

28 November 2023

Ms Dora Guzeleva
Director, Wholesale Markets
Energy Policy WA
Email: energymarkets@dmirs.wa.gov.au

Dear Ms Guzeleva,

Exposure Draft – Cost Allocation Review Wholesale Electricity Market (WEM) Amending Rules

The Australian Energy Market Operator (AEMO) welcomes the opportunity to provide a submission on the Cost Allocation Review (CAR) Wholesale Electricity Market Amending Rules and acknowledges the significant work that has been undertaken to date, in consultation with the CAR Working Group.

While AEMO supports the CAR outcomes that the Amending Rules seek to implement, we note that several areas require further clarification or amendment to address gaps, remove ambiguity, and improve efficiency. Attachment 1 highlights the substantive matters that AEMO considers need to be addressed to ensure practical implementation can be achieved, while minor feedback of a drafting nature has been provided at an officer level. AEMO looks forward to working with Energy Policy WA to refine the Amending Rules and ensure the CAR outcomes are successfully implemented.

If you would like to discuss any matters raised in this submission, please contact Mena Gilchrist, Manager WA Regulatory Affairs, at mena.gilchrist@aemo.com.au.

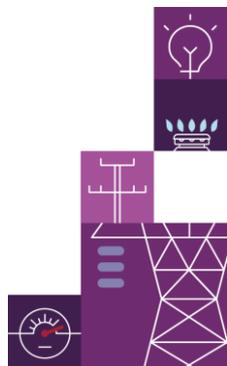
Yours sincerely,



Kate Ryan

Executive General Manager – Western Australia & Strategy

Attachment 1: AEMO's substantive feedback on the CAR Amending Rules



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CAR Review Outcomes	AEMO comments and questions
<i>Glossary</i>	
Residual Load	<ul style="list-style-type: none"> The term “Residual Load” is used inconsistently, either to describe “the implied demand for Non-Dispatchable Loads without SCADA metering”; the Non-Dispatchable Load itself; or to indicate a single notional entity made up of those Loads. AEMO suggests one way to address this could be to modify the definition to “Residual Load” for the notional entity; “Residual Demand” for the implied demand of the Residual Load; and “loads in the Residual Load” to refer to the individual load.
<i>Runway share calculation Appendix 2A</i>	
WEM Procedure	<ul style="list-style-type: none"> AEMO considers the changes required by clause 2.6 of Appendix 2A could be simplified to reduce implementation costs, while achieving the same policy outcomes, and would be pleased to work with Energy Policy WA on this matter. AEMO requests that Appendix 2A be updated throughout to specify how to treat electricity producing systems separately in accordance with clause 1.4, including clarifying how electricity producing units of a non-registered Facility will be treated in settlement calculations. In addition, rule changes should be considered with respect to Registration and Standing Data requirements for such electricity producing units to enable AEMO to perform the calculations.
<i>Calculation of regulation shares for regulation cost recovery Appendix 2D</i>	
4-second deviation calculation	<ul style="list-style-type: none"> Under clause 2.1 of Appendix 2D, AEMO is required to calculate the 4-second deviation as: $Deviation(f,s) = SCADA_Quantity(f,s) - Trajectory_Quantity(f,s)$. AEMO considers that clause 2.1(g) of this appendix, requiring AEMO to make the assessment for each 4-

	<p>second period separately, would lead to increased complexity and cost. We believe it would be sufficient to exempt set facilities' deviations to zero on a Dispatch Interval granularity (where they meet relevant criteria).</p> <ul style="list-style-type: none"> • AEMO recommends that trajectories be set according to Dispatch Targets for Scheduled Facilities and Semi-Scheduled Facilities providing FCESS. We recommend that treatment of all reasonable deviations associated with droop, regulation response via AGC, directions and other reasons for deviation may be best managed through processes outlined in the WEM Procedure under 2.1(g). • For clause 2.1(a) and clause 2.1(e) and other references to SCADA, AEMO advises that it will need to ensure sufficient flexibility is available for AEMO to interpolate, replace, and cleanse SCADA data to manage SCADA unavailability and other data quality issues. This includes a need for AEMO to manage Facilities with high SCADA latency, long-duration SCADA outages or Facilities with poorer granularity than 4-seconds.
<p>Implied Forecast Quantity</p>	<ul style="list-style-type: none"> • With respect to the calculation of Implied Forecast Quantity in clause 2.1(j), AEMO considers there is a high likelihood that the sum of the forecasts of the Scheduled, Semi-Scheduled and Non-Scheduled Facilities do not represent a reasonable Final Reference Value for the Residual Loads. For example, if the sum of the Dispatch Targets and the Injection Forecasts (which may be equal to the unconstrained dispatch targets) is substantially higher than the forecast demand. • AEMO recommends adjusting the definition of Implied Forecast Quantity to be similar to the definition of Implied Metering Quantity, but for the end of the interval instead of the start (or, equivalently, equal to the Implied Metering Quantity for the following interval). This is also more consistent with the definition of Final Reference Value for Non-Dispatchable Loads (NDL) with SCADA, which is based on actual end-of-interval consumption. • Furthermore, clause 2.1(j)(i) does not include NDLs with SCADA metering. AEMO recommends adding a new clause 2.1(j)(i)(3) to address such loads for consistency with the definition of Implied Metering Quantity and 2.1(j)(iii).
<p>Calculation of the contribution factor for each Regulation Entity</p>	<ul style="list-style-type: none"> • Regulation Entity is defined as including the Facility representing Residual Load. Residual Load is included in clause 2.4 of Appendix 2D. • AEMO recommends either changing the definition of Regulation Entity or excluding Residual Load from clause 2.3 of Appendix 2D to prevent double counting.
<p>Metered Quantity parameters</p>	<ul style="list-style-type: none"> • Clause 2.4(b) states the Metered_Quantity(L,DI) is the metered consumption by loads L in the Residual Load

	<p>in Dispatch Interval DI. AEMO requests a clearer description of this clause. Metered consumption is not a defined term, making this calculation ambiguous. AEMO considers that the intention of this clause may be the following: $\min(0, \text{SOMS}(L, \text{DI}))$, where $\text{SOMS}(L, \text{DI})$ is the Sent Out Metered Schedule of L in DI</p>
<p>Determining the metering connection points for loads</p>	<ul style="list-style-type: none"> • Clause 2.4(c) refers to L_{EP} which is the set of metering connection points for loads L in the Residual Load. • AEMO requests the definition of Residual Load be changed to enable AEMO to determine which connection points to include in this set and to specify which Market Participant owns the Residual Load.
<p>Calculation of Contingency Reserve Lower Share Appendix 2E</p>	
<p>Determining Contingency Reserve Lower (CL) Entities' Dispatch Instructions</p>	<ul style="list-style-type: none"> • Clause 2.3 of Appendix 2E states NDL are below the CL_Threshold, and clause 2.4 of Appendix 2E states NDLs are not in Applicable_CL_Entities. • Clause 2.1(c) will involve determining sets for each Dispatch Interval containing approximately 70,000 interval meters, then these interval meters are removed from the sets to perform section 3 of the calculation. AEMO suggests amending the determination of sets CL_Entities and Applicable_CL_Entities so as to reduce computational requirements and storage costs. • Under the proposed drafting, the determination of the NDL Facilities in the set Applicable_CL_Entities is based purely on whether the NDLs have SCADA. AEMO considers that a more appropriate determiner would be whether the Metered Schedule is over 120 MW equivalent.
<p>Determining Applicable CL_Entities(DI)</p>	<ul style="list-style-type: none"> • Both clause 2.3 and 2.4 use operators that do not include “equal to” CL_Threshold. • AEMO considers there may be a formula error in clause 2.3 of Appendix 2E and queries whether the formula should state $\leq \text{CL_Threshold}$ rather than $< \text{CL_Threshold}$. • CL_Threshold is also sometimes used to describe “the MW value which is the threshold for being considered in the runway methodology” and other times to separate terms are used for each description for clarity and consistency.
<p>Ranking of CL Entities</p>	<ul style="list-style-type: none"> • The CL_Entity with the highest Facility Risk is currently being assigned a rank of n, where n is the number of CL_Entities in the set Applicable_CL_Entities. This will result in the CL_Entity being assigned a rank of 1. However, the “CL_Threshold” entity is also assigned a rank of 1, which breaks the calculation. • To avoid this issue, AEMO requests that the CL_Entity with the highest Facility Risk should be assigned a

	rank of n+1 rather than n.
Calculation of the Runway Share for the Notional Wholesale Meter and CL Entities	<ul style="list-style-type: none"> • AEMO queries whether the calculation in Appendix 2E clause 2.3 should also depend on the calculation in Appendix 2E clause 3.3 to calculate FacilityRisk(f,DI). • If so, AEMO recommends updating clause 2.3 to reflect this, and also recommends updating clause 3.3(b) to state the RunwayShare(f,DI) = 0 for CL_Entities with FacilityRisk(f,DI) ≤ CL_Threshold.
CL_Threshold and RunwayShare	<ul style="list-style-type: none"> • There is a potential inconsistency in sign convention in clause 3.3. If CL_Threshold is 120 MW, it is implied that this is consumption, but CL_Threshold is not formally defined. Metered Schedule treats injection as positive. The clause indicates that RunwayShare = 0 for any CL_Entity with metered schedule less than 120 MW, i.e. any NDL Injecting less than 120 MW (including any NDL that is Withdrawing). • AEMO requests clause 3.3 be reworded to remedy the inconsistency.
Determining the Threshold Share CL_Entity_Quantity(f,DI)	<ul style="list-style-type: none"> • AEMO requests clarification on whether clause 4.1 is treating all NDLS without SCADA metering and the Notional Wholesale Meter as a single entity, and if so, requests clarification on which Market Participant owns this entity. • The formula for MeteredQuantity(f,DI) in clause 4.1(d) is different to the formula used in clause 3.3(b). • AEMO believes there should be an explicit formula for calculating FacilityRisk(f,DI) for each relevant entity which replaces the use of MeteredQuantity(f,DI). • The term “MeteredQuantity(f,DI) is used in clauses 3.3 and 4.1 of Appendix 2E with different definitions. AEMO requests that these clauses be updated for consistency, or two different terms be used. The term used in 4.1 should also be more precisely defined to avoid ambiguity, for example, around sign convention.
Network Contingency Shares	<ul style="list-style-type: none"> • Clause 6.5(a) refers to a union of sets, clause 6.5(a) only refers to one of the sets: Applicable_CL_Entities(D). AEMO recommends updating clause 6.5(a) and queries whether the clause is intended to state “where Causer_Facilities(nc,DI) is a subset of Applicable_CL_Entities(DI) as defined in clause 2.4 of this Appendix”. • The implementation of Contingency Raise was a complex undertaking. AEMO considers that the implementation of the Network Contingency Share adds additional complexity to the calculation and requests that further consideration is given to whether the additional complexity outweighs any benefit. • Network Contingency Share is assigned only to Registered Facilities. It is likely that most of the time the

Network Contingency that sets the Largest Credible Load Contingency for Contingency Lower will be dominated by consumption from NDLs (unregistered), with no or few Registered Facilities that are withdrawing associated with it. Under the current drafting, it appears likely that this will lead to intervals where significant costs are being attributed to Facilities with small energy withdrawals. For example, where a Network Contingency has a total risk of 240 MW, made up of 239.8 MW from NDLs and 0.2 MW from a Facility's parasitic loads, and there are no other CL_Entities in the system with consumption/Facility Risk > 120 MW, such that the Network Component (from clause 7.1) is 0.5, the facility with 0.2 MW Facility Risk would receive 50% of all Contingency Lower costs in the market.

- AEMO recommends either removing the Network Contingency share concept for Contingency Lower or adjusting the Network Contingency share concept to assign costs to NDLs in an appropriate manner (noting it would be unrealistic for AEMO to assign every NMI to a Network Contingency).