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31 August 2023

NATIONAL ELECTRICITY AMENDMENT (CLARIFYING MANDATORY PFR OBLIGATIONS FOR BIDIRECTIONAL PLANT) RULE 2023 – ERC0364

Dear Ms Collyer,

Fluence is a leading global provider of energy storage products and services and optimisation software for renewables and storage. Our solutions are built on the foundation of industry-leading technology platforms that are optimised for different application groupings, and Fluence leads the energy storage industry with over 7GW of grid-scale storage projects deployed or awarded globally.

We welcome the opportunity to comment on Issue 2 of the Clarifying Mandatory Primary Frequency Response (PFR) obligations for scheduled Bidirectional Units (BDU) rule change request, in particular:

- A requirement on BDUs to provide PFR when charging (acting as a load), in additional to discharging in response to a non-zero dispatch instruction when cleared in the energy market as per current National Electricity Rules.
- A requirement on BDUs to provide PFR when enabled to offer Frequency Control Ancillary Services (FCAS).

These obligations do not appear to support the system service objective to *longer-term investment in, generation facilities, load, storage, networks (i.e. the power system) and other system service capability*, as well as assessment criteria of principles of market efficiency and innovation and flexibility. Providing PFR more rapidly shortens lithium-ion battery energy storage unit (battery) life and therefore have a cost impact, as well as increase uncertainty and complexity for asset owners and investors.

Batteries are designed to deliver optimal and reliable performance for a finite amount of throughput, and this determines in their operating life. (Note there are several complex operational considerations that determine operating life, performance guarantees and warranties, however throughput has a major impact). Providing PFR increases energy throughput at the Point of Connection. 'Consuming' this throughput faster reduces the system capacity and shortens guaranteed performance life. Many performance guarantees are based on system throughput budgets, which allow the asset owner to determine when

it is most optimal to 'consume' this throughput. Therefore, all throughput consumed has a cost to the owner of the asset and investors.

While initially the additional throughput consumption requirement from the obligation to provide PFR when discharging, as well as charging and enabled for FCAS, may be minor, over time frequency distributions may broaden, due to synchronous unit retirements. This may require batteries to provide greater contributions of PFR and could add up to significant cumulative throughput, therefore degrading the battery faster.

Investors need clear policy and regulatory settings and are already adjusting to a broad array of change as the NEM transforms. This uncertainty on what may be required in the future, specifically the additional throughput impact on batteries, directly impacts current decisions of asset owners and investors.

An obligation on BDUs to provide PFR when charging

The requirement for batteries to provide PFR when charging does not appear to uphold to principles of technology neutrality. If BDUs are to be considered similar to loads (e.g. potentially exposed to non-zero negotiated TUOS charges), then they should face similar obligations as loads when charging. Loads are not obligated to provide PFR when consuming power. It should be considered that if there are specific obligations imposed on a specific technology then tailored and effective service payments should also be developed.

An obligation on BDUs to provide PFR when enabled for FCAS

The increased throughput requirements for batteries when enabled for FCAS could be significant. For contingency FCAS, the battery may be sitting at 'zero' energy dispatch. Currently the battery incurs no throughput when it is in this state. However, requirements to import or export active power by providing PFR could significantly increase throughput.

There are several dynamics that could arise from this. Batteries could be incentivised to increase the price of the FCAS offers to account for increased throughput costs. They may remove their assets from contingency FCAS, in order to reserve this throughout for higher price periods. AEMC should explore other potential unintended dynamics that may arrive from a mandated requirement, rather than a market mechanism for PFR.

General principles and consideration of a FCAS market mechanisms

Services that support the reliable and secure operation of the power system should be properly recognised and valued, where possible, through system service markets and contracts. This is the only way to ensure efficient investment outcomes in the NEM. Regulatory mandates may cause inefficient behaviour and investment. The effect of other mechanisms to support frequency should be analysed before introducing further market change, such as Very Fast Frequency Response and Frequency Performance Payments Procedure. If further PFR provision is required, we recommend that AEMC reconsider clear and transparent market mechanisms approaches, such as FCAS market provision for PFR.

There are many other important work streams and reforms that could further support both system frequency and other elements like system strength/stability of the voltage waveform. As the NEM reaches higher penetrations of inverter-based plant, clearly defining value for these advanced services and how to participate, such as those from grid forming inverters, will become increasingly important and worth greater focus. These reforms should be considered holistically with many other clarification rules changes and reform relating to system security.

Fluence looks forward to further engagement with the AEMC on this rule change clarification. Further queries can be directed to Lara Panjkov on lara.panjkov@fluenceenergy.com

Kind regards,

Lara Panjkov
Senior Manager, Growth and Market Development

Fluence