



8 September 2023

Anna Collyer
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Submitted online at: www.aemc.gov.au

Dear Ms Collyer

Operating reserve market – Directions Paper

Origin Energy Limited (Origin) welcomes the opportunity to provide comments on the Australian Energy Market Commission's (AEMC) Directions Paper on an Operating Reserve Market (ORM).

The existing National Electricity Market (NEM) framework has generally been effective in facilitating availability of reserve capacity to meet expected peak demand and ramping capacity requirements, and the AEMC's analysis suggests this is likely to remain the case in the longer term. Notwithstanding this, we acknowledge the concerns raised by the Australian Energy Market Operator (AEMO) in its technical advice to the AEMC, particularly in relation to whether a future NEM resource mix comprised largely of variable renewable energy and storage capacity will be capable of providing operating reserve at times of high forecast uncertainty and / or low reserve.¹

Origin agrees an ORM that commits resources to make energy available ahead of time, would likely give confidence to AEMO that supply will be available to meet demand and reduce the need for intervention. However, given the AEMC's preliminary position, we see value in AEMO undertaking further analysis of the drivers of forecast uncertainty that it considers could contribute to a lack of reserve capacity and inefficient resource commitment decisions. Specific attention should be given to critical time periods such as Lack of Reserve (LOR) conditions and high prices, as well as critical time horizons linked to plant commitment timeframes or aggregate error relevant to energy-limited plant. This would help industry to better consider the utility of the ORM and potentially other mechanisms that could more efficiently support reliability. Visibility of forecast uncertainty and its drivers in operational timeframes would also assist participants to respond appropriately.

In addition to the above, a key factor that should be assessed is the extent to which the ORM can also enhance participant decision making and risk management, which in turn supports reliability. A number of key issues to consider in this context are discussed below.

Market risk

The risk to the market should generally be less than the sum of the risks of individual market participants. Where each participant operates their portfolio with some redundancy to limit exposure when facing uncertainty, the total reserves in the NEM should generally exceed the requirements. In addressing reliability risk, consideration should be given to situations such as dunkleflaute events where risks are correlated across market participants and this principle would not necessarily hold. This suggests that

¹ AEMO, 'Operating Reserve Design – Technical advice', November 2022, pg. 31.

a mechanism to better coordinate energy-limited plant in operational timeframes might add more value than a mechanism aimed at reducing perceived uncertainty of resource commitment decisions.

Timing

Market participants will make contemporaneous commitment decisions that account for the start-up time of their assets. Earlier decisions to commit plant will necessarily not include information revealed after that decision, so later decisions will in general have better outcomes for a given portfolio. An assessment of the flexibility of resources in the NEM would therefore be required to determine the optimal timeframe of any ahead scheduling of reserves. This would include details of the resources likely to respond such as plant start-up time, forecast uncertainty over different timeframes during scarcity periods, and response times for interventions available to AEMO.

Portfolio optimisation and market dynamics

The recent paper referenced by AEMO, *Risk-averse self-scheduling of storage in decentralised markets*,² models the impacts of risk aversion on optimal dispatch of storage. However improved optimisation of price arbitrage is not the relevant question and is in fact a direct trade-off to the reservation of charge for potential reliability events. An unhedged merchant Battery Energy Storage System (BESS) modelled as a price taker (as in this paper) might be forgoing price arbitrage opportunities due to risk-aversion but is more likely to have stored charge to respond to high-price events. Furthermore, a BESS forming part of a portfolio of assets, or having sold forward contracts, may be operated as a defensive asset committing at prices below forecast settlement levels to ensure dispatch. In general, more supply will result in a lower price, so dispatch decisions necessarily involve consideration of overall portfolio exposure.

The ORM may provide additional confidence that operating reserves will be available to the market if needed and hence promote reliability. It could also provide some revenue certainty to cover start-up costs of thermal plant like gas powered generation (GPG), potentially reducing the risk of committing generation with uncertain returns. However, the feedback between the two markets and resultant impact on participants' portfolio approach to risk management is unclear and needs to be considered. For example, additional operating reserves provided by GPG would increase the supply of energy in the market as the plant ramps and generates at a minimum operating level. This would seemingly result in a lower energy price in the periods to be specifically addressed by the ORM relative to what would have otherwise occurred: where the expected energy price is below that required to incentivise GPG to be online but with coincident low reserves.

State of charge information

The AEMC should continue to investigate the merit of publishing regionally aggregated state-of-charge (SOC) information for scheduled batteries and pumped-hydro, noting the trade-offs identified in the consultation paper³. Origin sees limited benefit in requiring this information from any further technologies that generally approach energy limitations less often and whose energy limitations can be more complex and harder to systematise. Evidence of market benefits would need to be provided before further disaggregation of this information or inclusion of additional technologies was pursued.

The volume of storage remaining may be a useful metric that could help participants to better value their generation, however further consideration of how this data is presented or aggregated would be needed to maximise its value to participants. If this option is progressed, we suggest information could be

² <https://arxiv.org/abs/2212.00209>

³ AEMC, Operating reserve market directions paper, Directions Paper, 3 August 2023, pg. 56.

provided in form such as MW available and aggregated into buckets according to remaining time at full capacity such as 'less than 1 hour', '1 to 4 hours', '4 to 8 hours', 'above 8 hours'.

Regional and sub-regional procurement of Frequency Control Ancillary Services (FCAS)

The issues raised by Powerlink regarding future FCAS requirements should be considered. A solution which allows for reduced network spend or reduced energy costs which lowers the overall costs to consumers would likely meet the National Electricity Objective (NEO).

Segmentation of the global FCAS market into smaller markets will require consideration of whether the volume procured and resources available lend themselves to a workably competitive market, and how costs can be recovered from causers/beneficiaries.

If you wish to discuss any aspect of this submission further, please contact Ben Hayward on 03 9067 3403.

Yours Sincerely,

A handwritten signature in black ink that reads "S Cole". The signature is written in a cursive, slightly stylized font.

Shaun Cole
Group Manager, Regulatory Policy