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(Lodged electronically)

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National Electricity Amendment (Ref. ERC0296 - Fast Frequency Response Market Ancillary Service) Rule 2021

Delta Electricity operates the Vales Point Power Station situated at the southern end of Lake Macquarie in NSW. The power station consists of two 660MW conventional coal-fired steam turbogenerators. Delta Electricity appreciates the opportunity to comment on the Draft Determination on the proposed Fast Frequency Response (FFR) market.

Delta Electricity supports the determination of Rules to create a market for Fast Frequency Response (FFR) which is probably best described as "very fast (1s)" FCAS. Whilst Delta Electricity previously recommended this market should include inertial response of rotating machines, the differences in response characteristics between FFR, as proposed, and inertia are acknowledged. The new services specified in a similar construct to existing market ancillary services are welcomed.

Frequency Control – Contingency FCAS, Regulation FCAS and PFR

Delta Electricity continues to seek to discuss in the frequency control workspace, the important distinctions between Contingency Frequency Control Ancillary Services (FCAS) in contrast to Regulation FCAS and Primary Frequency Response (PFR). Decision makers are encouraged to continue to approach each grouping with slightly altered viewpoints. Contingency FCAS is more like an insurance product, whilst PFR and Regulation FCAS are essential continuously utilised services. Both groupings have an important similarity though, which is, if there is no energy/capability stored, prepared and/or preserved, to deliver the procured raise or lower service, the overall system delivery will be ineffective at controlling frequency. Hence it remains very important that the effectiveness of all services is monitored and transparently reported.

Contingency FCAS

Contingency FCAS procurement and markets, including FFR, ought to be focused on preparing, procuring and maintaining sufficient reserves to counteract predictable generation or network events that, whilst expected in a complex market with many suppliers and connections, are only occasional. The required Contingency FCAS amounts directly relate to the response expected to be required to meet the prescribed Frequency Standard. If AEMO's control objectives are requiring a reformed standard then that is quite another matter. Performance monitoring of Contingency FCAS must be routinely examined to ensure it is demonstrably confirming the effectiveness of the procured services. It is arguable, for example, that the present and increasing implementation of greater quantities of mandatory "free" PFR is now outweighing the purpose of procuring Slow and Delayed Contingency FCAS services. Most events of a contingent nature in terms of the present Frequency Operating Standards are now recovering in less than 20s. Such observations suggest to Delta Electricity that Mandatory PFR, whilst considered essential by AEMO to avert a system security crisis, is delivering far more frequency response than required by the operator, acting reasonably, to ensure the arrest and security of the system from impacts of predictable events within the expectations of the present Frequency Operating Standard. However, it is also understood that the Standard will soon be reviewed again and that AEMO are also required to control frequency. Ironically, as recently reported by AEMO in the May 2021 AEMC working party meeting, system frequency, whilst now maintained within a tighter envelope by Mandatory PFR, continues to suffer from inexplicable variations inside that envelope. This variability exhibits a control problem that was expected, by some in the industry, to be improved by Mandatory PFR. This observation and the fact that Mandatory PFR has not yet been effective in improving these small but regular variations is concerning.



Regulation FCAS and PFR

Regulation FCAS and PFR are required continuously for reasons other than simply ensuring the system reacts adequately to larger contingency events. Smaller imbalance events are almost continuously occurring. Incorrect approaches to these systems will be immediately apparent or ought to be when compared to an appropriately reformed frequency operating standard. Real-time monitoring systems are probably best suited at observing the effectiveness of each of these two systems. It is hoped that innovative ideas such as double-side causer pays develop suitable real-time monitoring tools but it should be remembered that the system frequency signal itself is critical data. The observations that Mandatory PFR, whilst tightening overall normal operating frequency containment has not addressed the variability suggests further to Delta Electricity that other factors are causing continuous unwanted variations reducing the quality and micro-stability of system frequency.

Diagrams

If AEMC see merit in revisiting the differences between contingency reserves and continuous frequency control, a modified diagram is worth considering for AEMOs diagram, Figure 2.1 on page 9 of the draft determination. The continuously responding systems should be presented with a focus on securing frequency within the Primary Frequency Control Band. The more occasional and much larger impacting contingency events should focus on the wider ranges relevant to the normal operating frequency band and the frequency recovery level defined in AEMOs Market Ancillary Services Specification (MASS).

Existing Controllers

Further complicating distinctions between the various FCAS services and systems is the utilisation of existing control systems. In large volumes in the existing NEM, the very systems developed to provide the occasionally-utilised Contingency FCAS services are now employed to deliver the “free” continuously-utilised Mandatory PFR. Mandatory PFR and contingency service responses can therefore interfere with each other and, with the different purposes they have, this perhaps presents a need for further reforms to consider uncoupling this interconnection. Separately, the continuously-utilised regulation FCAS service, centrally dispatched by AEMO, is delivered with energy dispatch signals and, because of that design, is inherently delayed in delivery. The overall coordination of frequency will not always be satisfactory due to interference between some services and the delay in others. To better coordinate, all systems need to be aware of the other systems and working in tandem to the same overall objective. Another matter relating to coordination, are variations permitted in metrology at work in each controller. Unless specifications of instruments permitted to supply FCAS services and monitor system frequency are standardised, variability in outcomes will result and has been the result it seems to Delta Electricity.

Many existing 6 and 60s contingency services are essentially one proportional system responding precisely proportional to each relevant frequency deviation to deliver from a common energy store and governing reaction. Delta Electricity anticipates that, at the commencement of the FFR market, many existing FCAS providers will also register for FFR, without needing to build any additional controller, and can deliver FFR in a similar fashion to the present conventional Fast service.

The prediction above suggests that the new FFR service risks adding costs to the market, but it is also possible that, by co-optimisation or other methodologies, the existing costs of contingency FCAS will spread to encompass existing and new markets and not necessarily add costs to the overall contingency FCAS procurement. As older technologies retire, the new very fast frequency services should add incentives to designers of new technology to deliver sufficiently rapid FCAS to help maintain frequency within the Frequency Operating Standards and assist AEMO in objectives for better control of frequency.

If the AEMC wishes to discuss any aspect of this letter, please contact Simon Bolt on (02) 4352 6315 or simon.bolt@de.com.au.

Yours sincerely

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