



Market Ancillary Service Specification Consultation - May 2022

Submission to Issues paper template

This template has been developed to assist Consulted Persons in providing submissions on the questions posed in the Issues Paper. AEMO encourages Consulted Persons to use this template to assist AEMO when considering the views expressed on each issue.

Consulted Persons should feel free to address only those questions that are of particular interest/concern to them and delete those they are not responding to.

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3 Capability of different technologies to deliver Very Fast FCAS

Question 2: Do you agree with the capabilities expressed in Table 3? If not, please advise which of these you do not agree with and provide evidence to support alternative capabilities.

Response: Enel X agrees with the table that some load can react within 0.25-0.5 seconds with a sustained response but note that load response times can vary much greater than that presented in the table. Response times vary greatly depending on the way the load asset is responding, ranging from 0.25 to 2 seconds (for a service like Very Fast FCAS). This means a faster response time requirement will result in fewer load assets available to provide the new Very Fast FCAS service.

4 Proposed design of Very Fast FCAS markets

4.2 Guidance from other FFR Markets

Question 6: Are there any specific useful lessons to be learned from other FFR markets around the world?

Response: Electricity Authority's [Review of instantaneous reserve markets](#) in 2018 ultimately found that no near-term changes to the frequency procurement were required. However, the paper does contain an interesting analysis of the adequacy of the current market design compared to alternative scenarios that involve other design tweaks, such as co-optimizing the SIR (sustained instantaneous reserve) and FIR (fast instantaneous reserve) products, implementing a 2-second FIR product, and event-based payments for DR providing ancillary services.

It also sets out what it sees as the features of the current market design that make it efficient and fit for purpose, including competition, co-optimisation, resources being able to participate in either or both FIR and SIR, leading to a wider pool of participants in each market, and incentives for providers of the slow product to respond quickly, leading to diversity of response times.

4.3 Proposed design of Very Fast FCAS markets	
4.3.2 AEMO's proposed high-level market design	
Question 7:	Are there any issues with the concept of shifting Fast FCAS to accommodate a similar, but faster, Very Fast FCAS? Is there a better alternative that is compatible with the Amending Rule?
<p>Response: We query whether the effectiveness of the current Contingency FCAS markets – particularly the R6 market – would be reduced at times when no R1 is being procured (during high inertial levels with strong interconnection, as is suggested by the Issues paper) due to the reduction of the R6 ramp window back to 1 to 6 seconds, from 0 to 6 seconds. Notionally, during periods of zero R1 procurement, there will be no contingency FCAS response between 0 to 1 seconds.</p> <p>As such, AEMO should consider always procuring sufficient R1 to cover any reduction in R6 from shifting the ramp window back by one second.</p>	
4.3.3 Impact of inertia	
Question 9:	Are there any other issues relevant to the impact of inertia that AEMO should consider?
<p>Response: As highlighted throughout the issues paper, quick response times are key for FFR to help inertia. As such, FFR market design should encourage faster response times without excluding potential participants. As a result, Enel X does not consider caps or requirements on response times should be used as proposed in this Issues Paper.</p> <p>Instead, the promotion of greater diversity of, and competition between, different providers with various response times should be incentivised by the MASS arrangements that encourage the best possible market response. We consider this is best done using the current R6 incentives (existing measurement processes, including the multiplier effect) and applying them to the new R1 market. See the response to question 39 for more information.</p>	
4.3.4 Primary Frequency Response	
Question 10:	Are there any other issues relevant to the interaction between Very Fast FCAS and PFR that AEMO should consider?
<p>Response: We acknowledge AEMO's position on all FCAS responses being considered for Contingency responses but caution that this may confuse the purposes of the separate services. PFR relates to the quantity of regulation FCAS required during normal operation and keeping frequency within NOFB. Whereas Contingency FCAS is about responding to a frequency deviation due to a contingency event. Using one service procured for another purpose may erode the service from being able to meet its purpose – i.e. Contingency FCAS being used for Regulation FCAS may mean there is an insufficient response when an event occurs.</p>	
4.4 Existing capability to deliver Very Fast FCAS	
Question 11:	Does a 1-second response time specification automatically exclude certain technologies from being able to participate in the Very Fast FCAS markets? Which ones and why?
<p>Response: Enel X strongly supports a 1-second response time given the modelling provided by AEMO demonstrates the inability of a 2-second service to adequately provide the desired outcomes. We do so noting that a 1-second response time will exclude some load assets from participating in the Very Fast FCAS market when compared to the amount available for a 2-second market. This is because we consider 1-second appropriately balances response effectiveness with competition and availability of prospective providers.</p>	
Question 12:	Is there anything else AEMO should consider in maximising the pool of potential Very Fast FCAS?
<p>Response: We consider the longest possible effective response time will maximise the market, hence our support for the 1-second response time. As such, the movement to a 0.5-second response time would</p>	

significantly reduce the participants in the market and is not supported at this time given the current assets available to provide the services.

Additionally, as discussed further in our response to Q39, incentivising faster responses and not limiting responses to active power provision in each market will maximising the pool of potential Very Fast FCAS providers. The proposal currently includes unnecessarily 'black and white' restrictions on who can and cannot provide the service. We consider the current MASS approach of rating faster responders through the 'multiplier effect' as an appropriate and effective way of maximising the pool of providers. We believe this also applies to the restriction on response to begin within 0.5 seconds, as the current methodology de-rates response after this window, whilst still allowing it to participate.

5 Specification of Very Fast FCAS and associated changes to the MASS

5.2 Proposed key parameters for Very Fast FCAS

5.2.1 Response time, timeframe, and initiation delay

Question 13:	Will some technology types be locked out of the Very Fast FCAS markets if the maximum response time is specified as 0.5 seconds rather than 1 second?
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Response: Some load assets would be locked out if a 0.5-second time is selected. We understand the need for a sufficiently fast response time to meet the design characteristics of the new FCAS market, but consider it should not be faster than required to ensure a workably competitive market size.

Having said this, we consider that the MASS should incentivise faster response times without excluding slower times. This is currently appropriately and effectively done by the MASS through rating delivery based on response times so the market experiences a stratified response by time rather than excluding slow and getting a big block response at the "cut-off" response time. This will maximise participation whilst adequately encouraging quick response.

As noted previously, this approach is less 'black and white' than that which is proposed and will result in greater diversity and competition while meeting AEMO's FFR requirements. We encourage AEMO to reward fast response times without excluding slower response times as a principle when amending the MASS.

Question 14:	Are there benefits to setting the response time for Very Fast FCAS faster than 1 second that AEMO should consider?
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Response: We consider 1-second sufficient on the evidence provided by AEMO in the issues paper. This is because it appropriately balances the effectiveness of the service with sufficient and competitive provision of the service from a wide(r) range of providers

5.2.2 Market ancillary service offer requirements

Question 16:	Are there any other issues relevant to the proposed market ancillary service offer requirements that AEMO should consider?
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Response: Portfolios of switched controllers, such as those operated by Enel X, should be viewed as providing a proportional response to AEMO and the market. Provider's offers should be considered in light of the type of response they provide, rather than the controller or technology through which they provide that response. AEMO should describe the required response and allow all avenues of providing it to be allowed. This approach will broaden the market and not unnecessarily limit supply into the market, resulting in increased competition and lower prices for consumers as well as a great suite of assets for AEMO to call on to provide FCAS.

5.2.3 Reference frequency levels

Question 17:	Are there any other issues or concerns relevant to AEMO's proposal to apply the current definitions of 'Raise Reference Frequency' and 'Lower Reference Frequency' to Very Fast FCAS?
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Response: We support leaving the reference frequencies as is.

5.3 Control system requirements

Question 19: Is AEMO's proposal to permit the use of a 'combination' controller, namely, a hybrid of proportional and switched controls for Very Fast FCAS appropriate? Please provide reasons for your response.

Response: Yes – Enel X considers a greater diversity of assets that can respond to be a good thing for the market and consumers.

Question 21: Are there other FCAS delivery methods that AEMO should consider allowing for Very Fast FCAS?

Response: AEMO should thoroughly investigate and demonstrate the root cause and therefore need for any limits on switched and proportional response controllers as a proportion of the market before they are introduced in any FCAS market, including the new Very Fast FCAS service.

There are two main points related to this that AEMO should consider as part of that deliberation:

1. **Switched controllers can provide a proportional-like response by stratifying a portfolio of assets responses:** Enel X utilises switch controllers on our portfolio of FCAS assets, but does so such that they respond similarly to that of a proportional response asset. Treating all switch controllers like they provide big block FCAS responses is not an accurate representation of the way switch controllers are used in the current market. Oversimplification of the way these controllers can be used will be detrimental to the market – both in terms of the assets available for AEMO to use as well as the cost to consumers due to lower competition in the FCAS markets.
2. **New Zealand experience shows large over-response causing an overshoot from a switched controller is highly unlikely:** is evidenced in the [Investigation into Over-Provision of Interruptible Load](#). The 2014 report by Transpower was commissioned as part of the New Zealand System Operator's Underfrequency Management (UFM) review. It looked at the concern expressed that since the only requirement was to deliver at least as much response to an under-frequency event as operators have been told to enable, they might be conservative and deliver far too much. In the extreme, operators might not disarm sites, even when they hadn't cleared. It was suggested that requirements could be tightened, such that providers of instantaneous reserves would have to respond within a particular tolerance of their dispatch target.
The danger was that a large over-response would cause an overshoot: the under-frequency event would be followed immediately by an over-frequency event, causing generators to trip. If this happened, since the underfrequency reserves would already be depleted, there would be a risk of going to system black. These concerns are very similar to those for the contemplation of a limit to be placed on switched response controllers.
However, the modelling showed that this scenario was not plausible: it would require 25% of North Island load, or 16% of South Island load to be providing instantaneous reserves. It recommended that no further action be taken. We consider similar modelling must be undertaken by AEMO to demonstrate that there is a real and probable issue that exists before introducing a limit on switched response controllers in any FCAS markets, including the Very Fast FCAS, as has been foreshadowed in the Issues paper.

5.4 Verification and measurement requirements

5.4.3 Frequency measurements

Question 22: What is the error margin and resolution for frequency measurements by high-speed metering installed by Fast FCAS Providers that could be retrofitted to existing Ancillary Service Facilities for participation in Very Fast FCAS markets?

Response: Schneider PowerLogic PM8000 provides high accuracy of standard speed (1s) and high-speed (1/2 cycle) measurements, including true RMS per phase and total for voltage, current, active power (kW),

reactive power (kvar), apparent power (kVA), power factor, frequency, voltage and current unbalance, and phase reversal.	
Frequency measurement accuracy of Class 0.2 as per IEC 61557-12.	
Question 23:	What is the error margin and resolution for frequency measurements by high-speed metering that is not currently in use in the NEM, but is available for use in the Very Fast FCAS markets?
Response: As above, high-end power quality monitoring devices like the Schneider PowerLogic PM8000 series meters provide highly accurate high-speed data capture and control around frequency excursions.	
Question 24:	What is the cost of high-speed metering that captures frequency measurements with a margin of error lower than <0.1 Hz?
Response: Typically in the thousands of dollar range depending on volume and model selection.	
Question 25:	Can metering providers submit the specifications of their high-speed metering currently available, or in use by Fast FCAS providers?
Response: Please see https://www.se.com/ww/en/download/document/PLSED310058EN_Web/ for specification.	
Question 26:	Are measurement rates of <100ms feasible for your technology? What is the nature and extent of changes that would need to be made to support rates of <100ms?
Response: Yes, measurement rates of <100ms are feasible for load assets but at a significant cost, especially for smaller loads that are being aggregated together. We can measure across a variety of rates and currently do so across many sites.	
More sophisticated metering comes at a cost and we ask AEMO to set out any rationale for requiring increased measurement rates above those of other FCAS services. Additionally, AEMO should be restrained when setting any measurement rate lower than 100ms, if it is justified, due to the increased costs for participants, which may decrease competition in the market. This is because, given our previous experiences, some aggregators may not be able to justify the additional metering costs associated with the more sophisticated equipment across enough sites to build a meaningful portfolio.	
5.6 Changes to other FCAS	
5.6.1 Interaction between Very Fast FCAS and Fast FCAS	
Question 35:	Can Consulted Persons identify any case where a decrease in Fast FCAS capability could be observed?
Response: Enel X is concerned with the following elements of the proposal that we consider will adversely affect the incentives of the Contingency FCAS markets and decrease Fast FCAS capability:	
<ul style="list-style-type: none"> • cap on registration at maximum active power change • requirement of response to be initiated within half the ramp period. 	
We consider limiting offers to the maximum active power change will reduce the appropriate incentive for the provider to respond as fast as possible. This coupled with the half ramp period response requirement could see most responders only providing services all at the same time and providing a significant blocked response rather than a smoother, stratified response.	
We can see the concerns that led AEMO to conclude these restrictions but we consider that they are mistaken and heavy-handed responses. The current active power limit applies collectively across all of the Contingency FCAS markets rather than on each market's offers in isolation. This better appreciates how all the Contingency FCAS markets operate together to return the frequency to normal levels and not a singular market. The changes proposed ignore this interrelation between the markets and how they work together to	

provide a singular response to a frequency event. Additionally, the proposal disallows slower responders and disincentivises faster responses unnecessarily for an issue that is already considered and appropriately dealt with by the current MASS and Rules. As such, we consider the proposal seems an oversimplification and overcorrection of the current MASS arrangements, which are suitable for use in all Contingency FCAS markets including the new Very Fast FCAS market.

Also, as discussed previously, there is a concern of materially reduced R6 being provided when no R1 is being procured if providers update their settings to start responding from 1 second rather than 0 seconds in line with the new ramp windows.

5.6.4 Revision to FCAS measurement

Question 39:	Are there alternatives to capping the registered Very Fast FCAS capacity to the actual peak active power change to minimise the discrepancy between the amount of FCAS enabled and the actual contingency size?
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Response: AEMO's modelling and issues paper discusses the faster the response the more benefit to the grid. So, principally the MASS shouldn't be discouraging quicker response and rather encouraging and rewarding it, especially for the Very Fast FCAS service where the benefits of faster responses are more material. As such, the alternate is a proportional calculation based on rewarding those participants that can respond quicker, as is currently used in Contingency FCAS markets.

Enel X considers the proposed changes to be an overcorrection to a minor issue that has not been clearly articulated to date. We believe there needs to be consideration of the relationship (and overlap) of the different markets. In the example provided, where a switched load of 30MW is valued at 50MW in R6, they would only be able to offer R60 at 10MW, thus the total valued/dispatched FCAS resources across the two markets is equal to the actual active power capacity provided, whilst still valuing the speed of response. We propose that instead a holistic approach to all FCAS markets should be taken, which we note is how the Rules already require all FCAS offers to be made.

Further, we would welcome more exploration of these issues about switched providers by AEMO. We note the proposed changes in section 5.3 of the issues paper don't apply to switched load. Also, AEMO used a simplistic, theoretical example and we would ask that a real-life or modelled example is undertaken to demonstrate the real issue. This should be done ahead of such a change being made that we consider would greatly impact the current operation of the market.

Question 40:	Are there any other issues relevant to the proposed market ancillary service offer requirements that AEMO should consider?
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Response: See response to question as Q16