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Tuesday, 9 February 2021

Ben Hiron
Australian Energy Market Commission
GPO Box 2603
Sydney NSW 2000

Dear Mr Hiron

RE: Frequency Control rule changes

ERM Power Retail Pty Ltd (ERM Power) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) Frequency Control rule changes 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 load¹. 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

ERM Power has actively participated in recent consultations relating to frequency control and frequency response. We maintain a keen interest in developments relating to frequency control given its importance in maintaining system security. We have previously supported the concept of a fast frequency response (FFR) market through our submission to the System Services rule change package – a forerunner to this directions paper. This was part of a broader proposal to co-optimize the dispatch and pricing of a change of system services including existing frequency control ancillary services (FCAS), FFR, inertia and more. We still consider that our proposed Power System Services Ancillary Services (PSSAS) market could achieve the aims of these rule changes as well as managing operating reserves and ramping services which are part of a separate AEMC discussion paper. Nevertheless, we are pleased to have the opportunity to engage on the two rule changes that make up this discussion paper.

We also consider that change is warranted to the recently introduced primary frequency response (PFR) requirements to create a market-based solution. We strongly view a market-based solution as the best way to align incentives for the provision of PFR as part of the broader FCAS markets.

¹ Based on ERM Power analysis of latest published information.



Fast Frequency Response

ERM Power supports the introduction of a market for fast frequency response (very fast contingency FCAS) within the existing contingency FCAS markets framework. We consider that it is an opportune time to design and implement the market before the need for such a service becomes urgent. Making these decisions now will provide participants with time to adapt their own systems and adjust strategies to participate. Very fast contingency FCAS could become an extremely useful tool in the future to help manage frequency deviations as the quantum of synchronous generation decreases resulting in a decrease in synchronous (real) inertia and a continued increase in the volume of inverter-based generation and load in the power system.

For simplicity, we recommend that this should be achieved through relatively minor amendments to the existing Market Ancillary Services framework as set out in Clause 3.11.2 of the National Electricity Rules (NER) to include the very fast raise service and the very fast lower service and inclusion of defined terms for these services in Chapter 10 of the Rules. AEMO would consult on and amend the market ancillary services specification to specify service provision requirements for these new market ancillary services following amendments to the rules. Cost recovery and settlement, and provisions in the Rules associated with the cumulative price threshold, the market price cap, market suspension, etc. for these new ancillary services would mirror that applied in the Rules to the existing fast, slow and delayed market ancillary services.

ERM Power does not support modification of the existing fast contingency services markets (sub 6 second response) to a sub 2 second service. We do not believe this would result in the most efficient outcome for consumers and participants. The fast contingency markets benefit from a large number of suppliers able to meet this need on both a global and regional basis. The proposed very fast contingency services market is likely to be specific region-based and service type procurement initially (raise only, as opposed to raise and lower²), and due to its technical requirements likely to be limited in service provision to a limited number of suppliers. Procurement is also likely to be demand dependent, with lower procurement values at times of average or higher system demand. While able to supply a sub 2 second response, some service providers may be unable to sustain the response for the same time period (60 seconds) as that required by the fast contingency service. This would prevent them from supplying a modified fast contingency service. We also consider it would be inefficient to require the procurement of what would be in effect only very fast contingency services in regions where the service is not required and adequate services for power system needs could be more efficiently managed by the competitive existing fast contingency services markets. Allowing AEMO to separately procure both very fast and fast contingency services on an "as needed" basis would allow the procurement by AEMO of the efficient level of each of the services on a flexible basis to meet the technical requirements of the power system in real time on a least cost competitive basis.

We also do not believe that there is any reason to consider more complex very fast contingency services (FFR) arrangements that would operate separately to the existing contingency FCAS markets framework given their pricing, procurement and cost recovery arrangements are efficient and well understood. The services specification for very fast contingency services should be set by AEMO and procured on a least-cost optimised basis as opposed to a requirement for AEMO to implement a separate framework to determine differential pricing arrangements or facility performance factors from different service providers which could change over time or for different power system events. In addition, the framework already exists to co-optimize dispatch between the existing FCAS and with the energy markets. This should be seen as an advantage – two new very fast contingency services markets – raise and lower – can be designed and set to begin without the need for widescale reforms. While we understand there are interactions with related issues like inertial response and primary frequency response (PFR), we consider that adding very fast contingency services to the existing FCAS markets is a low risk and low regrets approach to take. Separate processes can then deal with PFR and inertial response.

² The Paper, section 4.5 indicates that AEMO has only identified fast raise contingency services as of concern in the NEM out to 2030



ERM Power also supports procurement via a real time market as opposed to procurement via tendering and contracts. The latter would require AEMO to estimate over time the forward requirements for FFR which will almost certainly result in over procurement of services at additional costs to consumers and participants. Real time markets allow for flexible procurement based on “as needed” power system requirements at least cost. Real time markets also facilitate procurement of replacement services when services are consumed or diverted to other FCAS or the energy markets. It would be a suboptimal outcome if provision of energy supply was withheld at times of high prices due to a contractual obligation when an alternative supplier could provide alternative FFR services at reasonable costs.³

We support the Commission’s proposal for cost recovery for the new very fast contingency FCAS markets to replicate that of the existing FCAS markets absent any compelling reason to depart from this. Where the Commission notes “*As outlined in section 4.5.2, the projected reduction in system inertia is expected to lead to an increased requirement for fast raise services and an expected increase in costs for procurement of fast contingency services. This impact can be mitigated by the provision of FFR.*”⁴, the fast contingency raise services are paid for by generators, so it is reasonable that a supplementary service that cost effectively reduces the need for or can be co-optimised with the fast contingency raise service is paid for by generators. Similarly, where the Commission notes “*This rationale could lead to the allocation of FFR costs being weighted based on the degree to which a participant causes the need for FFR. In theory, a market participant that provides physical or synthetic inertia may be assessed as not causing the need for FFR and therefor allocated less of a share of costs for FFR.*”⁵, in this case the participant can register for the provision of the service and offset any cost by providing the service themselves where it is efficient for them to do so. This is currently the case for any of the FCAS markets. Where a participant determines it is more efficient to supply available reserves to alternative markets they should be permitted to do so, this however results in a cost being incurred for the provision of services by others in the market(s) where they chose not to supply.

The Commission has also requested feedback regarding the potential to implement a demand curve framework for the provision of increased procurement of contingency FCAS markets reserves based on pricing outcomes. We believe any such outcome must be co-optimised with energy market outcomes as well, as procuring additional contingency FCAS market reserves may result in increased price outcomes in the energy market. It is also worth considering that any individual participant frequency response, post contingency event, will still be limited by the size of the event leading to the frequency deviation and the response of other suppliers. Additional procurement of FCAS markets reserves may not result in a collective additional service provision, it may just change the quantity of service provision between service providers. As already noted by the Commission,⁶ AEMO already has the ability to adjust the procured quantity of FCAS reserves in real time based on prevailing power system conditions for the purpose of maintaining power system security. It is unclear to ERM Power that a demand curve framework would provide additional benefits above that already available.

The Commission has also requested that stakeholders consider the interaction of very fast contingency services and mandatory primary frequency response (PFR).⁷ Mandatory narrow band PFR is activated by a frequency deviation very close to 50.0 Hz, whereas contingency services are currently required to activate at a frequency deviation towards the edge of the normal operating band +/- 0.15 Hz. The Commission raises concerns that reserves enabled for very fast contingency services, and in our view any of the contingency FCAS markets, could be utilised by mandatory PFR to respond to small frequency variations during normal operation.

³ For example, a battery energy storage system with a contract to provide FFR could be held out of the energy market in order to deliver against its contract, whereas in a real-time market, the battery system would supply energy and a wind farm could provide FFR.

⁴ The Paper pp 45

⁵ The Paper pp 45

⁶ The Paper pp 49

⁷ The Paper pp 50



We agree with the Commission's concerns that frequent use of contingency FCAS reserves by mandatory narrow band PFR may undermine their effectiveness at responding to larger frequency deviations caused by contingency events. ERM Power noted this in our submissions to the mandatory PFR rule change request processes and continues to support the establishment of alternatives FCAS reserves for the procurement of market based narrow band PFR, in particular the ability for regulation FCAS to be provided by PFR and/or AGC control which was the historical method for effective and efficient small deviation frequency control in the NEM. Currently, AEMO procures and enables regulation and contingency FCAS on individual generating units or scheduled loads on the basis of the sum of these services plus any required output change in the energy market, in that way AEMO ensures the provision of reserves for the provision of both regulation and contingency FCAS. The implementation of mandatory narrow band PFR has unfortunately undermined the maintenance of reserves for responding to contingency events.

ERM Power notes that AEMO has committed to providing technical advice to the AEMC to inform the consideration and development of FFR arrangements for the NEM and that this advice will be provided to the Commission in February 2021 and will provide an important input into the Commission's draft determination. It is unfortunate that this advice was not available for release with the paper. We recommend the advice be made available on the Commission's website for review and comment as soon as it is available, as opposed to only releasing it with the draft determination.

ERM Power broadly supports the concept of valuing inertial response through a market-based system, though this may be challenging to do as part of a fast frequency response framework. We agree with the AEMC's assessment that the provision of synchronous (real) inertia will reduce the need for FFR to manage the rate of change of system frequency following a contingency event. However, due to its technical differences, it is not clear that FFR can reduce the need for synchronous inertia on the same basis. Given this, it is unclear that the valuation of FFR has any direct relationship to the valuation of synchronous inertia and both should have their own valuation and market procurement methods.

We firmly believe that the procurement of real inertia should be market based and to the extent possible should be co-optimised with the Energy market and FCAS markets (alongside FFR). For this reason, we proposed a comprehensive Power System Services Ancillary Services (PSSAS) market to the AEMC as part of its System Service rule change process. We still consider that a separate inertia 'market' could be introduced into the NEM, co-optimised with FCAS and Energy markets. An inertia market could form part of the broader Unit Commitment for Security (UCS) concept that is being investigated through the ESB's post-2025 NEM design work program.

Primary Frequency Response

ERM Power considers that there are two key issues to discuss as part of AEMO's rule change on PFR incentive arrangements.

Firstly, the costs to a generator, or other supplier, of providing either FCAS or PFR can at times be significant, depending on prevailing energy and FCAS price outcomes. A generator maintaining headroom for the provision of contingency raise FCAS or generating at lower output levels when providing mandatory PFR or lower regulation FCAS response at times when the energy market price is above the providers marginal cost, forgoes margin that would otherwise be accrued. Similarly, a supplier that maintains capability above minimum load to provide lower contingency or regulation FCAS foot room or generates at higher output when providing mandatory PFR or raise regulation FCAS response at prices below marginal costs incurs a direct loss. This represents the true cost of providing frequency control services. The revenue derived in the FCAS markets is provided to compensate the provider for the provision of these necessary services. As this holds true for PFR as for other ancillary services, it is reasonable to expect that the provision of PFR should allow generators to recover the costs incurred in providing the service (notwithstanding the risks involved in any market).



The current requirement for generators to provide mandatory narrow band primary frequency response without compensation removes both the short- and long-term economic signals for providers to provide this capability and instead maximise output in the energy market when positive margin accrues, and minimise to the lowest output possible, or de-commit the generating unit when a direct loss is incurred. We consider the loss of the long-term signal for the provision on necessary power system services of particular concern for the NEM which is undergoing significant and rapid structural changes. While we understand that this is only a temporary requirement, with the rule due to sunset in 2023, ERM Power wishes to see this change to a market-based narrow band PFR response as soon as practicable.

In general, ERM Power supports the Commission's views with regards to the problem definition and reform object as set out in the Paper.⁸ A market-based approach with compensation for the provision of narrow band primary frequency response including the maintenance of reserves to allow provision of the service will bring the necessary economic signals for the provision of these services, compared to current arrangements. It would better support frequency control and secure operation of the power system within the NEM by establishing a separate reserve for its provision and as noted above, prevent the degradation of contingency reserves required to respond to a contingency event which are currently being used to provide mandatory narrow band PFR reducing the power system's ability to effectively respond to contingency events. A market-based approach would also provide improved incentives for unit commitment and de-commitment decisions, as a generator with a portfolio of units would be incentivised to operate an additional unit to provide frequency control reserves and capability to respond across its generation fleet in return for being adequately compensated for providing these services.

Secondly, we also acknowledge the recent work undertaken by AEMO (12 September 2019 to 16 January 2020) to correct the under-procurement of contingency FCAS services and that increased procurement of regulation FCAS (March to May 2019) which actually improved the distribution of frequency outcomes under system normal conditions, despite reservations from AEMO that this outcome would be achieved.

Additionally, the capability for the existing regulation FCAS to be provided by PFR in combination with the centralised automatic generator control (AGC) continues to remain an outstanding issue to be addressed by AEMO via a review of the Market Ancillary Services Specification (MASS), and the ongoing review and adjustment of regulation FCAS procurement seems to have stopped post May 2019. We note that AEMO has again chosen not to review this as part of the current MASS consultation, we can only assume that AEMO is unwilling have its effectiveness demonstrated at a time when AEMO continues to focus on maintaining free mandatory provision of narrow band PFR as opposed to market based services. While the Commission suggests in the Paper that the provision of combined narrow band PFR and secondary regulating services may not be technically achievable,⁹ it should be noted that the NEM power system operated with combined PFR/AGC at NEM commencement and for many years after the implementation of the eight FCAS markets, it was only the Commission's decision¹⁰ to reinforce strict compliance with dispatch instructions that led generators to withdraw co-supplied PFR services. It is concerning that this option is quickly discarded in the Paper without the benefit of a physical trial.

The current effective delivery of raise and lower regulation services is restricted only by AEMO's currently imposed condition that the service must be physically delivered by AEMO's AGC system. As set out above, the physical delivery of all contingency FCAS is supplied by primary frequency response at a set PFR local frequency point and we see no impediment to regulation FCAS being also supplied by primary frequency response specified within a tighter control dead band than the contingency FCAS response, with the provision of supplementary response via AEMO's AGC system as and when required. It should also be noted that the New South Wales power system, and potentially other state power systems, were operated successfully on a combined primary frequency response and AGC system for dispatch and frequency control prior to the commencement of the NEM.

⁸ Section 5.4 pp 72 The Paper

⁹ Option A page 80 The paper

¹⁰ AEMC May 2016 - National Electricity Amendment (Compliance with dispatch instructions) Rule 2016



ERM Power considers that as part of this reform, the narrow band primary frequency control band be widened to +/- 0.05Hz. This is based on the deadband imposed on generating units in the NEM at commencement of the NEM where, as noted by both AEMO and the Commission, good frequency outcomes were routinely observed. We believe this level would provide a sustained and reasonable level of power system frequency outcomes which is technically proven in the NEM. This will reduce costs for the provision of the service which will flow through as reduced costs to consumers.

Should the Commission consider that an alternative framework is required for the provision of narrow band PFR, ERM Powers supports the development of a separate ancillary services market for enablement of primary regulation services as detailed in Option E (redesignated as Option 2¹¹) in the Paper. We agree with the Commission's views on the significant benefits to both operation of the NEM and the maintenance of power system security provided by the introduction of a new ancillary services market for the provision of primary regulation services as set out in the paper.¹² We also consider that procurement and pricing of these new ancillary services markets should be consistent with the procurement and pricing framework for the eight existing FCAS markets. Based on this, we also consider that procurement via a new ancillary services market would allow co-optimised procurement with the energy market, the eight existing FCAS market and the potential new markets for the provision of very fast (FFR) contingency FCAS. This would allow for least-cost procurement across all market requirements. We support cost recovery for these new regulating PFR markets on the same basis as the existing regulation FCAS markets.

We do not support Option 1, which as proposed would use reserves procured for contingency response for the provision of narrow band PFR as under some power system outcomes this could result in a lack of reserves to respond to a contingency event. We also consider that pricing offered for contingency reserves, which would only be dispatched infrequently following a contingency event, would be different to pricing offered for continuous narrow band PFR and would therefore lead to inefficient pricing in the contingency FCAS markets as service providers sought to recover the costs of full-time service provision in the contingency markets.

We also do not support Option 3, which would rely on voluntary provision via some form of incentive-based framework which could be based on either double-sided causer pays or frequency response deviation pricing. Pricing outcomes associated with either pricing framework are yet to be developed and it is unclear to us that either framework would result in sufficient price certainty to maintain adequate regulation PFR reserves both in the short- and long-term to provide confidence to AEMO that a satisfactory level of regulation PFR response will be maintained at all times. In addition, it is unclear to ERM Power that the development of a methodology to provide a consistent frequency response deviation price to facilitate long-term provision of regulation PFR is possible. Similar lack of supply outcomes could also result if AEMO were provided with control over pricing outcomes as proposed, potentially through some form of regulated price controls.

We note the Commission's view that the current causer pays framework for cost recovery of regulation FCAS does not reward participants that help to minimise frequency deviations.¹³ In considering this we note participants are able to offset negative performance in one 4-second assessment period with positive performance in another 4-second assessment period, while scheduled or semi-scheduled generating units or loads with the same registered participant are able to offset negative performance on one asset with positive performance on another asset. In this way, participants are able to avoid any cost recovery, although in some 4-second assessment periods, negative contributions are contributing to the ongoing need for the frequency regulation services. In addition, participants who are able to supply positive performance are also able to register for provision of any of the FCAS and therefore earn revenue to offset any costs incurred. It is unclear to us that additional incentives are required.

¹¹ Pp 82 The Paper

¹² Pp 82 The Paper

¹³ Pp 85 The paper



We also note the Commission's observation regarding the Norwegian electricity market.¹⁴ The Commission indicated that in the combined Nordic market, plant that is not enabled and paid for frequency containment reserves (FCR), may still be paid for the provision of adjustment of active energy output to help control system frequency, referred to as residual supply based on a regulated price determined by the market operator.

We understand the FCR-N (Normal) is designed to ensure the frequency normal operating band 49.90 to 50.10 Hz is not exceeded for more than 15,000 minutes in any 12-month period, or approximately 2.9% of the time. The FCR-D (Disturbance) is designed to maintain power system frequency in the combined Nordic power system above 49.0 Hz following a defined credible contingency event of loss of 1,450 MW of capacity for a defined system demand of 24,600 MW. Further, the Nordic market maintains 600 MW of FCR-N and 1,450 MW of FCR-D at all times. In addition to FCR-D, which is only required to prevent frequency falling below 49.0 Hz, the market recruits up to 600 MW of Frequency Restoration Reserves (FRR) to assist the restoration of power system frequency to within the frequency normal operating band within a 2-minute period following a credible contingency event.¹⁵

By comparison, in the NEM, contingency raise FCAS is required to both stabilise the frequency deviation to above 49.5 Hz and restore power system frequency to within the frequency normal operating band within 5-minutes following the largest declared credible contingency event. While the combined FCR and FRR in the Nordic markets have some similarity to the NEM's FCAS markets, there are a number of significant differences, most notably in the areas of required service delivery and the level of services procured. In considering the question raised by the Commission, it is unclear if the residual supply payment only applies to the provision of FCR-D or both FCR-D and FCR-N. If only FCR-D, this raises the question of a non-enabled participant being paid for a service where it has displaced service provision by an enabled unit. While ERM Power would not object to a non-enabled participant being paid for delivery of additional services, based on FCAS market prices at the time-of-service delivery, in our view any payment framework should only pay a non-enabled participant where supply of additional services is clearly demonstrated.

While supporting a market-based framework based on the current FCAS markets for the provision of narrow band regulation PFR, ERM Power also supports retention of a safety net wider band (in the range, +/- 0.50 to 0.40Hz) mandatory PFR where all generators would be required to respond, where capable of doing so, to a large non-credible contingency event. We do not support the setting of a safety net wide band mandatory PFR close to or at the boundary where contingency FCAS is expected to activate, as such an outcome could displace the provision of contingency FCAS (PFR) by enabled service providers. In our view, mandatory safety net response should only be expected to be required on an infrequent basis and for a limited time period (less than 5 minutes) where procured FCAS enablement has already responded to control frequency following a significant non-credible contingency event. As the provision of this mandatory wide-band safety net PFR would be on an as capable basis, we are largely content with the exemptions arrangements as set out in the mandatory PFR final determination. As long as mandatory PFR continues, then we consider that the exemptions regime should remain in place.

As discussed previously as part of the FFR rule change, ERM Power considers that where possible, the existing market ancillary services structure for procurement, pricing and cost recovery allocation should be used. Using existing structures which are well-understood and in place should help to reduce any transition time and complexity compared to using different methods for different elements of the FCAS markets.

ERM Power supports review of the NEM's Frequency Operating Standard by the Reliability Panel to confirm the required frequency performance during normal operation and the PFCB, which forms part of the mandatory wide band safety net PFR arrangement. We believe this review should commence as soon as possible as outcomes from this review will have a direct bearing on procurement of regulation PFR services.

¹⁴ Pp 87 The Paper

¹⁵ Nordic Balancing Markets: Overview of Market Rules, Division of Electric Power & Energy Systems, KTH Royal Institute of Technology, Stockholm, Sweden, Abolfazl Khodadadi, Lars Herre, Priyanka Shinde, Robert Eriksson, Lennart Söder and Mikael Amelin



AEMO has argued that the broader frequency distribution outcomes are no longer suitable and pose risks to system security, but has provided little quantitative evidence as to what distribution is necessary. In our view, the Frequency Operating Standard should be set to achieve a required engineering standard for frequency control to maintain satisfactory secure operation of the power system whilst considering the economic trade-off for achieving this outcome. AEMO would then procure services to meet this standard. We consider as part of this Frequency Operating Standard review, the Reliability Panel must set upper and lower performance bands which would require AEMO to formally assess procurement volumes—either additional or fewer resources. Clarifying AEMO's responsibilities would reduce the risk of under or excessive procurement, would minimise system costs (while still maintaining system security and reliability), and be consistent with the NEO. The continuing under procurement of services whilst power system frequency outcomes were observed to deteriorate must not be allowed to happen again.

ERM Power notes that AEMO will be providing technical and economic advice to the AEMC to inform the consideration and development of enduring PFR arrangements for the NEM and this advice will provide an important input into the Commission's draft determination. In addition, the Commission indicates it will seek other independent advice, but this advice will be facilitated by AEMO. It is unfortunate that this advice was not available for release with the Paper. We recommend both the AEMO and independent advice be made available on the Commission's website as soon as they are available for review and comment as opposed to only releasing it with the draft determination.

In general, ERM Power supports the proposals to revise the National Electricity Rules (NER) as set out in Section 5.9 of the Paper to improve the cost allocation of regulation FCAS causer pays. We are supportive of the proposal to align and shorten the sample and application period to more closely align with a calculated party's (scheduled or semi-scheduled generating units or scheduled loads, etc.) more recent deviations in output or consumption that caused the need for regulation FCAS procurement. Yet, it is unclear to us that close to real time calculation and allocation of causer pays factors would result in the most efficient and equitable recovery of regulation FCAS costs. The calculation of the need for regulation FCAS as determined by AEMO is based on a generalised need of the power system assessed by AEMO over longer time periods such as days, weeks or even months as opposed to a single 5-minute dispatch or 30-minute trading interval. A participant's behaviour in one dispatch interval may not be reflective of a participant's behaviour over time that contributed to the need for AEMO to procure regulation FCAS. Nonetheless, we agree the current temporal lengthy disconnect in calculation of causer pays factors and pricing of regulation FCAS needs to be reduced.

In considering this issue, we believe that:

- 1) participants should know the causer pays factor that will apply in real time in advance;
- 2) that recovery of regulation FCAS costs should be as reflective as possible of participant behaviour than led to the need for regulation FCAS procurement by AEMO; and
- 3) cross subsidy of regulation FCAS costs from other participants or consumers should be as minimal as possible, if at all.

We are concerned that the use of real-time single dispatch or trading interval causer pays factors may fail to meet principles 2 and 3 and potentially principle 1 outlined above.

By way of example, under the proposed framework of a single interval calculation period, a participant with what would be a non-zero calculated causer pays factor, based on historical dispatch outcomes which contributed to the need for regulation FCAS procurement, could either temporarily withdraw from the energy market or amend output via their offers to achieve a stable non-varying dispatch outcome resulting in the participant's regulation FCAS recovery costs reducing to zero during any very high priced regulation dispatch intervals. In doing so, this would increase the allocation of regulation FCAS costs to the residual component, which is fully allocated to market customers (consumers).



Such an outcome would not be reflective of the costs imposed on the market by that participant and would lead to a cross subsidy from market customers. Therefore, we believe there must be a balance achieved between the duration of the calculation period for the allocation of causer pays factor and the methodology used by AEMO to calculate the generalised need for regulation FCAS services. This may also require that AEMO consider a more dynamic assessment methodology for determining the procurement quantity of regulation FCAS based on forecasts of grid demand volatility and volatility in output from semi-scheduled generators due to expected weather conditions as opposed to the current reasonably static procurement volumes.

Taking all these factors into account and the also the improvements in data processing capability from when the causer pays framework was first initiated in the NEM, we recommend the Commission consider the implementation of a causer pays sample and application period of one trading day. The current trading day's causer pays factor would be based on a sample period from the trading day two days prior to the current trading day. AEMO would be required to calculate and publish the causer pays factors for the current trading day by 20:00 Eastern Standard Time on the immediately preceding trading day. Where greater than 25 per cent of dispatch interval data is discarded, the most recent accurately calculated causer pays factor will prevail. This change would:

- reduce the current lengthy temporal disconnect in the calculation and allocation of causer pays factors to more reasonably reflect current dispatch performance;
- should capture sufficient dispatch interval data to allocate causer pays factors based on AEMO's assessment of the generalised need as the data would be based on a daily cycle; and
- ensure that cross subsidy between participants and market customers is minimised.

We also note the AEMC is also raising questions on potential changes to ancillary services markets in the Integrating Energy Storage Systems into the NEM rule change options paper. It would be beneficial for the AEMC to provide some visibility to market participants around how it intends to address any overlap between these two rule changes. Given the volume of regulatory change ongoing in the market – an issue of which AEMC is surely aware given it has carriage of so much work – it can be challenging to fully understand whether separate rule changes which may be interconnected are being considered as a whole.

Conclusion

ERM Power supports the development of new very fast (FFR) contingency FCAS markets incorporated within the existing market ancillary services structure of the NEM. The design, procurement and cost recovery of the two new markets would align with the existing contingency FCAS markets. We believe that this will be the simplest, transparent and most effective way of bringing fast frequency response into the NEM.

Additionally, we see that primary frequency response should move from a mandated narrow band requirement to a market-based provision at the earliest possible opportunity. We support the development of two new ancillary services markets for the provision of primary regulation FCAS based on the design, procurement and cost recovery of the existing regulation FCAS markets. This aligns with the Option 2 framework as set out in the Paper. For avoidance of doubt, the existing regulation FCAS markets should be retained and renamed the raise secondary regulation FCAS market and the lower secondary regulation FCAS market. These new markets should be implemented as soon as technically achievable and in advance of the existing sunset date for the mandatory PFR requirement.

ERM Power supports the retention of the mandatory provision of a safety net wide band primary frequency response by all generating units capable of providing the service at a dead band setting outside the setting used for contingency FCAS primary frequency response. This wide band safety net setting would be set to ensure that provision of safety net wide band response does not interfere with of displace provision of contingency FCAS primary frequency response.



We also support the review of the NEM's Frequency Operating Standard by the Reliability Panel as soon as possible to determine the Standard to which AEMO are to procure market ancillary services and maintain frequency outcomes for the NEM. The Frequency Operating Standard should be set to achieve a required engineering standard for frequency control to maintain satisfactory secure operation of the power system whilst considering the economic tradeoff for achieving this outcome. We consider as part of this Frequency Operating Standard review, the Reliability Panel must set upper and lower performance bands which would require AEMO to formally assess procurement volumes.

We contend that the design of the existing FCAS markets is adequate and remains capable of managing power system frequency under both normal operating and contingency conditions. The only impediments to the FCAS markets managing power system frequency as originally intended is a result of the ongoing under procurement of FCAS, and the requirement that regulation FCAS be physically delivered solely by AEMO's AGC system.

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

Yours sincerely,

[signed]

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