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### ERC0295 – Operating Reserve Market

The Australian Energy Council ('AEC') welcomes the opportunity to make a submission to the Australian Energy Market Commission's ('AEMC') 2023 Directions Paper *Operating Reserve Market* (ORM).

The Australian Energy Council is the peak industry body for electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. AEC members generate and sell energy to over 10 million homes and businesses and are major investors in renewable energy generation. The AEC supports reaching net-zero by 2050 as well as a 55 per cent emissions reduction target by 2035 and is committed to delivering the energy transition for the benefit of consumers.

#### Question 1: Decision not to recommend ORM

The AEC recognizes the deep consideration of various forms of ORM carried out by the AEMC through this rule change, the provision of market modelling by AEMC's consultants and input from AEMO that all ultimately led to this decision. The provision of four quite different ORM models, and the spread of stakeholder preferences between them, made it sometimes challenging to grasp the specific issue the ORM was intending to address.

The AEC accepts the AEMC's process that led to the decision.

The AEC notes that following this decision, and the rejection by Energy Ministers' of a broad-based capacity mechanism, the industry is retaining its reliability reliance on the incentives created by the five-minute energy-only pricing signal. In turn this brings focus to the need to implement the Reliability Panel's recommendations for progressive increases in the Market Price Cap (MPC), Cumulative Price Threshold (CPT) and Administered Price Cap (APC).

#### Question 2A: Energy Storage Information

The AEC agrees that an emerging critical power system condition for the NEM will be energy shortages in the Pre-dispatch to STPASA timeframe (i.e. periods of up to 1 week). As the NEM's dispatch and forecasting processes perform no inter-temporal energy allocation, it is correct for the market bodies to consider the adequacy of forecasting tools that were built at a time when this was not a binding condition.

The AEC agrees in principle that publication of aggregated stored energy, say by NEM region, would be helpful both to participants in achieving efficient operation and risk management and for AEMO in having a greater understanding of reliability risk.

The benefit of course must be balanced with the cost of provision which could be substantial in some cases. Even if justifiable, the costs will fall more heavily on participants who are more energy limited and whose storage situation changes frequently. To that extent, the AEC notes that the AEMC's [Integrating price-responsive resources into the NEM rule change](#) is considering providing an incentive

payment to parties who provide visibility into the dispatch and forecasting process. Such a model could also be useful in this case.

The AEC agrees with the dot point list of matters on page 56 to consider, with the exclusion of the consideration of anti-competitive behaviour. A sub-optimal market design should never be pursued because of hypothetical postulations of uncompetitive behaviour. If, after implementation, such behaviour does emerge, it should always be dealt with outside the market design, ideally through new-entry, or as a last resort, by regulatory action. The AEC has published [material](#) explaining why these generator market power concerns are a legacy of the traditional power system and no longer relevant to the technologies pertinent to the transition.

In any case it is a near-universal truth that market transparency is pro, not anti, competitive.

The AEC notes that large-scale Battery Energy Storage (BESS) already has an obligation to provide real-time information of state of charge to AEMO. The provision of a real-time state of charge aggregated by region from these sources would appear straightforward, noting that it is not a fulsome picture of all the possible energy limitations within a region. Nevertheless, it could be provided by AEMO with a modest market information enhancement and would not require a Rule adjustment.

This aggregate real-time BESS energy could be further extended into a non-binding predispatch storage forecast by drawing upon the predispatch solutions of scheduled BESS.

However, the task of publishing stored energy in a complex electricity market is far from straightforward. Different technologies have quite different short-term energy limitations that are continuously changing and rarely deterministic. Indeed, all assets have degrees of energy limitations<sup>1</sup>,

The myriad of site-specific characteristics of energy depth (which is also the NEM's greatest strength) mean that a simplistic obligation to provide and aggregate storage information could create a meaningless, or even misleading, picture of energy limits.

For example, AEMO annually publishes long-term energy limitations in its [Energy Adequacy Assessment Projection](#) reports. The AEC is unsure that it provides a meaningful picture as its representation of these energy limits is quite simplistic.

The AEC therefore considers that developing an enduring arrangement to collate and publish energy storage information is beyond the reasonable scope of this rule change work and should instead be part of a holistic project around enhancing the Predispatch and STPASA tools.

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<sup>1</sup> We note for example the energy limitations of

- That stored in a coal bunkers, alongside an ongoing input of coal from a mine or trainline,
- Legal characteristics of a gas contract,
- The depth of availability of gas from a gas spot market
- Liquid fuel stocks and the ability to obtain resupply,
- Local gas storage facilities, and
- The energy stored:
  - upstream of a hydro station, plus expected inflow or
  - in the airspace below it, minus expected outflow.
- The maximum acceptable duration of a demand-side action.

This is not to suggest that it would be sensible for a stored energy publication to capture all of the above limitations, but to explain why the question of defining an energy limitation is a deep and complex matter.

## Question 2B: More localized Frequency Control Ancillary Services (FCAS)

The AEC appreciates Powerlink’s contribution which recognizes a potentially major issue resulting from the planned developments of Renewable Energy Zones (REZ) creating very large contingency risks on single tower transmission circuits. More granular FCAS acquisition is an appropriate response to this.

As stated in the paper, AEMO already have systems and powers to acquire FCAS on a non-global basis. Further, AEMO already uses manual methods to occasionally acquire FCAS sub-regionally (where a contingency risk does not align with a regional boundary).

In its report on the 25 August 2018 power system event, [AEMO recommended](#) purchasing regionalized FCAS quantities in system normal conditions. The AEC considers this an appropriate market-based response which could have been immediately implemented instead of the oppressive measure of uncompensated [mandatory Primary Frequency Response](#) (PFR).

However, due to mandatory PFR, AEMO appear to have [deferred and possibly discarded](#) this recommendation:

Table 1 Status of actions arising from major reviewable incidents

| Incident  | Recommendation  | Status | Details   |
|---|---|--------|---|
| 25 August 2018 – Queensland and South Australia system separation | <b>Primary frequency control in the NEM</b> <ul style="list-style-type: none"> <li>AEMO to work with the AEMC, AER and NEM participants to establish appropriate interim arrangements, through rule changes as required, to increase primary frequency control (PFC) responses at both existing and new (synchronous and non-synchronous) generator connection points where feasible, by Q3 2019.</li> <li>AEMO to support work on a permanent mechanism to secure adequate PFC as contemplated in the AEMC’s Frequency Control Framework Review, with the aim of identifying any required rule changes to be submitted to the AEMC by the end of Q3 2019 with a detailed solution and implementation process completed by mid-2020.</li> </ul> | Closed | <ul style="list-style-type: none"> <li>AEMO submitted a rule change proposal for mandatory PFR in August 2019.</li> <li>Following the rule change, AEMO issued an Interim Primary Frequency Response Requirements document (IPFRR)<sup>2</sup> in June 2020, including implementation processes<sup>3</sup>.</li> <li>The final Primary Frequency Response Requirements were published by AEMO on 08 May 2023<sup>4</sup>.</li> </ul> |
|   | <b>Circumstances for regional FCAS or frequency control</b><br>AEMO to investigate whether a minimum regional FCAS requirement is feasible, or whether there is scope to manage frequency requirements arising from non-credible regional separation under the protected events framework in the NER after interim PFC outcomes at the end of Q3 2019.  | Open   | FCAS is only procured to cover credible events.<br>Since the commencement of PFR implementation in 2020, a material improvement in frequency performance on the power system has been observed, lessening the frequency impact of non-credible events. Following implementation of very fast FCAS <sup>5</sup> , AEMO will consider regional FCAS requirements.   |

This is an example of AEC’s earlier warnings that uncompensated mandatory PFR would undermine voluntary FCAS markets, in a manner that is both inefficient and damaging to investment signals. In the AEC’s opinion, even with a more stable frequency, the development of regionalised FCAS pricing signals should not have been deferred due to the distortionary impacts of mandatory PFR.

To the AEC’s understanding, there is no barrier to AEMO immediately implementing Powerlink’s suggestion for purchasing regionalized FCAS, and the rules, dispatch processes and settlement mechanisms already exist. There appears to be no need for further AEMC action beyond a clear signal to AEMO that it should exercise this existing capability.

With respect to sub-regional purchasing, whilst systems do exist, the AEC accepts that they are not intended for regular use. Significant new questions arise regarding cost recovery and identifying the appropriate “causer” following the “causer-pays” philosophy of FCAS recovery.

Sub-regional FCAS opens issues deserving of a detailed investigation and discussion that seems beyond the scope of an incremental consequential reform flowing from the ORM rule change. In 2021 the AEC [wrote to the AEMC](#) proposing a self-initiated holistic review of the NEM’s various non-energy cost recovery frameworks, including FCAS. Such a review would be an ideal place to consider the nature of Powerlink’s suggestion.

The AEMC chose not to initiate a review at the time, however the AEC considers the value of such a review has since increased, as it would also include the cost recoveries of intervention costs of the

2022 winter crisis and matters since raised in a newly submitted [rule change](#) on recovering funds for capacity directions.

### Question 3: Other Improvements

The AEC notes the Paper's decision to not progress the AEC's suggestion of dual ramp rate bidding. The AEC proposed this as an incremental alternative to the ORM, noting it would not require a rule change. The AEC does not oppose the AEMC's decision to not progress it here, as it can be implemented unilaterally by AEMO and does not require the AEMC. The AEC is however disappointed to observe the discussion has seriously misunderstood the proposal to be something quite different to what was suggested.

The AEC was simply suggesting that generators be permitted to include four more fields in their offer structure which would be implemented by two new constraints:

- A "fast" Rate Of Change (ROC) up and down;
- A "fast ramp price" up and down.

The fast ramp constraint would adopt the Constraint Violation Penalty (CVP) of the existing ROC (a multiple of the market price cap).

Meanwhile the existing ROC constraint would adopt the "fast ramp price" (a fraction of the market price cap) as its CVP.

This would mean that if the objective function benefit of moving a unit exceeded the fast ramp price, the dispatch engine would make use of the fast ramp capability.

For example, if a unit bidding \$10 for energy bid \$20 for fast ramp, the fast ramp would be used if the price suddenly jumped from below \$10 to over \$30.

This is a very simple incremental adjustment to the existing dispatch program. The discussion in the Paper has misunderstood it to be a very different proposal, referring to the complexities of inter-temporal optimization. Yet there was never any suggestion of inter-temporal optimization.

It is unclear to AEC how the AEMC developed this major misunderstanding. The text of the AEC's February 2021 [submission](#) is reproduced below which makes no such suggestion and from which the proposed mechanism seems quite clear:

*The ability could be made continuously available to the dispatch process with a minimalist enhancement: permitting the bidding of two RoCs ("FASTRoC" and "SLOWRoC") along with a penalty price ("FASTRoC Price"). The current RoC Constraint Violation Penalty ("CVP") would be used for the FASTRoC constraint, whilst the CVP of SLOWRoC would use the FASTRoC Price.*

*In practice this would mean that if a regional price exceeded a unit's offer price by more than the FASTRoC Price, then the dispatch engine would move the unit at FASTRoC. The generator would express the plant damage cost penalty in the FASTRoC Price, knowing that the FASTRoC would only be used when the existing market's incentives exceeded the penalty.*

*The AEC encourages the AEMC to explore this minimalist dispatch enhancement with AEMO.*

The misunderstanding is disappointing as it could have been quickly resolved had the AEMC approached the submission's listed contact. The proposal is genuinely minimalist and fully consistent with existing bidding approaches, constraints and dispatch mechanism.

The Paper has also suggested that a fast ramp rate would only be used by coal, which is in decline, negating the benefit of an apparently maximalist suggestion. In fact, the intended and most likely users are open cycle gas turbines, for which manufacturers typically specify a fast-ramping capability, incurring a warranted maintenance penalty. Some hydro units also have a similar ability to ramp quickly at the cost of some specified loss of life.

Although less frequently, coal plants could also make use of it as the minimalist dispatch improvement suggestion can be implemented unilaterally by AEMO in a matter of months.

The intended users of the enhancement could also have easily been explained through a very quick discussion with the submission's contact.

Questions about this submission should be addressed to David Feeney, by email [David.Feeney@energycouncil.com.au](mailto:David.Feeney@energycouncil.com.au).

Yours sincerely,



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