

Submissions  
Electricity Authority  
Level 7, Harbour Tower  
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## **Future security and resilience: Phase 1 draft report**

Thank you for the opportunity to comment on the first phase of the Electricity Authority and System Operator's work on the opportunities and challenges facing the future security and resilience of the New Zealand power system.

We would like to make particular comment on two of the key topic groupings identified, namely challenges/opportunities from Distributed Energy Resources (DERs) and challenges to system inertia and system strength resulting from the anticipated increased uptake of non-synchronous generation.

We submit that in terms of prioritising future work, it may be more helpful to think of “no regrets” actions and/or actions that are common across themes instead of running the risk of compartmentalising workstreams. For example, although there is still considerable uncertainty about the extent to which DERs will proliferate (e.g., rooftop solar vs. grid solar) and the extent to which (and through what standards) DERs will be “smartly” controllable/programmable and coordinated between end consumers, flexibility traders, distribution networks and the national grid, we agree that gaining “visibility and observability” is an important first step.

We also believe that some of the inertia and system strength challenges posed by non-synchronous generation can to a large extent transcend the distinction between DERs and grid generation. For example, as inverter-based generation grows, grid frequency management will have to evolve regardless of whether the generation is largely grid-connected or embedded. A similar argument would apply to system strength, although we recognise the potential for different localised challenges (including within distribution networks) depending on the extent to which generation is distributed rather than grid scale. A key takeaway for Mercury is that thought should be going into future ancillary service products as a priority even though New Zealand is fortunate to have significant renewable synchronous generation resources at its disposal (i.e., hydro and geothermal.) Appropriately designed ancillary service products (e.g., potentially covering “newer” concepts like inertia, very fast reserves and voltage) will provide important incentives for investment and reinvestment in synchronous generation as well as support the “value stacking” necessary for the uptake of new technologies such as battery storage, be it at grid scale or within distribution networks.

Finally, we agree that technical requirements need to become more technology neutral as a priority matter. This will aid in the uptake of new technologies as well as make it easier to assign obligations to support the power system. The time taken to allow batteries to participate in the instantaneous reserves market beyond interruptible load shows that even “no regrets” and uncontroversial regulatory changes can take time.

Yours sincerely



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