



ERM Power Limited  
Level 3, 90 Collins Street  
Melbourne VIC 3000  
ABN 28 122 259 223

+61 3 9214 9333  
[ermpower.com.au](http://ermpower.com.au)

Thursday, 11 February 2021

Sebastien Henry  
Australian Energy Market Commission  
GPO Box 2603  
Sydney NSW 2000

Dear Mr Henry

## **RE: Reserve Services in the National Electricity Market**

ERM Power Retail Pty Ltd (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Reserve Services in the National Electricity Market (NEM) Directions Paper ("the Paper").

### **About ERM Power**

ERM Power (ERM) is a subsidiary of Shell Energy Australia Pty Ltd (Shell Energy). ERM is one of Australia's leading commercial and industrial electricity retailers, providing large businesses with end to end energy management, from electricity retailing to integrated solutions that improve energy productivity. Market-leading customer satisfaction has fuelled ERM Power's growth, and today the Company is the second largest electricity provider to commercial businesses and industrials in Australia by load<sup>1</sup>. ERM also operates 662 megawatts of low emission, gas-fired peaking power stations in Western Australia and Queensland, supporting the industry's transition to renewables.

<http://www.ermpower.com.au>

<https://www.shell.com.au/business-customers/shell-energy-australia.html>

### **General comments**

The AEMC is considering whether some form of dynamic market for in-market reserves, would incentivise generation to be available in advance based on the Australian Energy Market Operator's (AEMO) view of required system reserve rather than just at times as signalled by market price outcomes as set out in pre-dispatch, the calculation of reserve levels in the short-term projected assessment of system adequacy (STPASA), or the internal view of the respective market participant.

An in-market reserve would allow the market operator to look ahead in some time frame to determine whether certain generators, who though their bids have indicated an intention to self-decommit or not self-commit, may be needed to keep dispatching energy in the market in order to provide these additional reserve and power system services. The fact that these services are interrelated demonstrates the importance of forming a cohesive response that recognises the linkages and interactions between different approaches.

ERM Power struggles to see how an operating reserve market would improve on the current information provisions or settings in the market. The existing information provision and market settings, including the high market price cap (MPC), STPASA and pre-dispatch PASA (PDPASA) along with AEMO's declaration of lack of reserve (LOR)

---

<sup>1</sup> Based on ERM Power analysis of latest published information.



notifications, which includes flexibility for forecasting uncertainty,<sup>2</sup> all of which provide signals in different timeframes up to seven days in advance for capacity to be made available to the market. We have observed that generators and demand response providers do respond to indicators of tight supply-demand balance and make themselves available. As a last resort AEMO has the ability to intervene in the market to secure sufficient reserves via the use of a Clause 4.8.9 Direction or procurement of out of market reserves via the Reliability and Emergency Reserve Trader (RERT). The short-notice RERT panel provisions have been demonstrated to be particularly effective in recruiting and dispatching within day RERT resources when required to do so.

ERM Power fails to see what additional benefits an operating reserve would bring beyond existing signals in the market. It seems that the aim of an operating reserve market is to encourage capacity to be made available to the market, yet that already happens now. When unexpected events do occur, there is usually a response from market participants to make more capacity available. It appears that at this stage an operating reserve would provide capacity payments to selected capacity that is already available or would encourage capacity to make itself available earlier than it ordinarily would in return for an additional payment. Neither of these responses would seem to bring any real benefits to system reliability or security beyond what the existing market signals do. Alternatively, it risks creating an incentive for some capacity that would normally be available for dispatch to make itself unavailable in order to increase prices in the operating reserve market.

### **Rationale for an operating reserve**

ERM Power understands that the question of whether an operating reserve is necessary relates primarily to concerns the increasing volumes of variable renewable energy (solar and wind) with zero short run marginal cost entering the market and displacing higher-cost dispatchable generation. This can create a situation where sudden and unforecast changes in demand or supply could lead to a lack of available generation to meet supply. It also means that some plant – large, scheduled generators – which has previously been self decommitted, may take some time to resynchronise with the grid and begin dispatching energy and will therefore be slow to respond to any sudden and unforecast needs in the market.

We do not agree that at this stage, the primary issue is that there will be insufficient market reserves being made available to meet net demand or that the level of uncertainty in AEMO's demand, wind and solar output forecast is so great that an additional mechanism is warranted. AEMO's wind and solar forecasting systems already provide a reasonably accurate measure of expected solar and wind output 24 hours ahead of time, with accuracy increasing closer to dispatch. Figures 1 and 2 from the AEMC Reliability Panel's 2019 Market Performance highlight this.<sup>3</sup>

In addition, the PD and ST PASA reserve calculation uses values adjusted to be conservative from these forecast uninterrupted intermittent generation forecasts. ERM Power recognises that as the volume of solar and wind energy increases, the same error rate could create a larger total error in MW but we consider that this impact will be muted by improvements to forecasting systems – for wind, grid-connected and rooftop solar and demand – over time as well as the potential for innovative contract structures like firming products to provide a firm physical response to fluctuations in VRE generation in order to underpin the sale of financial contracts. AEMO could also look to issue a range of forecasts for VRE such as 10 per cent Probability of exceedance (10POE), 90POE or even releasing a Forecasting Uncertainty Measure (FUM) specifically for intermittent generation.

There may in future be an issue around the real-time dispatch of behind-the-meter generation like solar PV and battery storage that is largely invisible to the market operator. However, we understand that AEMO already uses tools to manage the integration of these technologies. It is our understanding that AEMO uses irradiance meters spread across the entire geography of the NEM as an input to forecasts of solar PV. AEMO also has real-time access to substation data from Distribution Network Service Providers which provides another indication of net

---

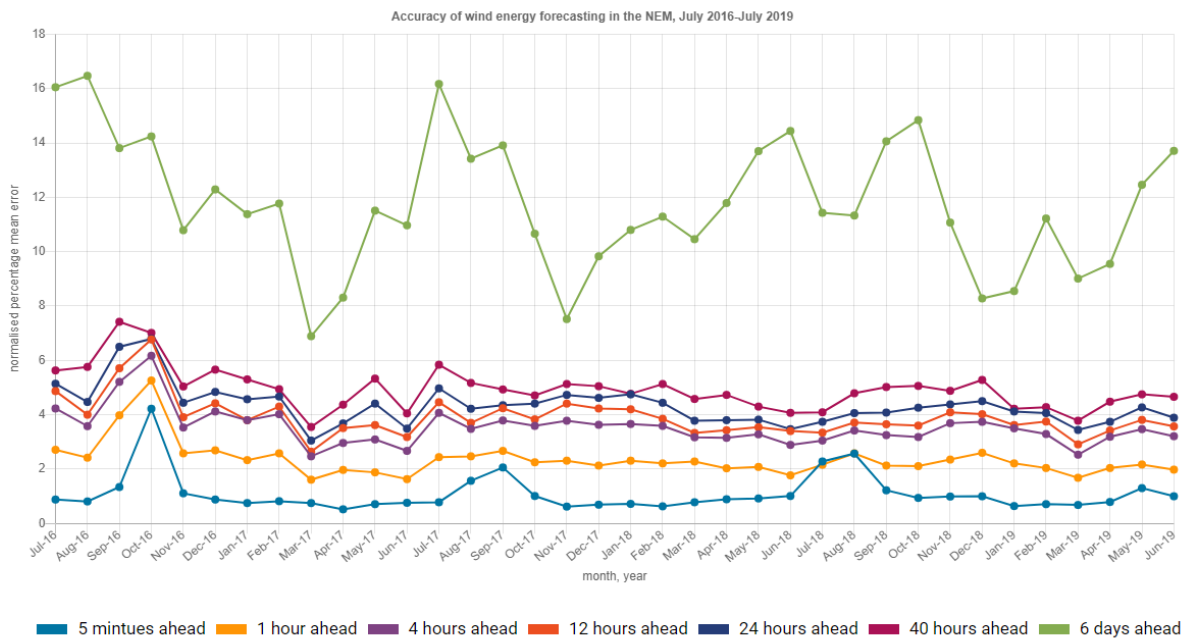
<sup>2</sup> The Forecasting Uncertainty Measure applies to forecasting uncertainty for demand and non-scheduled, semi-scheduled and scheduled generation output. This is additional to the current normal calculation of the largest credible contingency event.

<sup>3</sup> AEMC Reliability Panel, 2019 Annual Market Performance Report, 12 March 2020.

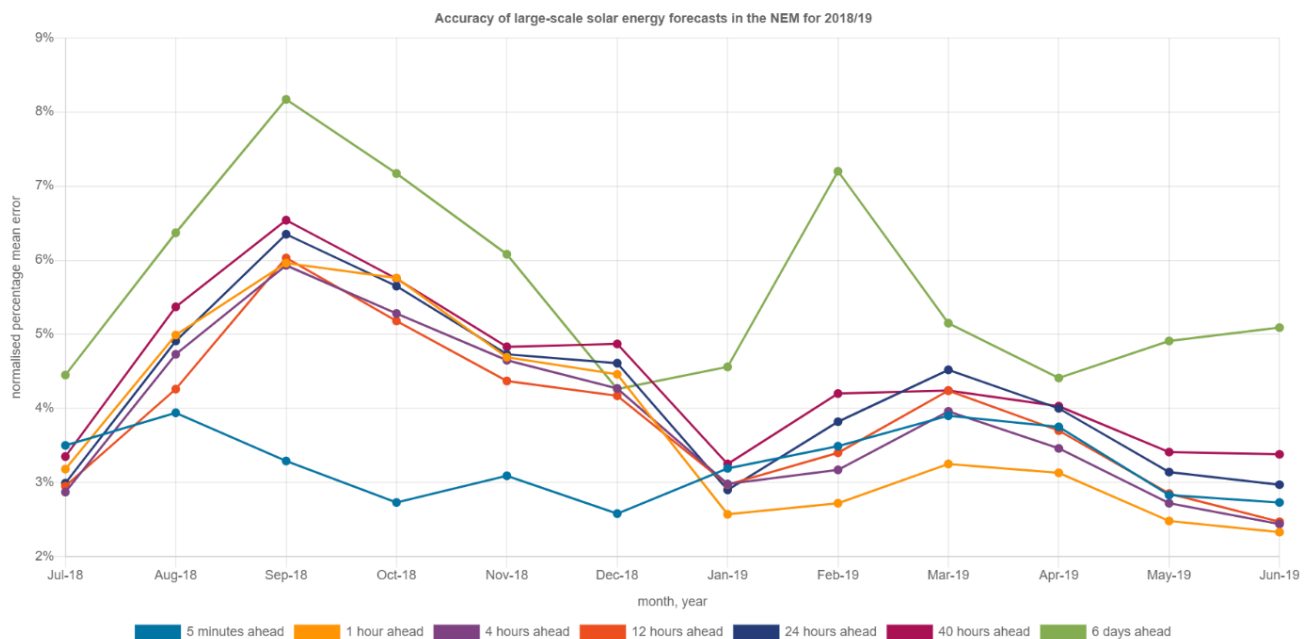


demand at a localised level. Aggregators working to facilitate virtual power plant (VPP) response will provide increased information in the area of household battery storage should the costs of battery storage become efficient for its widespread use at a household level.

**Figure 1: Accuracy of wind energy forecasting in the NEM, July 2016 – July 2019**



**Figure 2: Accuracy of large-scale solar energy forecasts in the NEM for 2018-19**





There may in future be an issue around the real-time dispatch of behind-the-meter generation like solar PV and battery storage that is largely invisible to the market operator. However, we understand that AEMO already uses tools to manage the integration of these technologies. It is our understanding that AEMO uses irradiance meters spread across the entire geography of the NEM as an input to forecasts of solar PV. AEMO also has real-time access to substation data from Distribution Network Service Providers which provides another indication of net demand at a localised level. Aggregators working to facilitate virtual power plant (VPP) response will provide increased information in the area of household battery storage should the costs of battery storage become efficient for its widespread use at a household level.

Further, we consider that to the extent this is one of the issues at hand, it is more relevant to the integration of Distributed Energy Resources (DER) into the market rather than whether sufficient in-market reserves will be available. The Energy Security Board is examining how to better integrate DER into the market and while we acknowledge the overlap between the issues, an operating reserve market would likely be an extreme and costly tool to address DER visibility. The Wholesale Demand Response Mechanism which is due to commence in October 2021 is also expected to increase the level of price-responsive demand response in the NEM. There may also be additional opportunities to incentivise demand-side resources to participate in the market by informing AEMO of its intentions, or via the use of aggregators. We note that this kind of demand-side participation has been a focus of the ESB's Two-Sided Markets workstream.

ERM Power considers that the incremental improvements discussed in Section 6.1 of the Paper would go a long way to addressing the perceived risks around uncertainty of net demand. In particular, we support the continued improvement of forecasts for demand and solar PV in particular. We consider that AEMO should continue to consult with stakeholders to improve its existing forecasting methodologies to provide more accurate information to the market. In considering amendments to their forecasts, it is critical that AEMO ensures conservative bias does not increase further than is currently the case as consumers incur the costs of conservative bias in AEMO's forecasts. In addition to the focus on AEMO's forecasts, we believe it should also be noted that participants themselves also undertake their own forecast for demand and supply conditions and will often increase their own supply or demand management response where they consider this is warranted ahead of adjustments by AEMO to their forecasts.

It appears to ERM Power that the main concern is not so much that sufficient capacity needs to be available in the market to support reliability; the medium-term PASA and Electricity Statement of Opportunities shows that any reliability issue is only likely to manifest in around a decade's time by which time additional generation will have committed to construction and commissioning. Rather, we see that the actual concern is that governments in particular would prefer that prices didn't have to rise towards the MPC for more capacity to make itself available in the market. In essence, we see that the real concern is therefore related to price volatility.

While we understand the concern over price volatility and a high MPC, the fact is that in the NEM the high MPC is a critical tool to signal that new investment may be needed and to provide a return for generators or demand response providers in the market. An operating reserve that effectively undermined the MPC in order to reduce volatility would mute the signal for new investment, potentially leading to a delay in new supply or demand response capacity entering the market or a need for further intervention to secure new generation capacity. Demand response in particular requires sufficient payment to warrant interruption to its consumption of energy. Undermining the MPC could also result in existing resources leaving the market if revenue sufficiency was undermined. This would seem entirely contrary to the aim of an operating reserve and even to the wider aims of the Energy Security Board's (ESB) Resource Adequacy Mechanisms workstream.

The high MPC also serves another purpose in that it provides a strong signal to retailers to contract for supply and in turn, for generators or demand response providers to be ready to dispatch to meet their contracted load in order to avoid the risk of high unfunded contractual payouts. This essentially provides a signal for firm capacity to be available to dispatch when needed. In ERM Power's view, this is the same driver as what the operating reserve is seeking to achieve.



The current market design allows for decision making in the form of self-commitment and self-decommitment by the respective market participants. This market design feature ensures that economic risks associated with these decisions are borne by the market participant as opposed to a central commitment and decommitment market design where the risks of decisions made by the market operator are borne by consumers. Market participants have the ability to manage these risks through the financial contract markets where a generator receives a fixed price for the negotiated contract volume, regardless of spot market dispatch outcomes. The proposed in-market reserve rule changes would in our view result in a transfer of the economic risks with regards to such decisions onto consumers.

While the Paper discusses whether changes in potential demand outcomes and variable renewable generation output will become increasingly challenging in the future, it needs to be understood that the current AEMO forecasts contained in the STPASA and pre-dispatch already include for such variations. The process for the declaration of LOR conditions also contains an additional forecasting uncertainty measure (FUM) value which increases in value over future time periods. Though we agree that the value of generation associated with a credible contingency event, including where a non-credible contingency event is reclassified as a credible contingency event, may also change over time, the current design of the FCAS markets allows for variable procurement volume of FCAS reserves by AEMO to manage this risk. An increase in the size of the largest credible contingency for each region would also flow through as increased reserve requirements for the calculation of regional LOR values. We are of the view that the variability factors as set out in the rule change requests are already well catered for in the market's short-term forecasting and required reserves calculation framework.

The Commission has also raised concerns regarding the inefficiency of interventions in the market to ensure there are sufficient reserves to address system security events, up to the level to prevent a contingency event resulting in involuntary load-shedding. In considering the level of current market interventions, we are concerned that the Commission's considerations in this area are being biased by outcomes in the South Australia region. The South Australia clause 4.8.9 Directions for system strength is in our view occurring due to two weaknesses in the National Electricity Rules (NER):

- The lack of a framework for the procurement of power system security services by AEMO; and
- The inability for a participant to receive compensation to cover their marginal costs for producing energy to allow provision of power system security services absent a clause 4.8.9 Direction.

We believe both these issues would be better addressed directly by the addition of a framework for provision of power system security services as opposed to the introduction of operating reserves which would not necessarily guarantee their provision absent a distortion to an operating reserve market to ensure procurement of these services from the required service provider(s) which may not be a least cost outcome.

Also, in considering the need to hold sufficient reserves to cater for potential unforecast power system security events, we note regional reserve requirements are calculated on the basis of the two largest credible contingencies after allowing for support from adjacent regions via interconnectors which may be further increased based on AEMO's FUM. This requirement would adequately manage any potential credible contingency event. From a consumer's cost perspective, we question if it would be efficient for additional reserves above this level to be maintained at all times to cater for the range of unforecast non-credible contingency events which could occur and if consumers are willing to fund these additional costs.

We also note that a primary reason for extending the RERT provision beyond its original sunset date in June 2016 was the Commission's view that ongoing uncertainty is likely to always be a feature of the NEM.<sup>4</sup> In the final determination the rules were also amended to allow AEMO to dispatch reserves procured under reserves contracts to address either reliability, security, or both. As such we question if the costs of holding additional reserves at all times on top of the existing RERT provisions would be inefficient compared to the costs of dispatching RERT on an

---

<sup>4</sup> Extension of the Reliability and Emergency Reserve Trader Final Determination – Summary pp ii





“as required” basis when an unforecastable security event occurred. IN the Paper, the Commission raises concerns about the costs of RERT during 2019-20. Given the nature of the simultaneous multiple contingency events that AEMO needed to manage, ERM Power doubts these events could have been managed by any of the proposed operational reserve markets. In each case reserve headroom remained available on generating units but the loss of multiple intra-regional network elements prevented firm supply to the major load centres.

ERM Power does not support any of the reserve services market options set out in Section 6.2 of the Paper. Although, we believe that they could in part be one of a number of frameworks to address some of the issues such as uncertainty of net demand due to forecasting errors or unexpected events, and steep increases in net demand, they are significant changes to the NEM that go well beyond what is actually needed to address these challenges. Reserve markets would impose additional costs across consumers at all times, in order to address rare issues that are already being considered as part of broader reforms. Additionally, we do not consider that the AEMC is right to include forecast high peak demand as one of the issues that may justify an operating reserve. As already mentioned, the high MPC plays a critical role in incentivising generation to be available at times of high peak demand. An operating reserve would simply duplicate the purpose of both the MPC and the RERT which already provides emergency reserves if RERT is actually required to maintain adequate reserve levels.

### **Ramping services**

In acknowledging AEMO’s concerns regarding the simultaneous provision of ramping capability and contingency FCAS reserves, ERM Power does see there may be some potential benefit in a ramping reserve market, provided as an ancillary service under some market conditions. Ramping services in the NEM may take on greater importance as the nature of electricity generation shifts to a greater volume of variable renewable generation, and in particular, the steep gradient in the evening period associated with the ramp down of rooftop and grid connected solar generation combined with the ramp up of consumer demand. We are somewhat unclear that amendments to the rules for the provision of a lower ramp rate service will be required, given the strong pricing signal already provided by the market floor price and the ability for scheduled and semi-scheduled generators to submit dispatch offers to reduce output, or for schedule load to increase consumption in response to low price outcomes. However, it is less clear in our view that a sufficiently strong signal will exist for raise ramping services under the 5-minute settlement framework due to be implemented 1 October 2021. From a technical perspective, whilst VRE is capable of reducing output rapidly in response to price, increasing output in response to high prices may not be possible due to energy input limitations. We expect that a market-based raise ramping ancillary service as opposed to a significant increase in the market price cap would deliver greater net benefits to the NEM over the long-term while meeting AEMO’s concerns regarding the market’s capability to provide adequate ramping services under the 5-minute settled market. As with our overall approach, a market-based approach is likely to be the most efficient way in which to deliver these services. Our submission to the previous System Services rule change contained a brief overview of a ramp rate ancillary service (RRAS) contained within a broader set of power system services ancillary service.

We envisage an RRAS whereby AEMO would monitor the forecast provision of ramp rate capability in the immediate (one-hour) pre-dispatch timeframe. AEMO would wait for the last time available before dispatching RRAS based on offered time(s) to achieve provision of the service. For a generating unit, this would be the time required to start, synchronise and achieve minimum unit output, for a load it would be the time required to implement process changes or activate VPP response to commence providing the service.

Although we believe it is appropriate to place an ancillary services market framework in place based on the reasonable probability the service may be required in the future, the decision to procure RRAS in Dispatch will remain subject to AEMO’s judgement. Simply having a suitable framework in place allows AEMO the option but not the obligation to dispatch RRAS. We envisage dispatch of RRAS on an “as required” basis, as opposed to full time service provision.



In addition, we consider that the Commission should recommend that AEMO review and consult on their current fast start inflexibility profile (FSIP) methodology. Currently, very fast start plant, those with a T1 time of less than five minutes can be quarantined from the National Electricity Market Dispatch Engine (NEMDE) dispatch process in the “dispatch pass” even those these generating units remain available to be dispatched to targets during the current dispatch interval. This unnecessarily removes ramping capability from the dispatch process and also results in the NEMDE setting inefficient regional reference price outcomes due to the exclusion of generating capability in the NEMDE dispatch and pricing calculation. We believe the FSIP methodology should be reviewed before the start of 5-minute settlement.

## Conclusion

ERM Power understands the concern from many parties that there will be a lack of reserves available in the NEM to provide supply at critical times. An operating reserve is proposed as a way to address this. However, the NEM already has a number of mechanisms designed to provide signals to supply both demand response and supply resources to be available at times of a tight supply-demand balance, including the high MPC, the STPASA and PDPASA, along with AEMO’s LOR notifications, which includes flexibility for forecasting uncertainty and changes in the size of credible contingency events. All of these mechanisms provide signals in different timeframes up to seven days in advance for capacity to be made available to the market. For the medium to longer term, the MTPASA and ESOO combined with the NEM’s transparent contract market provide the necessary signals to ensure reliable supply side resources to provide consumer demand in the future. Further, the RERT provides the scope for genuine out-of-market emergency reserves to be procured, including at very short notice, if actually required.

It is therefore unclear to ERM Power what benefit the proposed operating reserve would provide beyond the existing mechanisms. In our view, an operating reserve would simply duplicate the existing market signals but, in attaching a price signal to reserve capacity risks creating an incentive for some capacity to make itself unavailable in order to increase prices in the operating reserve market. An operating reserve which withheld capacity from both the energy and FCAS markets to provide additional spinning reserve response on a “just in case basis”, would artificially increase the price outcomes in both the energy and FCAS markets.

ERM Power does not consider that a reserve market is necessary given the NEM’s existing design. Even with possible changes to the NEM design through the ESB’s post-2025 market review, we fail to see how an operating reserve would provide a meaningful signal to capacity to be available without imposing a significant cost on consumers for no real increased reliability benefit.

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

Yours sincerely,

[signed]

Ben Pryor  
Regulatory Affairs Policy Adviser  
03 9214 9316 - [bpryor@ermpower.com.au](mailto:bpryor@ermpower.com.au)