17 November 2017

Mr Mark Miller
Operations Specialist
Australian Energy Market Operator
GPO Box 200
Melbourne VIC 3001

Dear Mr Miller

RE: Consultation on Reserve Level Declarations Guidelines – Draft Guidelines Initial Review

ERM Power Limited (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Operator's (AEMO) abridged Consultation on Reserve Level Declarations Guidelines – Draft Guidelines Initial Review (Draft Guidelines) published in October 2017.

About ERM Power Limited

ERM Power is an Australian energy company operating electricity sales, generation and energy solutions businesses. The Company has grown to become the second largest electricity provider to commercial businesses and industrials in Australia by load[1] with operations in every state and the Australian Capital Territory. A growing range of energy solutions products and services are being delivered, including lighting and energy efficiency software and data analytics, to the Company's existing and new customer base. ERM Power also sells electricity in several markets in the United States. The Company operates 497 megawatts of low emission, gas-fired peaking power stations in Western Australia and Queensland. www.ermpower.com.au

General comments

ERM Power supports AEMO's view that a level of uncertainty exists in the future forecasts of regional demand, intermittent generation output and scheduled generator availability and therefore agrees with AEMO's proposal to incorporate a Forecasting Uncertainty Measure (FUM) in the Short Term Projected Assessment of System Availability (ST PASA) and the Pre-Dispatch PASA processes.

Whilst we support the introduction of the FUM, our preference would be that this is incorporated in a transparent manner as a standalone measure in the National Electricity Rules (the Rules) as opposed to the current AEMO rule change request to amend the Rules with regards to the declaration of reserve. Whilst this is our strong preference, the following submission does not comment on the rule change process and concentrates on a review of the proposed Draft Guidelines as published by AEMO.

[1] Based on ERM Power analysis of latest published financial information.

Forecast regional excess supply (RXS) calculation

We note that the definition of forecasts Operational Demand to be used in the RXS calculation is:

> *scheduled generating units + semi-scheduled generating units + significant non-scheduled generating units – scheduled load.*

However, the proposed calculation of forecast generation to be used in the RXS calculation is:

> *reported available capacity of scheduled generating units + AEMO's unconstrained intermittent generation forecast.*

Whilst some level of significant non-scheduled generating units output may be captured as part of AEMO's unconstrained intermittent generation forecast process, not all potential significant non-scheduled generating units output which are included in the Operational Demand forecast will be captured as part of this calculation process.

The calculation in its current form imposes a negative bias in the forecast of supply to meet demand and will skew the calculation of Lack of Reserve (LOR) where additional "false positive" LOR conditions are forecast.

Therefore we propose that the RXS calculation in section 3.1 of the Draft Guidelines should be based on Scheduled and Semi-Scheduled Demand or alternatively include an additional supply source from significant non-scheduled generating units. In the interests of improved transparency to participants our strong preference is for demand to be expressed as Scheduled and Semi-Scheduled Demand as this is the demand to be met from generation whose output is transparent to the Market as a whole, rather than the use of Operational Demand which contains output from undisclosed generation which is opaque to the market.

Determining the RXS error distribution

The guideline indicates that AEMO intends to utilise historical data to determine a distribution of RXS error. Whilst the Draft Guideline indicates 4 input states that will be taken into account in developing the distribution of RXS error, the guideline does not list the actual input assumptions that will be used in the calculation. We believe the final version of the Guideline should contain a list of input assumptions and a brief statement setting out the basis on which these input assumptions have been derived.

In understanding these input assumptions we believe it will be critical to understand if the calculation is to be derived from only historical data with a negative implication for the supply vs demand balance as opposed to data that has both positive and negative implications. As an example, will only periods where AEMO under forecast actual demand outcomes be used or periods where demand was both under and over forecast?

In determining if both are to be used, ERM Power would be interested in AEMO publishing input assumption data which indicates the probability of both under and over forecasting by AEMO's systems. With regard to demand forecasts, if a strong over forecasting bias is present in the historical data, then using the error values associated with over forecasting errors in the calculation process could result in an over estimation of errors which have negative implications. Similarly if a bias exists with regards to under forecasting of intermittent generation output, a similar overestimation may occur.

Forecast uncertainty measure (FUM) calculation

We note that AEMO has proposed a 97% confidence level for the RXS value. In effect a 3% possibility of exceedance (3% POE) level where the RXS error would be expected to be exceeded only 3 times in any one hundred events. This appears to be a very high threshold value, particularly in the forecast timeline beyond the more critical 6 hour window, and given that the normal high threshold value used in many existing Market calculations is the 10% POE value.

ERM Power believes that implementation of the FUM has the very real potential to result in earlier activation of Reliability and Emergency Reserve Trader (RERT) contracts or the issue of Clause 4.8.9 Directions to generators, which will introduce potentially significant additional costs to consumers. It is extremely likely that a number of these early interventions will be activated based on "false positive" assessment outcomes.

We consider that simply including a 97% confidence level outcome in the Guideline, applicable to all time periods in the ST and PD PASA forecast timelines, may represent a sub-optimal outcome, and may result in inefficient outcomes. From an improved efficiency perspective, instead of a single confidence level factor applying to all trading intervals, the confidence level factor could vary (reduce) for trading intervals in the forward time frame beyond the more critical 6-hour window.

As an interim step for the initial release of the Guideline for the summer 2017/18 period, ERM Power suggests the following for AEMO's consideration;

Dispatch + Hours	Confidence Level
6 or less	0.97
6 to 9	0.96
9 to 12	0.95
12 to 15	0.94
15 to 18	0.93
18 to 21	0.92
21 to 24	0.91
Beyond 24	0.90

The proposal progressively moves towards to the more standard 10% POE threshold by the Dispatch plus twenty four hour timeline in 3 hour incremental steps and we consider this may reduce the number of "false positive" forecasts of a LOR2 condition as the forecasts move away from the more critical 6 hour window.

For future reviews of the Guideline, consideration should be given to establishing an economic assessment framework in the Guideline that allows the efficient confidence level outcomes to be calculated and updated as Market conditions change via the Rules consultation process.

Notification of credible contingency sizes

We agree with AEMO's proposal to publish the sizes of the two standard or normal largest relevant contingency events for each region either on the same webpage as this Guideline or alternatively as an appendix in AEMO's Operating Procedure SO_OP_3703 – Short Term Reserve Management, or potentially in both. It is also important that AEMO publishes a Market Notice in a timely manner whenever the size of the standard or normal credible contingency event is altered and then reverted to for any region.

Description of reserve levels

We understand and accept AEMO's proposal that the declaration of a forecast LOR3 or LOR2 condition will be based on the highest value of either the FUM or the largest relevant contingency events for each region as specified by AEMO. We also understand that the value of the FUM will potentially decrease as the Trading Interval under assessment in the ST and PD PASA timeframes moves closer to dispatch. We support the outcome where the size of the largest relevant contingency events for each region as specified by AEMO remains as the minimum level of contingency capacity reserves for the declaration of a LOR2 event in the ST and PD PASA processes.

However, we are concerned that if the declaration of a forecast LOR1 condition is calculated based on the sum of the largest and second largest relevant credible contingency event as specified by AEMO plus the calculated difference value between the FUM and the largest relevant contingency events for each region as specified by AEMO, this may result in a gross over estimation of the frequency of LOR1 events in the ST and PD PASA timeframes.

The intent of the LOR1 level in the declaration of reserves provision in the Rules was to ensure that reliability of supply to a region would remain secure following two unrelated and time separated contingency events. We believe that adding an additional FUM exceedance value, the value by which the FUM exceeds the largest contingency event, to the sum of the largest and second largest relevant contingency event as specified by AEMO may in effect be double counting for the same level of capacity reserves already allowed for by the addition of the value of the second largest contingency event.

We submit that the LOR1 value should be calculated on the same basis as the forecast LOR2 level as the highest value of either the FUM or the sum of the largest and second largest relevant credible contingency event as specified by AEMO.

As an example, whilst AEMO has published some nominal data for the South Australian region in the sub six hour forecast period, AEMO has not formally provided anything with regards to potential FUM values in the timeframes exceeding six hours. AEMO currently uses the difference in network flow capability for the loss of one circuit of the Heywood interconnector as the largest contingency event for South Australia, the value of which is 350 MW. The second largest contingency event is loss of one Gas Turbine powered generator at Pelican Point, which is 240 MW. Therefore, the combined LOR1 level is currently 590 MW. The potential value of the FUM for South Australia in the T + 24 hour Trading Interval could be approximately 600 MW.

Based on the AEMO Draft Guideline, the LOR1 level for South Australia would in this circumstance be 350 + 240 + (600 – 350) = 840 MW. This outcome could potentially result in AEMO declaring a LOR1 condition for SA whenever AEMO's unconstrained intermittent generation forecast moves towards a lower value. This outcome has the potential to lessen the value of the declaration of a LOR1 conditions to the Market which we believe would be a negative outcome for Market communications.

Given the uncertainty inherent in the FUM calculation process, we believe where the calculated value of the FUM exceeds the value of the LOR1 condition as calculated by the sum of the largest and second largest relevant credible contingency event as specified by AEMO, a simplification of the process to declare a forecast LOR2 condition would provide more clear and transparent advice to participants as to the potential for supply reliability issues. Where the value of the FUM is less than the sum of the largest and second largest relevant credible contingency event as specified by AEMO, an LOR1 condition would be declared when capacity reserves fell below the sum of the largest and second largest relevant credible contingency event as specified by AEMO with no addition of any FUM exceedance value.

Provision of information to the Market

In the interest of transparency, we believe the FUM value should be published as a standalone value to the market as part of the ST and PD PASA information process. Whilst AEMO intends to publish LOR1 and LOR2 values as part of these processes, the values contained in the information tables may either be the FUM or the credible contingency values. We believe the Market would achieve greater value from a transparent understanding of the actual calculated FUM values and their impact on the process for the declaration of low reserve conditions and therefore recommend the FUM values be published separately.

Review of the initial guideline

While the Draft Guideline has been subject to an initial abridged consultation process, this review has not followed the normal rules consultation process. We accept that this has been due to AEMO's desire to introduce the FUM into the process for the declaration of low reserves for the 2017/18 summer period. However, we believe there would be value in AEMO commencing a full rules consultation to review the initial Guideline following analysis of actual events over the 2017/18 summer period and recommend that this commence in April 2018.

Improving the AEMO forecasting process

Whilst not forming part of this Guideline, ERM Power believes the potential for AEMO to improve the level of accuracy of their demand and intermittent generation forecasts still exists. The introduction of the FUM into the process for the declaration of a low reserve condition should not be viewed as an improvement to AEMO's existing forecasting processes, but merely as a "band aid" which has been applied pending review of the existing forecasting processes and implementation of an ongoing improvement process. Ongoing improvements to AEMO's forecasting processes will have positive benefits in reducing the economic impact of the FUM in triggering "false positive" declaration of low reserve conditions. We look forward to reviewing AEMO's proposals to improve the accuracy of their forecasting processes.

Conclusion

ERM Power is supportive of the introduction of the Forecasting Uncertainty Measure (FUM) in the process for the declaration of a low reserve condition. This submission sets out what we believe would be areas of improvements to the Draft Guideline such that the implementation of the FUM into the process for the declaration of a low reserve condition will result in improved outcomes for the National Electricity Market. We look forward to further consultation on this Guideline following lessons gained from its use during the forthcoming summer period.

Please contact me if you would like to discuss this submission further.

Yours sincerely,

[signed]

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