

3 June 2021

Ms Anna Collyer
Chair
Australian Energy Market Commission (AEMC)

Dear Ms Collyer

Fast Frequency Response (FFR) Market Ancillary Service – Draft Determination (ERC 0296)

Hydro Tasmania welcomes the opportunity to respond to the AEMC's FFR draft determination.

Hydro Tasmania is broadly supportive of the AEMC's draft determination to implement two new "very fast" raise and lower services to operate alongside the six existing contingency FCAS services. This approach will maximise potential contributions of market participants for the management of the power system frequency, while simultaneously incentivising investment in faster and more flexible assets required to support the effective transition of the National Electricity Market (NEM) to higher shares of variable renewable energy.

Attachment A contains several points from Hydro Tasmania related to:

- The upcoming review of the Market Ancillary Service Specification (MASS) document and the need to ensure this document recognises all FFR-capable technologies; and
- The need to prioritise the design and implementation of a market mechanism for inertia to align as closely as possible with a FFR market, and the need for further analysis to better understand the dynamic relationship (co-optimisation) between inertia and frequency management services.

Hydro Tasmania looks forward to working with the AEMC and AEMO in the implementation of this rule change. If you wish to discuss any aspect of this submission, please contact John Cooper ((03) 6240 2261 or John.Cooper@Hydro.com.au).

Yours sincerely



John Cooper
Regulatory Manager

Attachment A – Hydro Tasmania comments on FFR Draft Determination

Review of the Market Ancillary Service Specification (MASS) document

Hydro Tasmania notes that the MASS is set to be reviewed within 18 months from the final rule. Hydro Tasmania considers that the MASS review will be important to provide detailed guidance on the way in which a FFR market will work. We provide the following points to help guide the MASS review.

- **Must recognise all FFR delivered within prescribed timeframes** – It is integral that the establishment of the FFR definition and technical parameters in the MASS uphold the principle of technology neutrality. Upholding this principle will maximise the provision of FFR services at least cost to consumers. This should be inclusive of, but not limited to: grid-scale batteries; aggregated smaller battery applications; demand-side response; and transmission frequency controllers. There are several Tasmanian examples that should be considered, including:
 - **Adaptive Under Frequency Load Shedding (AUFLS) Scheme** – This Tasmanian scheme uses ‘switching controllers’ based on absolute and rate of change of frequency to trip load which participates in the contingency raise FCAS markets. Hydro Tasmania also has some other switching controller devices of a smaller scale. Hydro Tasmania believes the design of an FFR market needs to cater for intelligent switching controllers that can be measured.
 - **Frequency Control System Protection Schemes (FCSPS)** – The largest contingency in Tasmania is the loss of the Basslink interconnector, which can be operated up to 630 MW when unconstrained. However, this contingency size is drastically reduced by the implementation of the FCSPS so that Basslink is often not the largest credible contingency. The FCSPS uses high-speed communications infrastructure to trip load whilst importing via Basslink, and trip generators on export, in order to balance system frequency. Hydro Tasmania believes this type of service should be recognised as an FFR service and should be encouraged as a low-cost solution for the delivery of “very fast” raise and lower FCAS.
 - **Basslink Frequency Controller** – The Basslink HVDC Interconnector has frequency controllers at the George Town (TAS) and Loy Yang (VIC) substations. This infrastructure allows Basslink to transfer valuable frequency services to and from Tasmania within milliseconds. Governor response settings on Tasmania’s hydropower assets, coupled with Tasmania’s high shares of system inertia will allow for the effective delivery of FFR services to mainland Australia. It is important that the MASS appropriately recognises this service provision. Likewise, the Marinus Link interconnector would be capable of delivering significant quantities of FFR and synthetic inertia to Victoria and beyond. This will be achievable using voltage source converter (VSC) technology, which can support continuous power flow during power flow reversals, as well as continuous provision of FCAS (including FFR).¹

¹ Project Marinus RIT-T Project Assessment Draft Report, pg. 54.

The dynamic relationship between frequency and inertia

It is Hydro Tasmania's view that the interrelated nature of these services requires further investigation and prioritisation.

- **Prioritising the creation of a market mechanism for inertia** – Hydro Tasmania is concerned that market bodies are not appropriately prioritising the creation of a market mechanism for inertia. Creating a market mechanism for FFR and not inertia may send the wrong signal to the market about the importance and necessity of each distinct service. Hydro Tasmania consider that this outcome is unlikely to deliver the most efficient, least-cost mix of services. While recognising the complexity of these issues, we strongly encourage the timeframe for the creation of an inertia mechanism to be brought forward.
- **Tasmania has extensive experience using inertia to assist in frequency management** – Hydropower assets traditionally have limited capability to deliver R6 FCAS due to the nature of their physical characteristics. To remedy this limitation, Hydro Tasmania have made significant investments in various generation assets to operate in 'synchronous condenser mode'. Operating in synchronous condenser mode delivers important inertial response, which is particularly valuable to maintaining the power system frequency and minimising the rate of change of frequency during periods of high non-synchronous penetration. Hydro Tasmania consider this experience would be a valuable contribution to any future activities to understand the inter-play between frequency and inertia. As such, we would welcome the opportunity to share these insights to guide the development of suitable mechanisms to co-optimize the delivery of these services.
- **The Australian Energy Market Operator's (AEMO) Engineering Framework** – Hydro Tasmania notes that AEMO have recently launched the *Engineering Framework*, following on from the insightful *Renewables Integration Study*. Hydro Tasmania propose that the Engineering Framework may be a suitable forum in which market bodies and market participants can collaborate to co-design appropriate approaches for the co-optimised procurement and enactment of inertia and FFR services under a higher renewables scenario.