



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

Lodged online via www.aemc.gov.au

RE: Mandatory PFR – Consultation Paper

Dear Victor,

Neoen welcomes the opportunity to respond to the AEMC's consultation paper 'Clarifying Mandatory PFR Obligations for Bidirectional Plant' (3 August 2023).

As you may be aware, Neoen is a specialist, independent power producer with a long-term vision that translates into a strategy to produce renewable, competitively priced energy, sustainably and on a large scale. With 7 GW in operation or under construction globally, we are aiming for more than 10 GW by 2025, with the ambition to reach 20 GW by 2030. In Australia, Neoen has 3.3 GW in operation or under construction—with more than 1.2 GW of this represented by storage.

Summary

As outlined in previous responses related to Primary Frequency Control, Neoen acknowledges that a PFR management system is required. We remain concerned, however, that the creation of a mandatory PFR requirement for all generators is not the most appropriate answer to the immediate issue, nor a sustainable long-term solution. In particular, we note that while it is difficult to directly quantify the cost of providing PFR, even when dispatched to zero, this clearly comes at an opportunity cost. In the specific case of the Victorian Big Battery, a dedicated capacity band had to be reserved for providing PFR which altered Neoen's capacity to generate merchant revenues. Further, we consider it is essential that suspension of providing PFR be possible where necessary—for example, recalibration of state of charge requires a 2-hour rest period.

In the short-term, direct contracting would be more cost effective and would better recognise the generators who are best placed to respond to local frequency deviations at lowest cost. Ultimately, the introduction of an enduring market-based mechanism is required to provide appropriate investment signals for technologies.

As is evident by the number of active procurement initiatives being led by network operators and governments to support energy storage, current market-signals alone are not currently strong enough to incentivise the level of investment required in new technologies, particularly batteries, which could be able to offer PFR service with highest quality standards (speed and accuracy).

Continuing to resist the establishment of a market-based mechanism is a missed opportunity to improve the incentives to invest in firming capacity that could otherwise deliver significant benefits for the network. In our experience, the development of PFR markets in Europe has triggered significant investment in new storage projects and this could be replicated in the National Electricity Market.

NEOEN AUSTRALIA PTY. LTD.

ACN 160 905 706

Level 21 – 570 George Street – NSW 2000 SYDNEY – Australia

European examples

In Continental Europe the Frequency Containment Reserve (FCR) mechanism provides for active power reserves that are automatically controlled based on the frequency deviation¹. Under this market, FCR is a symmetrical product (1 MW of FCR can be activated both upward and downward) and covers the frequency range of 49.80 Hz to 50.20 Hz, without a deadband. FCR is activated along a linear droop curve where FCR capacity is fully activated upward when the frequency is at 49.80 Hz and fully activated downward when the frequency is 50.20 Hz.

The market currently requires the procurement of 3,000 MW at all times across participating countries to cover a N-2 outage (the simultaneous loss of the two largest generation units). While each Transmission System Operator (TSO) is responsible for procuring its FCR share, Austrian, Belgian, Danish, Dutch, French, German, Slovenian and Swiss TSOs currently procure their FCR in a common market—representing the procurement of 1500 MW of FCR on a daily basis².

Similarly, in the Nordic synchronous area (Norway, Sweden, Finland, East Denmark), primary frequency regulation needs are covered by three automatic products: FCR-N, FCR-D Up, FCR-D Down, currently procured separately by each TSO.

- FCR-N, for normal conditions, is a symmetric product similar to FCR, but with a range of activation set to 49.90 Hz to 50.10 Hz
- FCR-D Up, for disturbance, is a single-direction product covering the frequency range 49.50 Hz to 49.90 Hz
- FCR-D Down, for disturbance, is a single-direction product covering the frequency range 50.10 Hz to 50.50 Hz.

Fingrid, for example, is procuring the requirements for Finland through a combination of yearly and daily auctions, paid-as-cleared³:

- A yearly auction awards a share of the required FCR-N, FCR-D Up and FCR-D Down capacity to be delivered every single hour of the following calendar year; and
- Each day, missing capacity for the next day is procured through an auction, with an hourly granularity.

SVK, the Swedish TSO, is currently procuring its FCR-N, FCR-D Up and FCR-D Down reserves through a combination of D-2 and D-1 auctions, both auctions awarding capacity with hourly granularity. Auctions are currently pay-as-bid but will switch to pay-as-cleared from 1 February 2024.

Openings of FCR markets in Europe attracted significant investments in BESS capacities—procured capacity in FCR markets increased by more than 70% in Finland and Sweden between 2015 to 2022—and subsequently this has led to a decline of costs supported by TSOs.

We look forward to engaging with the AEMC and stakeholders further on this and future reviews. For further clarification please contact Megan Ward, megan.ward@neoen.com in the first instance.

¹ https://www.entsoe.eu/network_codes/eb/fcr/

² [https://www.regelleistung.net/apps/datacenter/tenders/?productTypes=SRL,MRL,PRL&markets=BALANCING_CAPACITY,BALANCING_ENERGY&tenderTab=PRL\\$CAPACITY\\$1](https://www.regelleistung.net/apps/datacenter/tenders/?productTypes=SRL,MRL,PRL&markets=BALANCING_CAPACITY,BALANCING_ENERGY&tenderTab=PRL$CAPACITY$1)

³ https://www.fingrid.fi/en/electricity-market/reserves_and_balancing/frequency-containment-reserves/