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1 June 2022

Dear AEMO Network Planning Team,

Re: System Strength Requirements Methodology and System Strength Impact Assessment Guidelines amendments consultation

Akaysha Energy (Akaysha) welcomes the opportunity to comment on the System Strength Requirements Methodology (SSRM) and System Strength Impact Assessment Guidelines (SSIAG) amendments consultation.

Akaysha are in principle supportive of urgent changes to the methods used for system strength assessment and planning in the NEM. Generally, Akaysha advocates strongly for the utilisation of methods that facilitate a technology agnostic approach to system strength management in the NEM, enabling the lowest cost solutions to be implemented.

Without providing specific response to the questions raised in the AEMO issues paper, the following details more specific views of Akaysha regarding the proposed approaches in the issues paper.

Quantification of System Strength:

It is Akaysha Energy's position that quantification of system strength by the traditional short circuit MVA metric is an outdated methodology of diminishing relevance as the modern power system transitions toward domination by inverter-based generation. The more forward looking and pragmatic system strength assessment methodology would be to use agreed maximum allowable levels of voltage waveform amplitude and phase disturbance. The measurement methodology could be adopted by a number of potential methods, including simulation of applied faults over a range of impedances for specific durations to a standardised set of network locations to quantify the disturbance resilience in each location.

This measurement methodology allows for a more technology agnostic approach and is not biased toward the physical advantages synchronous machines possess over inverter-based technologies when assessed against the current short circuit MVA basis. A technology agnostic measurement approach is critical in ensuring the lowest cost solution for energy stakeholders, particularly noting recent power system studies validating the advantages of grid forming inverters over synchronous condensers for supporting the grid.

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Fault Current:

Minimum levels of fault current MVA must be sustained for the explicit purpose of ensuring the power system maintains an appropriate level of fault clearing capability for existing electrical protection systems. Fault current should however be separated from the definition of system strength as although related, the two power system parameters are best separated due to the different technical requirements they fulfil. It is expected the minimum fault current requirements would progressively diminish as traditional over-current based protection devices are phased out for earth-leakage, differential and line impedance type relays.

Connection Enquiries / Applications:

Akaysha also raise concerns around the implications of the SSIAG and subsequent information provided by NSPs to proponents during the Connection Application process. Akaysha's position is that elements of the Preliminary Impact Assessment are now for much of the NEM redundant as even in traditionally strong network locations, NSPs have been declaring Available Fault Levels inconclusive, reflective of the complexity of the present power system and the challenges with their ability to specify clear system strength levels. Additionally, the specification of singular short circuit and X/R ratios to be used in the Connection Application power system studies is inappropriate considering the fundamental variability of the actual values seen in the real power system. Akaysha supports changes to the SSIAG that provide more useful information on system strength risks to new proponents, and suggests SCR and X/R values provided to proponents instead being generalised with appropriate sensitivities also tested.

Oscillatory Stability

Management of power system oscillations and small signal stability additionally needs modernisation with the weakening power system. Akaysha do not propose any specific strategies for future management of oscillatory stability, however we note that new high-inertia synchronous condensers with no active power control can introduce further detrimental risks to power system stability. Continued use of short circuit MVA based quantification of system strength will encourage further deployment of synchronous condensers to new VRE generators for the sole purpose of creating short circuit MVA, subsequently introducing further power system risks. Hence, Akaysha recommends a new system strength quantification method enabling potential new multi-capability technologies with active power control such as grid-forming BESS to avoid the introduction of further oscillatory risks.

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Sincerely,

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