VIOTAS

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Suite 409, 235 Queens St,

Melbourne VIC 3000

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Submitted by email to mass.consultation@aemo.com.au

Re: AMENDMENT OF THE MARKET ANCILLARY SERVICE SPECIFICATION – DER AND GENERAL CONSULTATION - DRAFT REPORT AND DETERMINATION

To whom it may concern,

Thank you for the opportunity to respond to this important consultation.

By way of introduction, VIOTAS is a market-leading smart grid technology and demand side services company headquartered in Ireland and we have recently established a Melbourne office. We are passionate about enabling a low carbon future by leveraging smart grid technology to accelerate the use of renewable energy worldwide and have a dedicated in-house team developing the leading-edge technologies that underpin our services to meet the ever-changing needs of our customers and the power system.

VIOTAS' submission to this second stage consultation is focussed on a number of key issues it wishes to emphasise or reiterate from its detailed first stage consultation submission (dated 11th March 2021).

If you require any further information on this submission, please contact me by email on william.salis@viotas.com or by telephone on 0403 613 243. VIOTAS is more than willing to have a follow up discussion with AEMO on any of the topics contained within this response.

Yours sincerely,

William Salis

Market Operations Manager

VIOTAS Australia

1. **Measurement resolution and location for FCAS delivery:**

   VIOTAS supports AEMO's position in the draft determination that the metering requirements within the MASS (in terms of both data resolution and measurement location) should not be amended to accommodate alternative measurement arrangements for FCAS provision from DER. This is in line with the detailed first stage consultation submission made by VIOTAS, recognising the importance of high resolution power and frequency metering for the provision and verification of fast response FCAS services.

2. **Frequency event "t=0" times:**

   As highlighted by VIOTAS in its recent FFR rule change (ERC0296) consultation submission, the determination of "time zero" from which performance is measured is a critical parameter for a frequency event. Currently, the MASS defines this relative to the Contingency Event Time (time of the initial event that led to the frequency leaving the Normal Operating Frequency Band (NOFB), determined retrospectively by AEMO) and the Frequency Disturbance Time (time at which local frequency falls outside the NOFB). VIOTAS believes this is an area where the current MASS is deficient, and that at least for Switched Controllers all performance assessment should be relative to the time at which the local frequency falls below a switching controller's assigned frequency deviation trigger.

   Currently under the MASS the time interval between the frequency departing the NOFB and crossing the Switched Controller's assigned frequency setting, penalises the calculated volume delivered by the load, despite the Switched Controller having behaved exactly as expected and as agreed with AEMO. VIOTAS recommends this is reviewed and addressed by AEMO in future consultations.

3. **Managing over-delivery from non-frequency responsive FCAS:**

   VIOTAS technology is specifically designed to enable the provision of high speed ancillary services using controllable loads, and the validation of the resulting response. VIOTAS can remotely control individual Switched Controllers from providing automatic frequency response depending on AEMO dispatch instructions. It is therefore capable of ensuring that its non-frequency responsive facilities are linked to market outcomes, as opposed to responding if their assigned frequency trigger is breached irrespective of market enablement. As the volume of demand side providers on the system grows this capability is important to ensure over-delivery is limited. VIOTAS believes it is prudent for AEMO to build an over-delivery limit into the MASS, whilst recognising that this should provide an allowable tolerance for over-response (such as the 50% limit highlighted). This would enable service providers to provide the maximum possible certainty that the delivered response will always exceed the enabled amount.

4. **Proposal to move Contingency FCAS frequency triggers closer to the NOFB:**

   The potential for variable renewable and demand side resources to provide low cost over-frequency (lower) and under-frequency (raise) services respectively is highly complementary. As the technologies which have historically provided ancillary services see their role diminish, facilitating the optimal provision of ancillary services from these technologies will yield significant system benefits. Frequency trigger set-points are a critical design element impacting the volume of demand side participants willing to provide services and the associated price, as ultimately, for a controllable load providing contingency raise services, frequency trigger set-points closer to the NOFB will result in a higher likelihood of a controller being triggered more frequently.

   Care is required to ensure that power system needs (such as restoring frequency to within the NOFB) are not necessarily directly translated into the minimum technical requirements for the provision of ancillary services, where doing so would result in an inadvertent barrier to the provision of those services by particular

technologies. VIOTAS believes it is important to design ancillary services technical requirements as broadly as possible (enabling the widest possible range of providers), while ensuring that the price signals incentivise as far as possible the service delivery technical characteristics that are of highest value to the system.

For example, in Ireland the three automatically triggered Operating Reserve Services employ a scalar which applies a payment multiple depending on the frequency trigger. Participants nominate their own frequency set-point in the range 49.3 - 50 Hz, but a provider with a set-point of 49.3 Hz will be paid 50% vs. the same service at 49.985 Hz, with linear interpolation between. This recognises that delivery at frequency set-points closer to 50 Hz is of higher value to the system than at lower frequencies.

A market design which allows providers to nominate their own frequency set-points, but with a strong financial incentive to set these as close as possible to the NOFB, will allow the optimal participation of the widest possible range of technologies. This will, for example, allow some providers to elect to have a wider dead-band in return for being triggered less frequently, where other providers may elect to have a narrow dead-band (and likelihood of being triggered more frequently) in return for higher payments.

This is particularly important for demand side providers. The underlying industrial and commercial sites which agree to make their electrical loads available to provide ancillary services suffer a degree of disruption each time they are triggered. For these sites, these services are not their core business, and their participation needs to be carefully managed to enable them to provide these critical services to the power system without causing intolerable operational disruption for the facility. If they can be optimally utilised, demand side providers are a very low cost provider of contingency services, utilising existing assets to provide this vital safety net to the power system for relatively infrequent events. Allocating frequency triggers further from the NOFB will reduce the expected frequency of trigger events (and the associated disruption), and will encourage greater volumes of demand side participation, ultimately leading to price benefits for all energy consumers. Conversely, allocating higher frequency triggers with a corresponding increase in expected frequency of trigger events and disruption will reduce the volume of customers willing to provide such ancillary services, which will instead need to be procured from other (typically higher cost) providers. This approach is equally applicable in faster services such as fast frequency response.

This is an important element for the design of ancillary services procurement arrangements in any market: ensuring the optimal balance between maximising the participation of all technologies, while at the same time ensuring the correct incentives are in place for the provision of the service characteristics of highest value to the power system. VIOTAS believes that the high speed frequency response services which demand response can provide are especially valuable during the most serious contingency events, and that such providers have the ability to arrest the frequency nadir as quickly as possible. If the ancillary services system design can facilitate the optimal utilisation of demand response assets this will encourage energy consumers to actively participate in the energy markets, with the ability to respond quickly when critically needed by the system and driving significant system benefits as the ongoing decarbonisation transition continues and accelerates.

5. Uncertainty associated with current frequency trigger allocation:

VIOTAS would also like to highlight the current uncertainty associated with the allocation of frequency trigger set-points by AEMO. For example, when a demand response aggregator is developing a project with a client with electrical load it is willing to make available for ancillary services, it is not possible to confirm the frequency set-point at which the site will be required to respond until the aggregator applies to AEMO to classify the load. Therefore, despite this factor being critical to assessing the expected frequency of trigger events and developing a pricing strategy at which the client is willing to provide the services, is not allocated until very late in the process of a client site becoming an ancillary services load. In addition, VIOTAS believes that the MASS contains significant ambiguity as to how Frequency Settings will be allocated to Switched controllers. For example, the principle that larger blocks will be allocated to frequencies closer to NOFB, or the provision for a Market Participant to request a change to its allocated Frequency Setting if it can provide a technical reason for this both seem subjective. VIOTAS recommends that, to improve fairness, transparency, and predictability, AEMO either clarifies this section of the MASS or implements a system (see comment above) where providers are able to select their own frequency trigger set-point (within a defined range) but for this to be factored into service payments (with frequency trigger set-points closer to NOFB earning higher payments).

6. Potential limits on the proportion of FCAS which can be provided by Switched Controllers:

VIOTAS supports AEMO's conclusion that there are only very limited circumstances where FCAS provision from Switched Controllers is likely to cause problematic power system impacts (such as potentially during system separation events), and its position not to progress general limits on the amount of FCAS services which can be provided by Switched Controllers.

VIOTAS agrees with the points raised by a number of other participants highlighting that there is not currently any evidence to justify limiting the quantity of FCAS provided by Switched Controllers, and any such restriction (which would cause a significant market distortion between different technologies providing FCAS services) should only be imposed once a rigorous assessment of potential power system security risks as a result of FCAS provision from Switched Controllers has been completed.

It is also important to reiterate that there are a number of ways to mitigate the risk of over-response – the primary concern raised against Switched Controllers. For example, as highlighted by Enel in its first stage consultation submission, AEMO could stagger the trigger frequencies assigned to switched loads across a more granular range of setpoints to enable switched providers to provide a pseudo-proportional response when considered in aggregate. This seems to be counter to the AEMO proposals to bring the trigger ranges for Switched Controllers closer to the NOFB.

In the Irish market, the design arrangements for the Fast Frequency Response service enable providers including VIOTAS to provide a sophisticated response by continually reallocating frequency triggers to individual Switched controllers to provide a multi-"stepped" response that emulates the response that would be delivered by a proportional controller with a fixed droop characteristic. As ultimately approximating a proportional response from Switched providers seems to be the intention of MASS section 7.2, facilitating demand side aggregators to provide this type of service directly would yield significant efficiency benefits.

VIOTAS sees significant merit in encouraging FCAS providers using Switched Controllers to adopt such an approach and believes the multi-step response it already provides in the Irish market is a very good example of international best practice in this regard, closely approximating the dynamic response that would be expected from a Proportional service provider. VIOTAS recommends this approach be considered by AEMO in the next MASS consultation if AEMO is concerned about potential negative impacts of large volumes of FCAS provided by Switched Controllers.