



31 August 2023

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

RE: ERC0364 - Clarify Mandatory Narrow Band Primary Frequency Response for Bi-Directional Units

Shell Energy Australia Pty Ltd (Shell Energy) welcomes the opportunity to respond to the Australian Energy Market Commission's (AEMC) rule change Consultation Paper (the Paper) to clarify the provision of mandatory narrow band primary frequency response (MNBPF) requirements for Bi-Directional units (BDU).

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](#).

Key Messages

There are several issues examined in this rule change request, which will have varying potential impacts. In the first instance, Shell Energy supports the minor changes to the Rules to add BDUs to clauses 4.4.2, 4.4.2A, 4.4.2B and if required 4.9.4. The inclusion of BDUs in these clauses resolves an oversight in the drafting of the revised rules for ERC0280 and ERC0351 on Integrated Energy Storage Systems.

A more material issue is the proposal to require BDUs, primarily battery energy storage systems (BESS), to provide MNBPF during storage charging and when dispatched for frequency control ancillary services (FCAS) in addition to when dispatched for energy. The proposed rule change would impose significant and uncontrollable costs on BESS, reducing the life of the storage cell component of a BESS as well as the cells storage capability and limiting their ability and willingness to provide both energy and FCAS to the market. The rule change proposal contains no additional evidence than that previously considered by the AEMC, we

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.



consider that the AEMC has extensively analysed the issue previously and agree with its previous conclusion that:

“the application of the mandatory PFR requirement to battery energy storage systems that are not dispatched to generate electricity would be discriminatory, as other generation technologies cannot provide PFR unless they are online and generating.”³

There is a significant consumption of battery storage cell life and the cell’s ability to store energy whenever energy is drawn from or added to the cells, particularly when storage cells are asked to cycle between charging and discharging on a frequent basis. Further, imposing a requirement to provide MNBPFR when charging or enabled for provision of FCAS will result in deviation from optimum recharging profiles both increasing costs for recharging and reductions in stored energy available for dispatch in the energy market or for the provision of FCAS. If the MNBPFR provisions of this rule change are made, it will expose battery systems to these risks frequently adding costs, reducing battery life and energy available to the market.

Shell Energy is in the process of working through the commissioning of the Riverina BESS. We intend to undertake testing to quantify the additional “work” on a BESS which would be imposed by the proposed rule change. We intend to make the data available on a confidential basis to the AEMC to inform them on the potential costs to a BESS operator as well as to the market of implementing what we consider to be an unnecessary rule change.

Shell Energy acknowledges the work undertaken by the AEMC in proposing alternatives to the proposed rule change. We have taken this work and suggested improvements to remove what we perceive as negative aspects that would hinder practical implementation. Our proposed alternative approach is to expand the pool of NBPFPR providers using a market-based, local measurement and control approach which has the potential to incentivise participation by incorporating non-scheduled resources. Our model, set out in detail later in this submission, would result in NBPFPR provision when units were enabled for regulation FCAS services and is consistent with the current provision of contingency FCAS by non-scheduled resources using local frequency measurement and control systems.

In summary:

- Shell Energy supports the minor change to the Rules to add BDUs to clauses 4.4.2, 4.4.2A, 4.4.2B and if required 4.9.4. (Issue 1)
- Shell Energy supports previous AEMC determinations that excluded mandatory provision of Narrow Band Primary Frequency Response by Battery Energy Storage System (BESS) during charging and when dispatched for FCAS. We do not consider that the simple change to include BESS in the new BDU registration category provides sufficient justification to reopen or cast aside two previous rule change determinations.
- Provision of NBPFPR by BDUs (BESS) when charging or providing FCAS carries a material cost which will have a significant impact on the ability of BESS to bid into the energy and FCAS markets. A decision to provide a bid that requires provision of MNBPFR should remain controllable by the project owner.
- Shell Energy intends to provide an impact assessment of the proposed changes following the completion of real-world testing.

³ AEMC, Final determination ERC 0263, p 29.



- Shell Energy proposes its own alternative approach which builds on the AEMC proposed alternative which we consider will expand the pool of PFR providers using a market-based, local measurement and control approach and which will incentivise participation in providing MNBPFPR by non-scheduled resource.

For more detail on this submission please contact Peter Wormald, Policy Adviser (peter.wormald@shellenergy.com.au).

Yours sincerely,

[signed]

Libby Hawker
GM Regulatory Affairs and Compliance

**Issue 1**

Shell Energy supports the proposed changes to clauses 4.4.2, 4.4.2A, 4.4.2B and if required 4.9.4 of the National Electricity Rules (the Rules) to clarify that BDUs are required to provide MNBPF when issued a clause 4.9.2 dispatch instruction to generate active energy output greater than zero megawatts via the addition of the defined term *scheduled bi-directional unit* where appropriate in these clauses. We consider this to have been a simple oversight in the drafting of the revised rules for ERC0280 – Integrating Energy Storage Systems into the NEM and ERC0351 – Implementing Integrated Energy Storage Systems. It is unclear to Shell Energy why this relatively minor change was not submitted as part of ERC0353 by the current rule change proponent at that time and recommend that the AEMC seek an explanation regarding this.

Issue 2

Shell Energy does not support any of the rule changes as proposed to require a BDU (BESS) to provide MNBPF when consuming energy for storage purposes, or when issued a clause 4.9.3A market ancillary services dispatch instruction (more commonly referred to as frequency control ancillary services or FCAS). This issue was discussed and considered at length during the consultation processes for both ERC0274 – *Mandatory Primary Frequency Response* and ERC0263 – *Primary Frequency Response Incentive Arrangements*.

unlike other generation technologies, battery energy storage systems are capable of providing a frequency response when they are neither charging nor discharging, ie neither supplying nor consuming energy from the grid. Under the final rule, generators that are not dispatched in the energy market to generate electricity are not required to operate in a frequency response mode in accordance with the PFRR. As such, the final rule includes a provision that generators are only required to provide PFR when they have received a dispatch instruction to generate at a volume greater than 0 MW. The Commission considers that the application of the mandatory PFR requirement to battery energy storage systems that are not dispatched to generate electricity would be discriminatory, as other generation technologies cannot provide PFR unless they are online and generating.⁴

The ERC0263 final determination commentary runs counter to the proponent's claim that the process for implementing the Integrating Energy Storage Systems framework into the NEM was not considered. Further we note that the Final Determination for ERC0263 was published in September 2022, 9 months after the final determination for ERC0280.

We consider that no new evidence has been provided in the rule change request or the Paper that would warrant the proposed change. We also note that the primary frequency response incentives in the form of frequency performance payments are yet to commence operation and consider it questionable to introduce additional changes until the operational outcomes from this rule change have been observed and considered fully.

Whilst ERC0280 provided the rules framework for the introduction of BDUs into the National Electricity Market (NEM), this did not change the underlying technical characteristics of plant designated as a BDU. A BDU remains a system comprised of a scheduled generation component(s) and a scheduled load component(s) which will still be bid as separate component parts via a single dispatch unit identifier (DUID) into the NEM. These bids will remain reflective of these underlying technical components when the Implementing Integrated Energy Storage Systems (IESS) rules commence. We reject the rule change proponent's arguments that the implementation of the IESS rule change in any way alters the technical characteristics of the plant, or in fact its *dispatch* in the NEM, that would justify the provision of MNBPF when the BDU is active in its scheduled load

⁴ AEMC Final determination ERC0263 – page 29



component. We note that such requests by the rule change proponent to mandate NBPFR for BESS when charging or providing FCAS during both the ERC0274 and ERC0263 rule change processes were considered at length and strongly rejected by the AEMC. Shell Energy remains supportive of the AEMC's decision to not require BDU (BESS) to provide MNBPFPR when charging as part of these rule changes.

Costs imposed by this rule change proposal

We note the rule change request contains no consideration of the costs associated with delivering MNBPFPR when charging or enabled for FCAS that would be imposed on BESS project owners should the proposed amended rule be made. There is a significant consumption of battery storage cell life, which also impacts a cell's ability to store energy, whenever energy is drawn from or added to the cells, particularly when storage cells are asked to cycle between charging and discharging on a frequent basis. BESS manufacturers typically express this cell lifetime in number of charge/discharge cycles for a defined state of charge/state of discharge. The underlying physics and chemistry of battery storage cells is complex, which means the impact of incremental charge/discharging or micro-cycling is difficult to perfectly calculate in advance and may only become apparent over time. However, we understand based on information provided by BESS manufacturers that the cost of this micro-cycling to battery life can be material.

In addition, imposing a requirement to provide MNBPFPR when charging or enabled for provision of FCAS will result in deviation from optimum recharging profiles, both increasing costs for recharging and reductions in operational stored energy available for dispatch in the energy market or for the provision of FCAS. These impacts on the technical life of storage cells as well as provision of optimum levels of storage in the daily operational timeframe for dispatch in the energy and FCAS markets in real time cannot be neglected, and we maintain it should be an active decision for the operators as to what level of risk and cost they wish to expose the plant to in exchange for possible financial incentives.

We disagree with the proponent's view set out in the Paper that with the commencement of ERC0263:

"The operating costs incurred by plant because of the expanded obligations would be compensated through frequency performance payments."⁵

The level of payments associated with the commencement of ERC0263 are unknown with pricing tied to the enablement price for the regulation raise and lower services as opposed to the efficient price for the provision of NBPFR, which we consider is likely to impose significant net costs over time on service providers.

Shell Energy is in the process of working through the commissioning of its Riverina BESS. We intend to undertake testing to quantify the additional "work" on a BESS which would be imposed by the proposed rule change. This data is not available to share with the AEMC prior to making this submission. We intend to make the data available on a confidential basis to AEMC to highlight the potential costs to a BESS operator as well as the market of implementing what we consider to be a highly regressive rule change.

Negative impact on ability to provide FCAS

The rule change request suggests that implementing the proposed rule will increase the willingness of BESS to participate in the FCAS market as the proposed rule removes, in the proponent's view, a perverse incentive to withdraw from the FCAS markets. We consider that the current Rules act to facilitate participation by BESS in the FCAS market, including when charging and that the proposed rule change would have the effect of reducing participation in the FCAS markets by BESS when charging or in fact when generating in the energy market. Clause 4.9.8(d) of the rules requires that:

⁵ AEMC, Clarifying mandatory PFR obligations for bidirectional plant, Consultation paper, 3 August 2023, p17



A Market Participant which has classified a generating unit or load as an ancillary service generating unit or an ancillary service load, as the case may be, must ensure that the ancillary service generating unit or ancillary service load is at all times able to comply with the latest market ancillary service offer for the relevant trading interval.

Tier 1 civil penalty provisions apply to this clause.

As previously noted, requiring a BESS to provide MNBPFRR even when charging will, in Shell Energy's view, have a detrimental impact on stored energy during a trading day. To ensure compliance with the requirements of clause 4.9.8(d), it is not unusual to apply specific trigger limits in BESS storage levels which act to trigger the submission of an automated bid to remove a BESS from participation in FCAS markets. It is our view that imposing the proposed rule change may result in resetting of such limits to a more conservative level and an increased frequency of BESS withdrawing from participation in the FCAS markets.

In addition, as the provision of MNBPFRR when charging or providing FCAS will result in a premature reduction in storage cell life and storage capability, BESS operators seeking to minimise this reduction may withdraw from the FCAS markets under lower market price outcomes resulting in an increase in the overall costs of FCAS procurement.

We also note that traditionally frequency control has always been implemented by varying the generation output to match the total load on the system. Even where it has been possible in the past to implement frequency control features in control systems for loads this has never occurred beyond mandatory load shedding implemented in accordance with clause 4.3.5 when the system is in extremis. There are multiple reasons for this including:

- a desire not to interfere with commercial operations at loads, along with the costs involved;
- wear and tear considerations for customer loads from implementing frequency responsive consumption adjustments;
- a lack of economic incentives and the costs to participate in the FCAS markets; and
- to avoid possible complex power system interactions between loads and generation.

Many of these considerations apply equally to BESS. Having BESS provide MNBPFRR when charging impacts on the commercial operation of the installation adds wear and tear to battery cells, power electronics and cooling systems shortening life and increases operating costs. It could also potentially lead to complex interactions with other generation plant particularly when switching between different control modes.

Reviewing historical records of the power system frequency of both the Mainland and Tasmanian systems reveals that the existing levels of frequency control typically remains within the primary frequency control band deadbands of +/- 0.015 Hz. The histograms of the Mainland power system frequency outcomes are multi-modal with peaks near both the 49.99 Hz and 50.01 Hz levels but also exhibiting an uncontrolled cyclic oscillation currently peaking at 130 millihertz, with a historical trend of increase in this peak oscillation value. In our view, which is supported in the Australian Energy Council's Technical Expert Provecta's submission to the Reliability Panel's review of the Frequency Operating Standard,⁶ this indicates that the implementation of MNBPFRR at such a narrow primary frequency control band (PFCB) has resulted in a "bang-bang" control outcome across the system, where individual generating systems are fighting each other to develop good power system frequency control outcomes. The additional MNBPFRR requirements to the charging cycles of BESS units is likely to exacerbate this undesirable power system frequency behaviour.

⁶ [AEC attachment – Provecta technical report.pdf \(aemc.gov.au\)](#)



AEMO's technical arguments in support of the rule change

The rule change proponent argues that control system settings must be applied consistently and predictably for the provision of MNBPF to provide certainty on frequency control capability to support power system security on an ongoing basis. We contend that the current Rules framework, where MNBPF is provided when a BESS is issued a clause 4.9.2 dispatch instruction to generate active energy output greater than zero megawatts but is not required to do so at other times, provides a consistent and predictable response with regards to MNBPF for the purpose of both power system modelling and real time power system control. When generating active energy output into the energy market, MNBPF is active. If a BDU is not generating active energy output into the energy market, MNBPF is not active. We again note that for a BESS operating as a schedule load, this MNBPF requirement is consistent with the Rules requirement for all scheduled load components for BDUs.

Shell Energy also questions the practical achievement of the proponent's predictability and certainty argument even if the proposed rule changes were implemented, given the MNBPF does not require reservation of stored energy, headroom or foot room by any generating or scheduled load resource. Absent these reserves, in particular stored energy, provision of MNBPF cannot be supplied. A steam boiler driven turbine generator operating under sliding boiler pressure control conditions with its turbine throttle valves wide open would not have stored energy to enable provision of MNBPF to act to raise power system frequency and under the Rules would be exempted from doing so. Likewise, a BESS may have comparatively limited storage at times, and at such times will be seeking to recharge its storage levels as efficiently as possible, and therefore we reject the proponent's argument that BESS be required to provide MNBPF when charging or issued a clause 4.9.3A (FCAS) dispatch instruction on the basis of consistency and predictability.

AEMC's Proposed Alternatives to the Proponent's Rule Change Request

We support the AEMC's decision to consider alternatives to the rule change request's preferred solution and thank the AEMC for setting these out in some detail in the Paper. We support the intent of the proposed alternative to increase the participation of non-scheduled generators and scheduled and non-scheduled loads in the provision of voluntary NBPFR. However, the AEMC's proposal contains some limitations and therefore Shell Energy has set out what we consider to be a more practical and workable alternative. We believe our alternative model will better achieve the goals of the rule change proposal.

Registration of voluntary frequency response settings

Shell Energy supports a process that would allow market participants to voluntarily participate in the provision of NBPFR when not obligated to do so by clause 4.4.2(c1) and receive, where appropriate, frequency performance payments. We also support the AEMC's view that to be eligible, a market participant would need to install appropriate metering and register their eligible units and the unit's frequency response settings with AEMO.

However, we see a significant weakness in this proposed framework that would deter participation. The proposed approach would not allow a market participant to provide an availability or a price bid at which the eligible units would agree to voluntarily provide NBPFR. It also doesn't allow consideration of a one-way (raise or lower) service provision given that some resources may not be able to provide both at the same time. The process as proposed would place an obligation, following registration for frequency performance payments, to always provide NBPFR and to do so regardless of the impact this may have on a participant's generation or consumption requirements. Such an outcome could at times have a detrimental impact on a consumer's non-energy production operations. As such, we consider that the proposal is unlikely to achieve its practical potential as the inflexibility of the ongoing obligation will strongly disincentivise registration by participants.



AEMO approval to change a unit frequency response mode – clause 4.4.9(e)

Shell Energy agrees that semi-scheduled generating units should be added to clause 4.4.9(e), but questions if this clause continues to be required given the requirements of clause 4.4.2(c1). We do not support a requirement for approval from AEMO to implement control settings on a scheduled or non-scheduled load, or the scheduled load component of a BDU consistent with the requirements of clause 4.4.2(c1). The current “approval” requirement has the potential to impose additional onerous operational obligations on a BDU (BESS) and significantly delay the registration process. In the case where the BDU is seeking to register or change settings consistent with a Rules compliant outcome, we consider that the BDU should be required to advise AEMO, but should not require AEMO’s approval. We recommend this be explicitly clarified in the Rules.

A practical and workable alternative

Shell Energy proposes an alternative solution that we consider would provide improved predictability and certainty of the provision of MNBPF for frequency control capability to support power system security on an ongoing basis. It would also provide a framework that has the real potential to increase the provision of NBPFR by non-scheduled resources. These outcomes are aligned to the goals of the rule change proposal in this area.

Our alternative builds on the AEMC’s proposal which would allow registration of non-scheduled generation and scheduled and non-scheduled load to provide NBPFR. In addition, it allows these resources to register in the regulating raise service or the regulating lower service in a way that would allow the participant to retain control of the offered service via their bids. This component of the proposal is critical for investment certainty and facilitating efficient market outcomes.

Our proposed alternative would require amendment to clauses 3.11, 3.9.3A and 4.4.2 of the Rules by the addition of proposed new clauses 3.11(a1), 3.9.3A(a1) and 4.9.2(c2) respectively (see below). The rule amendments below would allow *plant* receiving a clause 3.9.3A market ancillary services dispatch instruction (for regulating raise and lower services) to comply with this 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 PFR 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.

Suggested rule clauses to implement the proposal are set out as follows:

3.11(a1) The regulating raise service and the regulating lower service may be supplied by:

- (1) AEMO centralised *plant* remote control dispatch, or
- (2) Frequency responsive *plant* responding to local frequency measurement in accordance with registered primary frequency response settings, or
- (3) A combination of (1) and (2) above.

3.9.3A(a1) An ancillary service generating unit or an ancillary service load issued a dispatch instruction for the provision of the regulating raise service or the regulating lower service must comply with this dispatch instruction in accordance with clause 3.11(a1)



4.4.2(c2) each ancillary service generating unit or an ancillary service load that has been issued a dispatch instruction in accordance with clause 3.9.3A(a1) to generate, or consume, if required, a volume greater than zero MW must operate its ancillary service generating unit or an ancillary service load in accordance with this dispatch instruction and the Primary Frequency Response Requirements, as applicable, to that ancillary service generating unit or an ancillary service load

We also support the Australian Energy Council's (AEC) suggestion as set out in the AEC's submission to this rule change request to remove existing rule 4.9.4(e) from the Rules. However, we suggest that if existing rule 4.9.4(e) is to be retained, it should be amended to provide clarity that an ancillary service generating unit or load not dispatched in accordance with proposed clause 3.9.3A(a1) for the provision of either the regulation raise or lower service is not required to comply with the provision of 4.9.4(e) unless it is required by clause 4.4.2(c1) to do so.

We offer the following amended clause, which is worded on the basis of commencement of ERC0280, for consideration.

4.9.4(e) that a scheduled generator, semi-scheduled generator and scheduled bidirectional unit may not change its frequency response modes without the prior approval of AEMO, notwithstanding that this clause does not require AEMO approval for the implementation of settings consistent with the application of clauses 4.4.2(c1) and 4.4.2(c2)

The proposed amendments provide certainty and predictability to AEMO regarding practical provision of NBPF from both an enabled service provider perspective and an enabled reserve provision perspective. It also allows AEMO full control of the amount and type of service enabled, including its geographical location, to achieve the required frequency control capability to support power system security on an ongoing basis. This would be accomplished through the regional regulation FCAS market requirement settings controlled by AEMO.

Importantly, service providers would retain control, in real time dispatch, of the level of NBPF offered via their bids. This control does not exist in the AEMC's proposed approach. We add that allowing service providers control would not compromise NBPF provision as the required services would still be procured as required by AEMO, from what is likely to grow to be a larger pool of service providers.

We acknowledge that the proposal would impose an additional action on the service provider to offer bids. However, we consider that as non-scheduled resources and BESS are already providing bids for contingency FCAS the changes should be relatively minor for most participants. In addition, such bidding requirements for non-scheduled resources need not necessarily be onerous, as the provisions of clause 3.8.9 allow for submissions of a default bid that remains active until replaced.

Interaction with Contingency Reserves

Provision of NBPF and NBPF reserves by units enabled for provision of the regulating raise or lower services should ensure that contingency FCAS reserves are not depleted by provision of MNBPF or a 3.9.3A(a1) dispatch instruction. Shell Energy remains concerned by the rule change proponent's arguments that a BDU unit issued a clause 3.9.3A dispatch instruction for provision of one of the eight contingency services⁷ should be required to provide MNBPF at all times. This has the potential to deplete the valuable contingency services reserves which in turn could lead to a major system incident should these reserves be required to maintain power system security but have been depleted by MNBPF provision. We note that the AEMC staff have identified that it is possible for a BESS to operate with multiple droop settings, one for MNBPF and another for the

⁷ Includes for commencement of the very fast contingency FCAS markets



contingency services, which may somewhat reduce the depletion of contingency reserves due to MNBPFR. However, this will not remove the potential for depletion of contingency reserves and relies on gaining approval from AEMO during the registration process for the use of multiple settings. To date gaining this approval has been challenging.

Along with factors such as the short circuit ratio and the system X/R ratio, the droop settings of an inverter can interact with the control system stability in complex ways which are difficult to fully evaluate in simulations. Increasing the number of possible droop settings that the BESS is required to operate at will not only increase the number of cases that must be investigated, but also require investigations of the impacts of changing from one droop setting to another. This will add significant unnecessary complexity and delays to the process of registration which is already seen to be the major impediment for the connection of new projects.

Assessment framework

Shell Energy is supportive of the assessment framework as set out in the Paper but notes criteria 3 (efficiency) and 4 (innovation) run counter to proposals to extend the reach of MNBPFR to a BDU (BESS) when charging.

Conclusion

Shell Energy opposes the proposal to require BDUs, primarily battery energy storage systems (BESS), to provide MNBPFR during storage charging and when dispatched for frequency control ancillary services (FCAS) in addition to when dispatched for energy. The proposed rule change would impose significant and uncontrollable costs on BESS, reducing the life of the storage cell component of a BESS as well as the cells storage capability and limiting their ability and willingness to provide both energy and FCAS to the market. We consider that the AEMC has extensively analysed the issue previously and justifiably rejected the need for BESS to provide MNBPFR when charging or providing FCAS. Little has changed since the AEMC first made these decisions. Shell Energy intends to provide the AEMC with data on a confidential basis to support our arguments following testing of our Riverina BESS project.

Instead, we have proposed an alternative approach building on the AEMC's proposed alternative which we consider will expand the pool of PFR providers using a market-based, local measurement and control approach which will incentivise participation in providing NBPFR by non-scheduled resources. In our view, this model will deliver increased NBPFR relative to the status quo at far lower costs and risks to BESS operators who choose to participate.