- ERM said that the Forecast Accuracy Report should not just contain details of actual weather outcomes on the day of monthly maximum demand but also a cross check of actual demand outcomes on the day of maximum temperature during summer and the day of minimum temperature outcome during winter.
- ERM saw no impediment to AEMO's use of forecasts published in previous ESOOs being utilised to meet the NER requirements to consider forecasting accuracy over the previous five-year period.
- ENGIE encouraged AEMO to examine the feasibility of using tornado diagrams when examining the output of the reliability modelling. In these, the change in model output is arranged from the most to least sensitive for a given change of input variables, highlighting the most sensitive input assumptions to get right.

In relation to the forecast improvement plan:

- ERM noted that in considering changes made as part of the forecast improvement plan, each change and its objective should be well documented and that subsequent to its implementation, regular benchmarking should be undertaken to assess its benefit.
- ENGIE suggested that the continuous forecast accuracy improvement process is documented in more detail and participants are engaged early to facilitate meaningful and timely resolution of potential issues.

Finally, in relation to timing, ERM recommended AEMO reconsider the timing for release of the annual Forecast Accuracy Report. In general, the Forecast Accuracy Report considers the previous year's forecasts compared to actual outcomes and it would be helpful for the Forecast Accuracy Report to be delivered as early as possible to allow identified improvements to be included in the current year's reliability forecast.

4.3.2 AEMO's assessment

AEMO is committed to developing a Forecast Accuracy Report Methodology paper, which will include information on how its forecast accuracy assessments will drive the forecast improvement plan. AEMO will consult on this paper in the first half of 2020, and it will be part of the methodology documents that AEMO will review and consult on at least every four years.

In terms of the content of the Forecast Accuracy Report:

- AEMO acknowledges the importance of the accuracy assessment for building confidence in the forecasts.

- AEMO agrees that an assessment of forecast accuracy more granular than summer and winter is required, either through the Forecast Accuracy Report or through more regular reporting elsewhere. Any assessment will focus on forecasts used to assess reliability.
- AEMO will focus the assessment of forecast accuracy on the most recent ESOO forecast that can be meaningfully compared with actual values. Older forecasts may be based on methodologies that have since been updated and assessments of these would only be considered where sufficiently relevant to warrant the additional effort.
- AEMO agrees it is essential to identify the main contributors to forecast inaccuracy and will consider the use of tornado diagrams, waterfall diagrams or similar concepts to best illustrate this.

For the forecast improvement plan, AEMO agrees that proposed change and the reasoning behind these must be communicated. AEMO will, depending on time available and materiality of the impact, use either FRG consultation or written consultation to any changes in methodology or key sources of inputs, to engage with stakeholders before locking in any change. The annual engagement plan will specify planned engagement on changes, but AEMO will remain open to feedback on a continual basis.

Before putting any changes into production, AEMO would assess whether they are fit for purpose and at least as good as any previous data/method used. Further assessment of benefits is not anticipated apart from the regular yearly assessment of forecast accuracy, which will pick up trends in performance over time, and any further need for improvements.

AEMO will endeavour to publish the Forecast Accuracy Report as soon as practical after data is available for the full financial year (noting that settlement data may change for several months) and may supplement with additional publications throughout the year, such as after the completion of summer, where relevant.

4.3.3 AEMO's conclusions

- AEMO will develop and consult on a Forecast Accuracy Report Methodology Paper during the first half of 2020. This will include characterising how the Forecast Accuracy Report will drive the forecast improvement plan.
- In the Forecast Accuracy Report, AEMO will:
  - Assess accuracy more granular than simply summer/winter.
  - Focus on the accuracy of the most recent forecast, where meaningful.
  - Assess the main contributors to forecast inaccuracies and use this to guide the forecast improvement plan.
- When developing the forecast improvement plan, AEMO will:
  - Detail changes sought and the reasoning behind.
  - Engage with industry early before locking in any changes.
- AEMO will seek to publish the Forecast Accuracy Report as early as is practical after the full financial year data is available.

4.4 Reliability Forecast

4.4.1 Issue summary and submissions

The draft interim guidelines included a section on the reliability forecast methodology itself, consistent with NER clause 4A.B.4(b), to explain how a reliability forecast, indicative reliability forecast, forecast reliability gap size and forecast reliability gap period and likely trading intervals are determined.

ERM noted that this level of detail could have been in a methodology paper referred to in the guidelines.

ERM also sought clarification around:

- The choice of 90% probability of exceedance (POE) in the loss of load probability calculation.
- The probability weighting applied to the calculation of probability of lost load.
- Whether the trigger level is based on 10% of all trading intervals within a month based on all potential scenarios under only the 50% POE demand scenario (the "scenario most likely to eventuate") or alternatively weighted under the 10%, 50% and 90% POE demand scenarios.

ERM expressed concern about AEMO's proposal to include all trading intervals between the first and last trading interval in the day based on all day types within a month where a 10% threshold trigger for all modelled trading intervals is observed. ERM considered this could result in more trading intervals being declared as subject to a forecast reliability gap than are warranted, some of which may have no forecast USE.

Two submissions (ERM and MEU) did not support AEMO's proposal to include months where the forecast probability of lost load falls below the 10% trigger threshold in any reliability instrument request if this month falls between two months where the 10% trigger threshold is met. It was suggested that including such months could unnecessarily increase overall costs to the Market.

ERM opposed the proposed methodology for calculation of the size of a forecast reliability gap. The proposed methodology (as acknowledged in the draft interim guidelines) will result in the size of a forecast reliability gap being larger than would otherwise be the case if the reliability gap were calculated on the assumption that any additional capacity secured to fill the gap would be available for dispatch during any trading interval in the year. Again, ERM submitted that this could increase the costs to the market of meeting any declared forecast reliability gap.

Finally, ERM did not support the proposed restriction on an additional MW of capacity in one region supporting reductions in USE in another region, noting that maximum demand outcomes across the NEM exhibit a significant degree diversity, particularly during the summer months, and between the southern and northern regions of the NEM where weather diversity on average may range from 5 to 7%.

4.4.2 AEMO's assessment

AEMO agrees that the specifics of the reliability forecast, such as the determination of gap size and the reliability gap period, sit better in a methodology document. It is appropriate to include these in the ESOO Methodology document[9], which already explains the calculation of USE.

AEMO's determination of the reliability gap period and the set of likely trading intervals is based on the probability of lost load. The probability of lost load calculations use the same weightings as those used for calculating expected unserved energy. This means that the probabilities are calculated for the 10% POE, 50% POE and 90% POE (where the probability is assumed to be zero), and the resulting probabilities are then weighted by 30.4%, 39.2% and 30.4% respectively.

Regarding the inclusion of trading intervals between the first and last interval in the day where the 10% threshold is exceeded, AEMO considers this unlikely to result in more trading intervals being declared as subject to a forecast reliability gap. In the unlikely event that there are two distinct periods within the day, e.g. 8-9 am and 3-7 pm, where the threshold is exceeded, AEMO would separate the likely trading intervals into these two distinct groupings.

AEMO finds no justification to change its approach to identifying months where the 10% threshold is exceeded. AEMO has previously outlined that approach avoids the administrative burden of declaring two reliability gap periods by instead declaring a single reliability gap period and excluding the month where the reliability risk is low from the reliability gap period. AEMO reiterates its desire to not specify periods with low scarcity risks as being subject to the RRO, and proposes that the approach outlined in the interim guidelines achieves this objective.

AEMO disagrees with ERM's suggestion that the size of the reliability gap should be determined by considering additional capacity in all periods, rather than during the likely trading intervals identified within

[9] See https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/NEM-Consultations/2019/Interim-reliability-forecast-guidelines/Interim-Reliability-Forecast-guidelines.pdf.

the gap period. Any capacity contracted to help fill the gap is only required to be available within the reliability gap period, so the calculation of the reliability gap should similarly assume capacity to fill the gap would only be available in those periods. While it is possible, in reality, for additional capacity obtained by industry to be available throughout the year, it is equally possible that demand side participation helps fill this gap, and this may only be available during a limited number of periods. AEMO will publish the size of the reliability gap assuming that any additional capacity industry obtains to meet this gap is available at all times, but this is for information purposes only.

AEMO will continue to apply the calculations related to the reliability gap period and the size of the reliability gap at a regional level, as required by the NER. This approach is consistent with what was contemplated when the formula for calculating Procurer of Last Resort (POLR) costs was developed. Again, AEMO notes that the actual calculation of the quantity of long- and medium-notice RERT will take into account the ability for additional reserves to be shared across regions, provided there is interconnector capacity available. Therefore, there is no anticipated impact on the cost to the market.

4.4.3 AEMO's conclusions

- AEMO will move the reliability forecast methodology section to the ESOO methodology document.
- AEMO will continue to determine the reliability gap period using the methodology described in the draft interim guidelines, excluding months with low reliability risks within the reliability gap period by using an exclusion from the likely trading intervals.
- AEMO will exclude months and trading intervals that have low scarcity risks, as it considers this reduces the potential administrative burden of multiple instrument requests for the same effective reliability gap periods.
- AEMO will continue to calculate the size of the reliability gap (in megawatts) required to reduce the annual expected USE to the reliability standard, based on the assumption that any additional megawatts obtained by industry to help fill the gap are 100% available during all identified trading intervals within the reliability gap period only.
- For information purposes only, AEMO will also report the size of any reliability gap assuming availability at all times of the year.
- AEMO will make no adjustment for reserve sharing in calculating the reliability gap, noting its direct application in the POLR cost calculation, but will do so when assessing any RERT volumes required.

5. Other matters

In the submissions, a number of issues were raised on subjects not directly related to the Interim Reliability Forecast Guidelines content:

- The majority of the submissions (ENGIE, ERM, EUAA, MEU and QEUN) noted concerns about how forecasts, if overly conservative, could result in the expenditure of large amounts of resources and money to meet the scenario set out in the reliability forecast.
- QEUN believed AEMO's small and medium enterprises (SME) demand forecasts to be a significant weak spot that AEMO urgently needs to address.
- ERM suggested that for months where USE is forecast from the MT PASA modelling, particularly under 50% POE conditions, the Forecast Accuracy Report should provide a detailed review of the underlying assumptions to actual outcomes where no actual USE is realised.
- ERM and EUAA suggested that, to avoid confusion, there should be one consistent demand definition used for all reporting and that this should be "operational demand as generated".

AEMO's responses are summarised below.

Conservatism in forecast

AEMO agrees that the reliability forecasts, and input data and assumptions underpinning the reliability forecast, should be as accurate as reasonably possible. AEMO believes the methodologies applied are reasonable and did discuss conservatism in great length in the Reliability Forecast Methodology – Final report[10] in July 2019.

It should be noted that consultation on some of the methodologies will be undertaken in 2020, which will allow industry to raise any concerns with these.

Demand forecast for small and medium enterprises

This comment relates to the demand forecasting methodology rather than the Guidelines themselves. AEMO reviews accuracy of its business forecast annually in the FAR, which will indicate any issues with this forecast overall. For subcomponents, as the SME sector definition was new in the 2019 ESOO, it cannot be assessed till 2020 when a full year of actuals are available to check against. AEMO will review this as part of its 2020 Forecast Accuracy Report.

Review of forecast compared with actual USE events in MT PASA

This is not related to the Interim Reliability Forecast Guidelines, and AEMO does not consider it appropriate to assess accuracy of USE reported in MT PASA, as opposed to assessing the accuracy of the supply and demand forecasts underpinning the assessment. The MT PASA is an operational tool to allow industry to schedule outages. It is expected that the market will respond by moving outages, if flexible, to avoid USE occurring. Further, in operational timeframes, AEMO uses RERT and other operational mechanisms to avoid USE events where possible. Therefore, if the reliability standard is implemented effectively, any USE foreshadowed in an operational tool such as MT PASA should rarely be evidenced in reality.

Demand definitions

There are a number of different demand definitions – each of them serving a specific purpose – and it would not be meaningful to use a single demand definition across all AEMO's publications.

[10] See: https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/NEM-Consultations/2019/Reliability-Forecasting-Methodology/Reliability-Forecasting-Methodology-Final-Report.pdf

AEMO acknowledges that there is potential to improve the reporting of demand in some areas, by providing additional definitions where this makes sense for comparison with other sources. This was recently implemented as an update to the forecasting data portal, noting that additional uncertainties around auxiliary loads are necessarily added to the forecast of as-generated demand. These auxiliary load uncertainties grow as demand forecasts are extended further into the future, as they depend on the future generation mix.

For this reason, AEMO will report as-generated demand forecasts for RRO and MT PASA purposes, but will continue to only report longer term demand forecasts sent-out, allowing auxiliary loads to be determined as an output of modelling analysis used for purposes such as the ISP.

6. Final interim reliability forecast guidelines

After considering the matters raised in the submissions, AEMO has made a number of amendments to the draft interim guidelines in determining the final Interim Reliability Forecast Guidelines[11], as described in this Final Report. The Interim Reliability Forecast Guidelines are effective from the date of publication.

[11] See https://www.aemo.com.au/-/media/Files/Stakeholder_Consultation/Consultations/NEM-Consultations/2019/Interim-reliability-forecast-guidelines/Interim-Reliability-Forecast-guidelines.pdf.