



31 August 2023

Shannon Culic
Australian Energy Market Commission
Level 15, 60 Castlereagh St
Sydney NSW 2000

Dear Ms Culic

RE: Operating Reserve Market

Shell Energy Australia Pty Ltd (Shell Energy) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Operating Reserve Market Directions Paper.

About Shell Energy in Australia

Shell Energy is Shell's renewables and energy solutions business in Australia, helping its customers to decarbonise and reduce their environmental footprint.

Shell Energy delivers business energy solutions and innovation across a portfolio of electricity, gas, environmental products and energy productivity for commercial and industrial customers, while our residential energy retailing business Powershop, acquired in 2022, serves households and small business customers in Australia.

As the second largest electricity provider to commercial and industrial businesses in Australia¹, Shell Energy offers integrated solutions and market-leading² customer satisfaction, built on industry expertise and personalised relationships. The company's generation assets include 662 megawatts of gas-fired peaking power stations in Western Australia and Queensland, supporting the transition to renewables, and the 120 megawatt Gangarri solar energy development in Queensland.

Shell Energy Australia Pty Ltd and its subsidiaries trade as Shell Energy, while Powershop Australia Pty Ltd trades as Powershop. Further information about Shell Energy and our operations can be found on our website [here](#).

General comments

Shell Energy largely supports the AEMC's position not to proceed with the implementation of an operating reserve market. We view an operating reserve market as being unnecessary due to the existing processes within the market which signal the need for more supply including the maintenance of adequate operational reserves. The existing information provision and market settings, including the high market price cap (MPC), short term projected assessment of system adequacy (STPASA) and pre-dispatch PASA (PDPASA) along with the Australian Energy Market Operator's (AEMO) declaration of lack of reserve (LOR) notifications, which includes the provision of an additional reserves buffer via the Forecasting Uncertainty Measure (FUM), all provide signals for sufficient capacity to be made available to the market in timeframes up to seven days in advance. We have

¹By load, based on Shell Energy analysis of publicly available data.

² Utility Market Intelligence (UMI) survey of large commercial and industrial electricity customers of major electricity retailers, including ERM Power (now known as Shell Energy) by independent research company NTF Group in 2011-2021.



observed that generators and demand response providers do respond to indicators of tight supply-demand balance and make themselves available when available to do so.

As a last resort, AEMO has the ability to intervene in the market to secure sufficient additional 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.

An operating reserve market does not appear to add any additional benefits to the market, and would likely impose additional costs on energy consumers to achieve the same results as the current market structure. Importantly, it is our view that an operational reserve market would not result in the provision of additional reserves, both within- and out of market, to that currently made available.

There are numerous reports which analyse the NEM's energy reserves over the long, medium and short term. While the Electricity Statement of Opportunities (ESOO) may identify the potential for low reserves in the longer term, this is its role to provide participants with information regarding future opportunities such that the timely provision of additional supply resources may occur. In the medium term, the medium term PASA (MTPASA) and Energy Adequacy Assessment Projection (EAAP) signal reserve shortfalls and Shell Energy notes neither are currently suggesting an exceedance of either the reliability standard or the lower interim reliability measure.

In addition, AEMO monitors and reports on reserve adequacy in both the pre-dispatch and STPASA timeframes. Pre-dispatch is updated every 5 minutes for the period T+1 hour and the remainder of the pre-dispatch period is updated every 30 mins. This provides close to dispatch information regarding prices and reserves to both market participants and AEMO. STPASA which provides information in the day 2 to 7 timeframe is updated at least hourly. These include the provision of data to the market with regards to short term availability and demand forecasts as well as clear indication where a reserve shortfall is calculated by AEMO. All this information leads to outcomes where available generation is incentivised to present to the market as required with further incentives provided by market price outcomes.

Currently, we have seen little in the way of conclusive evidence presented to demonstrate there is a problem that requires a market design change to rectify. We note and agree that variable renewable energy (VRE) generation output may change rapidly, however, this is not inconsistent with other credible contingency events for which AEMO manage reserve levels. We also note that the framework for declaring what constitutes a credible contingency is sufficiently flexible to allow AEMO to comprehensively manage risks to the power system and consumer reliability.

Suggested FCAS Procurement Changes

The events of 25 August 2018 demonstrate the risks involved in procuring Frequency Control Ancillary Services (FCAS) concentrated in a single region. On that day, the QNI interconnector tripped thereby reducing supply to New South Wales and the southern regions by some 850 MW. Before the trip of QNI, FCAS Raise Services spinning reserves were concentrated in South Australia and to a lesser extent Queensland with little headroom or contingency raise reserves in both Victoria and New South Wales. The reaction of the high level of spinning reserves in South Australia to the QNI trip led to the trip of the Heywood interconnector, which then caused the under frequency load shedding (UFLS) in New South Wales and Victoria. Absent the trip of the Heywood interconnector, Shell Energy doubts UFLS would have occurred. As noted in AEMO's final report on the events of 25 August 2018, an improved geographic spread of FCAS would have alleviated the risks of this outcome occurring.³

³ AEMO, Queensland and South Australia system separation on 25 August 2018 – Final Report.



Shell Energy therefore tentatively agrees with the AEMC's proposal to limit the volume of FCAS procured in any one region. Applying a regional maximum limit will ensure that there is a geographic spread of FCAS supply. This will allow for improved frequency control outcomes both in system normal dispatch and post any contingency event due to the improved geographical distribution of frequency responsive resources across the NEM.

While any precise limit requires further consultation, we note that the choice of limit will inform how many regions FCAS must be procured from and hence the geographical spread of FCAS resources, i.e. a limit of 30 per cent of the global FCAS requirements from one region would mean that FCAS would have to be procured from at least four regions. A limit of 35 per cent would only require FCAS to be sourced from three regions and provide approximately the same as current general outcomes.

Shell Energy argues that the specific limit should be specified in the National Electricity Rules (NER) to provide certainty for participants and provide a higher threshold for consultation on changes, compared to using an AEMO Guideline for instance. However, we also consider it reasonable to allow AEMO to set a lower regional limit at Dispatch via a transparent consulted on process if they consider this is warranted for real time secure power system dispatch. This could conceivably be a dynamic limit outcome. The rules should also clearly indicate that the maximum percentage does not prevent AEMO from applying a higher local requirement in a region if this is required for power system security. This notes that a local contingency requirement following an electrical islanding event in either South Australia or Queensland could exceed the regional limit for normal operating conditions. However, where additional local FCAS procurement occurs, this additional amount would not be allowed to contribute to the global requirement and AEMO would procure the same levels of global procurement outside the region impacted by the local procurement requirement.

By way of example, if the global FCAS requirement were 600 MW with a 30 per cent maximum limit, then no region should contribute more than 180 MW. However, if islanding conditions required 250 MW to be procured from one region, then the additional volume should be added to the global requirement meaning that AEMO would still need to procure 420 MW from other regions (600 MW - 180 MW). This approach would retain the appropriate level of geographical diversity in global FCAS procurement as if the local requirement did not exist.

Any changes to how FCAS is procured is also likely to require consideration of how FCAS is priced. In our view, the Rules must indicate that the global FCAS prices continue to be set by the marginal MW regardless of the regional maximum procurement limits. This would prevent an outcome where varying regional prices occur for global procurement requirements which has the high potential to lead to perverse outcomes in the energy market pricing and dispatch. This would also maintain incentives for the continuation of secondary markets for managing price risks in the global FCAS markets.

Procurement on a sub-regional basis

We note Powerlink's recommendation that contingency FCAS could also be procured on a sub-regional basis such as to maximise exports from a renewable energy zone operating on a single credible contingency. The National Electricity Rules (NER) already allow for such an outcome on a regional basis where those benefiting from such an outcome would be allocated the costs of the additional FCAS. To date, AEMO has not used this ability, perhaps due to the economic efficiency of doing so, due to the high costs that can occur for local FCAS. While FCAS raise services are generally aligned with the sent-out output from the largest generating unit, the Rules allow AEMO to increase above this amount to cover any sized credible contingency such as the trip of a group of generators connected via a single transmission line, should this outcome maximise the value of trade, (i.e. minimise the NEMDE objective function).

Historically AEMO has generally limited output from such a group of generators, yet this is not a Rules requirement. Shell Energy considers that output should only be reduced if there is insufficient FCAS available to



meet the requirement or such an outcome would result in an increase in the National Electricity Market Dispatch Engine (NEMDE) objective function.

From our perspective, the only rule changes that Powerlink's sub-regional FCAS procurement proposal would require is for the Rules to allow for designated sub-regional local FCAS requirements and sub-regional cost recovery on a beneficiary pays basis. This would be in addition to the current regional local requirements and regional cost recovery. Where sub-regional FCAS procurement occurs, Shell Energy recommends a beneficiary pays outcome as opposed to a generalised global cost recovery model. This would be consistent with the current regional or local procurement and regional cost recovery framework.

We also note that the lower FCAS component from generation within a Renewable Energy Zone (REZ) could be already implemented by a generator(s) tripping or runback scheme implemented by the responsible network service provider as part of the connection agreement requirements. It would not necessarily need to be implemented as a sub-regional local contingency lower FCAS requirement.

If implemented, a sub-regional lower contingency FCAS requirement may simply impose additional costs on consumers whilst rewarding generators within the REZ for FCAS and increased energy output. Outside a REZ, where higher output is being supported, additional global contingency raise services would need to be procured to compensate for the loss of generation post contingency from the REZ. In this case, the additional cost above the general global requirement should be recovered solely from generators within the REZ who benefit from increased energy dispatch. A generator in southern Queensland would receive no physical or economic benefit from additional contingency raise FCAS to allow additional output from a generator connected in the NSW Central West Orana REZ, but global cost recovery would impose such an outcome.

Provision of state of charge or storage information

Shell Energy cautiously supports the AEMC's proposal to publish more data on state of charge or storage subject to the specific obligations and datasets published. Our preference is for aggregated data in MWh to be provided on a regional and technology basis. This should be provided at dispatch via SCADA data from individual dispatchable unit identifiers (DUIDs) and also for pre-dispatch where publishing of the information would not lead to the state of storage of an individual DUID. We understand this information is already routinely supplied to AEMO.

In our view, providing the aggregated data on a technology basis means that participants are able to distinguish between the available storage from battery energy storage systems, pumped hydro and any other energy-limited plant that may emerge over time. Were data on storage in MWh provided only by region, the large volumes of energy stored by pumped hydro (in some states) may dominate the aggregated dataset, reducing the utility for market participants.

Compliance requirements on participants regarding the future (forecast) state of charge of storage for the pre-dispatch period would need to be clearly defined in the Rules (clauses 3.7.2(d) and 3.7.3(e) as the "current intention and best estimate" which is on the same basis as the forecasts for availability and PASA availability are submitted to prevent onerous compliance requirements.

Shell Energy also recommends that the 5 minute actual state of charge or storage information in MWh for individual DUIDs be published the day after the Trading Day in the same way as individual DUID bids and availability information is published by AEMO. Similarly, AEMO should publish any advised trading day energy limits for thermal plant in the day after Trading Date reports.



Additional comments

The AEMC asks whether there are any incremental improvements that could be pursued in the absence of an operating reserve market being implemented. Shell Energy considers that an increased focus on forecasting accuracy in the operational timeframe would complement the two changes already discussed: regional FCAS limits and provision of state of charge or storage data.

As the Directions Paper notes, AEMO must publish the Forecast Accuracy Report annually, to outline the accuracy of both supply and demand forecasts. Shell Energy observes that this report focusses only on forecasts in planning timeframes and not on accuracy in operational timeframes (i.e. pre dispatch forecasts and STPASA). In our view, the changing dynamics of both supply and demand, with more supply from VRE and batteries coming online alongside the retirement of large thermal generation facilities, means that it is becoming more critical that forecasts in the operational timeframes are as accurate as possible. In the Directions Paper, the Commission raises incremental improvements to STPASA as a concept it investigated but is not considering further.⁴ We note that a greater focus on forecasting accuracy was not part of these potential improvements.

We consider that the Rules should require a forecasting accuracy report be published on a regular basis looking at the highest 46 half-hourly demand periods at various forecast time horizons. We specify this because these are the most critical timeframes. High accuracy at times of low demand is good, but less important for market participants than high accuracy at the most critical (highest demand) times. More accurate short-term forecasts will assist participants to manage their assets over a trading day to ensure they can deliver supply at critical times.

We recommend the AEMC investigate how such a report could be provided, how frequently, and what data should be included. Shell Energy considers that such a report should also look at Forecast and Actual LOR declarations to determine based on actual market real time 5 minute dispatch outcomes if a genuine reserve shortfall occurred and for what 5 minute dispatch periods. Our approach is predicated on the fact that although AEMO can declare an Actual LOR, the declaration remains based on AEMO current forecasts and not actual dispatch data. Any report should also consider what the drivers behind any false positive LOR declarations were (e.g. overestimates of demand or underestimates of availability). If LOR trends are to be used as a reference for current and future NEM reliability, then it is imperative that the data or information and processes used are accurate and transparent. We note that clause 4.8.4B of the National Electricity Rules requires quarterly reporting of LOR declarations. However, the information provided to date by AEMO does not include analysis of actual market data to determine if a genuine actual reserves shortfall occurred, merely that AEMO's forecasts suggested that would be the case.

Conclusion

Shell Energy supports the AEMC's proposal not to implement an operating reserve market at this time. We consider it would likely impose significant costs on consumers for little additional benefit to consumers beyond the mechanisms already in place.

Additionally, we consider the proposals to set a maximum limit on contingency FCAS reserves from a single region to be worth implementing, subject to the specific design choices. A geographic spread of supply would provide additional security and resilience to the market. While there would likely be some additional costs, the benefits to the market and power system resilience and security are likely to be sufficient to justify the change.

We also support the provision of state of charge or storage volumes in the dispatch and pre-dispatch timeframe on an aggregated MWh basis by region and by technology. We consider this would deliver added benefits to

⁴ AEMC, Operating reserve market – Directions Paper, 3 August 2023. p 52



market participants and, given that this data is already provided to AEMO through SCADA, is unlikely to impose significant costs.

Finally, Shell Energy argues that to support these changes, AEMO be required to report on forecast accuracy in operational timeframes (i.e. in the pre-dispatch and STPASA timeframes). Any report should focus on the highest demand 4-6 half-hourly periods as well as reviewing any actual LOR declarations based on actual dispatch outcomes. We consider that more accurate and transparent forecasts will assist market participants to deliver the required supply at critical periods.

For more detail on this submission, please contact Ben Pryor, Regulatory Affairs Policy Adviser (ben.pryor@shellenergy.com.au or 0437 305 547).

Yours sincerely

[signed]

Libby Hawker
GM Regulatory Affairs & Compliance