8 May 2020

Ms Audrey Zibelman
Chief Executive Officer
Australian Energy Market Operator
L22 530 Collins Street VIC 3000

Lodged by email: pfr@aemo.com.au

Re: Primary Frequency Response Requirements Document Consultation

Dear Ms Zibelman,

Tilt Renewables is a leading Australasian renewables developer engaged across all stages of project development through to operations. Tilt Renewables currently has 366 MW of operational wind farms across the NEM and New Zealand, plus a further 469 MW in construction/commissioning and over 3 GW in its development pipeline.

Tilt Renewables welcomes the opportunity to provide feedback on AEMOs Primary Frequency Response Requirements (PFRR) and appreciates the workshops held with industry to provide clarity with respect to some of the details within the PFRR document.

In previous submissions to the AEMC Tilt Renewables has highlighted the differing costs associated with providing PFR across technologies. As semi-scheduled generation will typically be required to spill near-zero marginal input cost energy to provide primary frequency response, Tilt Renewables considers that the costs for providing this service will likely be higher for semi-scheduled generators compared to scheduled generators. This is further compounded by the fact that MW losses relating to providing PFR (Primary Frequency Response) for conventional generators due to curtailing output to respond to over frequency will be largely cancelled out by responding to under frequency – noting that conventional generators will use less fuel/water to respond to over frequency. To reflect the higher costs associated with providing PFR on semi-scheduled generators Tilt Renewables suggests AEMO explore the option of having higher and wider droop and deadband settings on semi-scheduled generation to ensure that most of the response is provided by those technologies able to provide this service at the lowest cost.

Equation 1 in Section 3.3 of the PFRR details the droop calculation which describes how the generator is expected to alter its active power output in response to frequency deviations. AEMO has suggested in previous workshops that the droop would be calculated based on P_available as opposed to P_max which is now used in the PFRR. The consequence of the change for VRE (Variable Renewable Energy) is that its share of PFR provided will be much higher than its share of energy supply compared to conventional generators. Wind in particular is nearly always online, so under the proposed droop definition it would be providing PFR proportional to its installed capacity the majority of the time, despite only being capable of producing a proportion of that installed capacity as active power due to prevailing wind speeds.

By using P_max in the droop calculation instead of the initially considered P_available, AEMO in its drafting of the PFRR has failed to consider differing technologies and has placed a more cumbersome burden with respect to PFR on VRE. During the industry workshops AEMO stated its desired to achieve a shared frequency response across the generation fleet such that each generator is 'pulling their weight'. Tilt Renewables estimates that the increase in energy spilt/lost for wind by using P_max instead of P_available in the droop calculation will be inversely proportional to the capacity factor of the generating system (for a typical wind farm with ~30%

capacity factor this would equate to 1/.3 = 3.33 times the losses). This result would not be an appropriate outcome of the PFRR regime.

Given the above Tilt Renewables requests that P_max in the droop calculation be replaced with P_available.

Tilt Renewables will be pleased to meet with you to discuss this submission in more detail and provide ongoing support through the consultation process. Please contact the undersigned or Rhys Albanese at rhys.albanese@tiltrenewables.com or 0423 423 797.

Regards,

Nigel Baker

Executive General Manager, Generation and Trading
Tilt Renewables