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Victor Stollmann
Australian Energy Market Commission
60 Castlereagh St
Sydney, NSW, 2000

RE: ERC0364 - Draft Determination: Clarifying mandatory primary frequency response obligations for bidirectional plant

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 Australia[1], Shell Energy offers integrated solutions and market-leading[2] 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 also operates the 60MW Riverina Storage System 1 in NSW.

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 welcomes the draft decision by the Commission not to require bidirectional units to provide mandatory narrow band primary frequency response (MNBPFR) when it has a zero energy target or is enabled only for contingency frequency control ancillary services (FCAS). We believe this will avoid significant unwarranted cycling of battery installations in particular and will help preserve the longevity of the plant. We consider that the voluntary provision of NBPFR when enabled for contingency FCAS in response to the forthcoming price-based incentives creates the right level of risk allocation between asset owners and consumers.

One issue we consider needs further clarification prior to implementation regards the calculation of contingency FCAS provision. This will require the inclusion of MNBPFR, or voluntary NBPFR, in the market ancillary services

[1] By 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.

specification (MASS) when calculating the provision of contingency FCAS.[3] The provision of NBPFR can result in deviations away from a generating unit's or bi-directional unit's (BDU) dispatch target by a significant value even though power system frequency remains close to 50 hertz. It is unclear to Shell Energy that the current MASS calculation fully captures such an outcome for BDU.

Shell Energy considers it necessary that to fully implement the proposed approach, the Rules must clearly specify that project proponents and asset owners have discretion to set up and to modify their control systems to align with the new rules. The proposed rule may require some retrospective changes to control systems and registration details for some battery projects and the rule should be clear that asset owners may do so. Conditions imposed by AEMO during the registration and connection process have seen some control systems adopt settings that would not allow NBPFR setting to be based on operational status or disabled when the plant has no energy target or is providing only contingency FCAS. The Rules currently require approval from AEMO to change control settings in operational timeframes and we believe this is unnecessary and inefficient given the minor changes required to enable operation in compliance with the proposed rules. Further, the Rules should clarify that project proponents have discretion to set up their control systems to enable both the voluntary or non-provision of NBPFR when allowed to do so and are not required to do otherwise as a condition of market registration or connection to the grid.

Shell Energy is comfortable with the Draft Determination regarding the provision of MNBPFR when enabled for provision of regulation FCAS. In our view there is a natural affinity with the provision of regulation FCAS and MNBPFR. However, we believe this requires additional clarification in the Rules regarding the quantity of MNBPFR to be provided when a battery is enabled for Regulation FCAS. Shell Energy's view is that the amount of MNBPFR provided in this circumstance should be limited to the Regulation FCAS enablement level. The provision of MNBPFR by a BESS requires not only allocation of capacity (headroom and foot room), but also allocation of the available storage resource or storage headroom. To require more than the Regulation FCAS enablement level would introduce the risk that the BESS storage levels are compromised by the provision of MNBPFR resulting in battery operators withdrawing their plant from providing Regulation and potentially contingency FCAS due to the risk that additional energy will be consumed or stored in the provision of MNBPFR. This additional energy could be substantial, and circumstances are likely to arise when, despite Regulation FCAS provision on its own being economic for the plant owner, the additional cost imposed by MNBPFR responding beyond the Regulation FCAS enablement level is economically irrational or imposes operational inflexibility in the form of storage level fluctuations. This result could drive up the price of Regulation FCAS unnecessarily and lead to inefficient market outcomes. Placing a limit on the amount of MNBPFR to be provided that aligns with the Regulation FCAS enablement level would allow battery operators to efficiently allocate storage resources and headroom and readily avoid this outcome.

As discussed above, Shell Energy also notes that, due to the requirement to allocate storage as well as capacity resources, limits on the provision of MNBPFR may be required when plant is operating in a range towards fully charged or fully discharged. The risk of plant damage and non-compliance with the Rules are higher when plant nears these limits of physical storage capacity. We recommend the Commission consider a provision in the Rules that excludes MNBPFR provision by BDU's beyond certain states of charge. These limits on PFR would need to apply when generating active energy or charging towards the boundaries of continuing to be able to provide regulation or contingency FCAS. We recommend that the provision of MNBPFR by a BDU when generating active energy output or charging should only be required when a battery's state of charge is within the range of 25 to 75 percent. Outside the range provision of NBPFR would be on a voluntary basis.

[3] Page 31 Draft Determination

Charging

Shell Energy does not support the requirement in the Draft Determination for BDU's to provide MNBPFR when charging. An unintended consequence of the mandatory provision of NBPFR when charging is that BESS could be incentivised to charge as quickly as possible in some circumstances. This is because the plant will be exposed to MNBPFR costs during charging. This could lead to less efficient market dispatch outcomes, the costs of which have not been considered or quantified and may also lead to a reduction in the proposed system security benefit, particularly at times of high distributed energy resources output, as determined by the Commission[4].

We remained concerned that this decision is not a technology neutral approach as other scheduled loads are not required to provide MNBPFR when consuming. Whilst the Commission has chosen to apply the designation of BDU to BESS alone, from a technology perspective a BESS is still comprised of a schedule load and generation component. We note that the Commission has consulted BESS suppliers who have indicated that provision of MNBPFR when charging carries a low incremental cost. However, participants dealing with BESS suppliers regarding warranty provision have seen no consideration associated with provision of MNBPFR. This indicates a degree of misalignment between commercial practices and policy principles within these entities.

We are also concerned that all costs associated with the provision of MNBPFR when charging may not be recovered by the yet to be implemented frequency performance payments (FPP) rule change. These FPP's will be based on the costs of provision of regulation FCAS and not what are arguably the higher costs of providing NBPFR. There are also concerns that increasing the provision in this rule change of MNBPFR could result in AEMO reducing the procurement of regulation FCAS with a resultant decrease in the regulation FCAS prices. We note that dispatch of many multiples of regulation FCAS procurement via the provision of MNBPFR is already occurring and the FPP rules require no scaling of regulation FCAS prices in determining the FPP. We also consider that the provision of MNBPFR when charging will result in a reduction in the round trip efficiency of BESS by one to two percent based on test data previously provided to the Commission.

From a power system security viewpoint, whilst we agree that the provision of MNBPFR using a very tight deadband setting has narrowed the overall frequency distribution, we remain concerned that the tight deadband setting has resulted in an uncontrolled oscillation in power system frequency around 50 hertz. This oscillation continues to increase in amplitude and the provision of additional MNBPFR by BESS when charging may exacerbate this growing issue. This rule change must more fully consider the question of this growing uncontrolled oscillation.

Shell Energy disagrees with the statement made in the draft determination regarding provision of MNBPFR when charging;

> *it would promote good regulatory practice and system security by continuing the existing obligations that batteries face under the IESS and PFR frameworks*[5]

Batteries currently have no obligation to provide MNBPFR when charging in the rules so this cannot be viewed as a continuation of the existing obligations.

Alternatives

Shell Energy continues to consider that alternative options exist to enhance the provision of NBPFR and Regulation FCAS at low cost. We refer to our proposal in our previous submission to the initiation stage of this rule change. In that submission we detailed an approach which would enable plant receiving a clause 3.9.3A

[4] Page 19 Darft Determination

[5] Page 13 Draft determination

market ancillary services dispatch instruction (for regulating raise and lower services) to comply with the dispatch instruction using local frequency measurement and control. This would be in addition to the current methodology which limits service provision to AEMO centralised remote control dispatch.

The benefit of this approach is that it would enable, and provide incentives for, non-scheduled frequency responsive generating units and load to provide regulating raise and lower services. They would do this using local frequency measurement and control which would remove the additional costs of installing remote control and telemetered SCADA data services. Participants would register to do so in accordance with the primary frequency response requirements framework which would result in NBPFR provision when the units become enabled for regulation FCAS services. This proposed change is consistent with the current provision of contingency FCAS by non-scheduled resources using local frequency measurement and control systems.

As discussed in our previous submission, we believe that this approach would enhance certainty and control of service provision while also allowing service providers to control the level of NBPFR they provide to the market. Another benefit would be the additional number of potential service providers which would lower cost and enhance competition in the market.

Please contact Peter Wormald (peter.wormald@shellenergy.com.au) for any questions or further information in relation to this submission.

Yours sincerely

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