

18 February 2019

Ms Sara O'Connor  
Assistant Director – Market Regulations  
Economic Regulation Authority  
4th Floor Albert Facey House  
469 Wellington Street  
PERTH WA 6849

Level 45  
152 St Georges Terrace  
Central Park  
Perth WA 6000

Postal Address:  
PO Box 7096  
Cloisters Square  
Perth WA 6850

T +61 8 9469 9800  
E [wa@aemo.com.au](mailto:wa@aemo.com.au)

By email: [PublicSubmissions@erawa.com.au](mailto:PublicSubmissions@erawa.com.au)

Dear Ms O'Connor

## **RELEVANT LEVEL METHOD REVIEW 2018 – CAPACITY VALUATION FOR INTERMITTENT GENERATORS – DRAFT REPORT**

The Australian Energy Market Operator welcomes the opportunity to provide this submission in response to the draft report, *Relevant Level Method Review 2018 - Capacity Valuation for Intermittent Generators*, published by the Economic Regulation Authority (ERA).

AEMO generally supports the ERA's objective of improving the accuracy of the capacity value calculation for intermittent generators. This will ensure that the Wholesale Electricity Market (WEM) objectives are met more effectively.

AEMO recognises that there are several aspects of the recommendation to change the relevant level method (RLM) that require further consideration in the design and implementation phases to ensure the review objectives. These considerations are summarised below.

### **Key principles for the methodology assessment**

#### *Accuracy*

AEMO agrees that it is important for the RLM to accurately value the contribution that intermittent generators make to satisfying the Planning Criterion.

From a reliability perspective, accuracy is imperative to facilitate the determination of whether the Reserve Capacity Requirement has been met (i.e. avoiding 'false positive' or 'false negative' determinations) or whether Supplementary Reserve Capacity is required to support reliability. From a commercial perspective, accuracy will support efficient decision-making by Market Participants.

The current Planning Criterion aims to ensure that sufficient capacity is available to satisfy extreme (one-in-ten-year) peak levels of demand, which typically occur on very hot summer afternoons. Due to the infrequency of these extreme conditions, it can be challenging to gather sufficient relevant data to accurately forecast the contribution that intermittent generators would make in these conditions.

The ERA's proposed RLM appears to be more accurate than the current RLM in estimating the reliability contribution of intermittent generators in historical conditions, through its closer linkage with capacity valuation theory. However, AEMO recommends further consideration as to whether this approach achieves similar accuracy for the weather conditions and peak demand levels that are considered in the Planning Criterion.

### *Transparency*

The draft report indicates that the current RLM does not provide any significant transparency advantage compared to the proposed RLM because the statistical and mathematical complexity (particularly regarding the K value) would be similar.

Following the determination of K and U values, the current RLM provides Market Participants with a simple approximation formula that is transparent about the factors that drive the capacity value calculation for an intermittent generator. Market Participants can subsequently estimate and verify capacity values determined by AEMO, even if they do not have a comprehensive understanding of the fundamentals of the approximation theory or the K and U values.

AEMO notes that the proposed RLM is highly complex, and in particular the process could become a “black box”. Lack of transparency may lower Market Participants’ confidence in the proposed method, and could have adverse impacts on their financial decisions. In the interest of improved transparency, AEMO proposes that detailed model specifications and data sources should be available to Market Participants, and encourages the ERA to consult with Market Participants regarding the trade-off between transparency and the reasonable protection of confidential data.

### **Other considerations**

#### *Technology neutrality*

AEMO agrees that the method used to evaluate capacity value should be technology-neutral.

AEMO considers that there is a need for a more holistic consideration of incorporation of new technologies into the WEM, and encourages the ERA to include the treatment of emerging technologies as part of the RLM review process.

#### *Network constraints*

When the WEM moves to security constrained economic dispatch this will require consequential changes to the Reserve Capacity Mechanism to account for constraints<sup>1</sup>. Given that the effect of network constraints on the capacity value of intermittent generators is currently addressed by a separate process (where Western Power calculates the Constrained Access Entitlement for Constrained Access Facilities), AEMO agrees that the proposed RLM does not need to account for the effect of network constraints on intermittent generators.

However, AEMO notes that energy sent-out estimates developed by an independent expert can differ from actual meter data, since actual meter data will include the effects of any network constraints on the Facility’s output<sup>2</sup>. Independent experts cannot take network constraints into account when determining the estimates because detailed constraint information is unavailable and the modelling can be complex. This may result in over-estimates of the output level in the independent expert report used for the capacity value calculation for Facilities that are less than five years old. Although this inconsistency may be mitigated by the separate process used to address the effect of network constraints, AEMO encourages the ERA to assess its impact on the accuracy of the capacity value calculation for intermittent generators.

---

<sup>1</sup> The Public Utilities Office has published a consultation paper on ways to implement an assessment of network constraints. The consultation paper is available at: [https://www.treasury.wa.gov.au/uploadedFiles/Site-content/Public\\_Utility\\_Office/Industry\\_reform/Consultation-Paper-Allocation-of-capacity-credits-in-a-constrained-network.pdf](https://www.treasury.wa.gov.au/uploadedFiles/Site-content/Public_Utility_Office/Industry_reform/Consultation-Paper-Allocation-of-capacity-credits-in-a-constrained-network.pdf).

<sup>2</sup> Meter data is adjusted to account for Consequential Outages before being used to determine a Facility’s Relevant Level.

## Implementation

Several practical and implementation considerations need to be addressed before adopting the proposed RLM, including:

1. Market Procedure custodian.

While a Market Procedure is an appropriate way to implement the proposed RLM, AEMO should be the custodian (with the ERA's support) as it is responsible for the calculations.

2. Review timing.

The reliability measure that underpins the proposed RLM must be consistent with the Planning Criterion, and must be amenable to any modifications or enhancements to the Planning Criterion. AEMO supports a change to the WEM Rules to align the timing of the reviews of the Planning Criterion and the RLM (in that order) to ensure consistency.

3. Energy sent-out estimates for new Facilities.

The proposed RLM does not distinguish between new and existing Facilities (in contrast to the current RLM). The quality of energy sent-out estimates for new intermittent generators affects both existing and new Facilities. AEMO considers that developing best practice guidelines on how independent experts develop energy sent-out estimates, in conjunction with the new Market Procedure, would ensure that accuracy of the proposed RLM would not be compromised by inaccurate inputs.

4. Changes to the Certified Reserve Capacity (CRC) and Capacity Credit assignment processes.

Amendments to the CRC and Capacity Credit assignment processes in the WEM Rules may be required when implementing the proposed RLM. Assigning CRC and Capacity Credits to intermittent generators requires several steps as follows:

- a) Once CRC has been assigned (around 18 August of Year 1), Market Participants must make a trade declaration to advise how much capacity they wish to trade bilaterally and how much they would like to withdraw.
- b) At the same time as trade declarations are being completed<sup>3</sup>, Market Participants with new Facilities must provide Reserve Capacity Security.
- c) The trade declaration and Reserve Capacity Security windows close (around 2 September), and AEMO assigns Capacity Credits the following day.

Under the current CRC process, there is no time allowed for AEMO to recalculate the level of CRC<sup>4</sup> before assigning Capacity Credits. However, since the proposed RLM calculates the capacity value of the entire fleet of intermittent generators, a Facility withdrawing its capacity during the trade declaration window (or failing to provide Reserve Capacity Security) will affect other Facilities' capacity calculations. Consequently, to ensure accuracy, some time period should be factored in for AEMO to recalculate CRC for intermittent generators before assigning Capacity Credits.

AEMO considers that withdrawal of CRC should not be allowed after AEMO's CRC recalculation to avoid any further iterations, as this would make the process unnecessarily complicated, in addition to increasing administrative burden.

---

<sup>3</sup> This window is around two weeks.

<sup>4</sup> Which may include a recalculation of Constrained Access Entitlement values by Western Power.

5. Reserve Capacity pricing changes.

AEMO considers that changes to improve Reserve Capacity pricing under consideration by the PUO<sup>5</sup> may have implications for the implementation of the proposed RLM, particularly if the changes do not guarantee that all new capacity would be awarded Capacity Credits. This requires more iterations of the CRC calculation using the proposed RLM to exclude any new capacity that is not awarded Capacity Credits. This in turn requires even more complex changes to the certification processes required to implement the proposed RLM and any Reserve Capacity pricing changes.

6. Removing Early and Conditional Certified Reserve Capacity.

The current RLM and the proposed RLM do not contemplate how to calculate the capacity values of intermittent generators that apply for Early Certified Reserve Capacity or Conditional Certified Reserve Capacity. AEMO considers that this may be an opportune time to remove these provisions from the WEM Rules<sup>6</sup>, considering the additional complexity that may be required for the proposed RLM to accommodate them.

7. Operational and fee impacts.

The implementation of the proposed RLM may increase AEMO's operational costs, particularly in relation to the development of the Market Procedure and the numerical model. In general, increasing complexity of the method used to calculate the capacity value for intermittent generators requires more complex systems, which cost more to develop and operate.

AEMO recommends that any changes to the timelines for assigning Capacity Credits are carefully considered given the potential flow-on effects and consequences.

### Conclusion

The draft report proposes a numerical method to replace the current RLM to improve accuracy of the capacity value calculation for intermittent generators to more effectively meet the WEM objectives. AEMO looks forward to assisting with the remainder of the ERA's review. If you would like to discuss any matter raised in this submission, please contact Neetika Kapani on [REDACTED]

Yours sincerely

[REDACTED]  
PP Martin Maticka

**Group Manager – WA Market Operations**

<sup>5</sup> Available at: [https://www.treasury.wa.gov.au/uploadedFiles/Site-content/Public\\_Utility\\_Office/Industry\\_reform/Draft-Recommendations-Report-Improving-Reserve-Capacity-pricing-signals.PDF](https://www.treasury.wa.gov.au/uploadedFiles/Site-content/Public_Utility_Office/Industry_reform/Draft-Recommendations-Report-Improving-Reserve-Capacity-pricing-signals.PDF).

<sup>6</sup> AEMO has never received an application for Early Certified Reserve Capacity and has not received a Conditional Certified Reserve Capacity application since 2011.