23 December 2025

Electricity Authority
By email: operationsconsult@ea.govt.nz

Wholesale market arrangements for battery energy storage systems

Meridian appreciates the opportunity to provide feedback on the Authority's consultation paper 'Wholesale market arrangements for battery energy storage systems – Issues and options paper'.

This is an opportune time to be considering wholesale market arrangements for battery energy storage systems (BESS) given the recent connection and commissioning of Meridian's Ruakākā BESS and further BESS projects under development or consideration. We encourage the Authority to continue this work at pace in order to ensure the system can benefit from the significant potential benefits that BESS can deliver.

While we support the Authority's proposal to introduce state of charge constraints into BESS offers and allow for 'flexible trading' of BESS, we think the Authority should continue to explore the option of reducing gate closure for BESS to 30 minutes. We note that given the rolling nature of market schedules, the current 1-hour gate closure means in practice that, gate closure limitations go from 1 hour and 29 minutes to 1 hour every 30 minutes. This is still a lengthy window for a technology which has typically up to 2 hours storage and which is intended to arbitrage prices in a highly volatile market. The Authority notes itself in the consultation paper that reduced gate closure would be more efficient for BESS and its modelling in Appendix D of the paper demonstrates that there is a benefit to both wholesale purchase cost savings and to battery profitability from such a change. We consider this benefit is worth pursuing, particularly if it improves incentives for BESS investment, which could lead to significant dynamic efficiency benefits over time.

While not covered in detail in the consultation paper, Meridian also reiterates our support for moving to 5-minute wholesale market settlement (as adopted in Australia's National Electricity Market), providing for block dispatch of BESS and co-located intermittent generation (referred to as 'hybrid plants' in the Authority's regulatory roadmap) and the development of a capability market for control system response. All of these wider market changes would support further BESS development and ensure that the benefits of this technology can be maximised. In particular, as set out in Meridian's submission on the Authority's BESS regulatory roadmap, a capability market for control system response would simultaneously encourage investment in and utilisation of BESS while ensuring that system

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security and frequency are maintained at lowest overall cost.[1] We consider this should be a priority for the Authority.

Further details are included in our responses to the Authority's specific consultation questions attached as Appendix A.

Please contact me if you have any queries regarding this submission. This submission can be published in full.

Nāku noa, nā

Matt Hall
Principal Advisor – Regulatory Affairs and Government Relations

[1] https://www.ea.govt.nz/documents/8320/Meridian_XB6GYwL.pdf

Appendix A: Responses to consultation questions

Questions	Comments
Understanding the characteristics, benefits and future operation of BESS	
Q1. Do you agree we have sufficiently identified the unique characteristics of BESS to assist in developing appropriate arrangements?	Yes. One further characteristic not discussed is the fact that BESS experience losses. In Meridian's experience, the losses associated with BESS are complex. This may be a relevant consideration in determining particular aspects of future wholesale market arrangements (including, for example, SO calculations regarding state of charge).
Q2. Do you have any views on how BESSs should be defined in the Code?	We agree it is appropriate that BESS's have their own definition in the Code given their unique characteristics.
Q3. Do you agree that BESS can deliver the benefits described? Are there any other benefits that will assist us in assessing the size of benefits of different arrangements?	We agree.
Q4. Do you agree with our description of how BESSs are likely to operate and how this will change over time? If not, why?	Yes.
Q5. Do you have any other insights about potential BESS operation that will help with assessing the benefits of our options?	No.
Dispatch requirements for BESS when charging	
Q6. Do you agree with the way we have framed the issues?	Yes. We note that, as part of the connection requirements agreed with Transpower for the Ruakākā BESS, Meridian is required to submit dispatchable bids when charging.
Q7. Do you agree with the Authority's preferred option? If not, what are alternative options that would better	We agree it is reasonable that BESS be required to submit dispatchable bids and respond to dispatch instructions when charging. While Meridian already does this for the Ruakākā BESS, making this a general

address the issues? Are there any particular risks with our preferred option that you would like to identify?	requirement will provide greater clarity for future BESS investments, avoid individual negotiations with Transpower on this matter, and avoid the need for BESS owners to apply to become dispatchable purchasers. We note that BESS are at times subject to variable local service load which may mean that charging or discharging rates vary slightly from an issued dispatch instruction. We recommend that any Code requirements allow sufficient tolerance to accommodate such variation.
Bids and offers forms for BESS	
Q8. Do you agree with how we have framed the issues?	Yes.
Q9. Do you agree with our preferred options? If not what other options would better address the issues identified?	Yes. Meridian considers a bi-directional offer form for energy and a single offer form for reserves will significantly simplify trading processes for BESS.
Q10. Do you think further restrictions to BESS participation in MFK under the current arrangements would have any effect on their participation?	Our current assessment indicates that the size and value of the MFK market do not justify the investment required for BESS to participate. Furthermore, upcoming changes mandating a maximum dead-band setting of +/- 0.1 Hz are expected to increase BESS response within the normal frequency band, further reducing the potential size of the MFK market. If the MFK market experiences significant growth or a capability market for control system response is introduced, investment in MFK toolset enhancements would enable BESS capabilities to be properly recognised and valued. However, it is not necessary to pursue these enhancements now. Given the benefits of moving to a bi-directional offer form, we do not consider this should be delayed.
Balancing flexible trading with security needs	
Q11. Do you agree the issues identified by the Authority are worthy of attention? If so, do you agree with our framing?	Yes.

Q12. Do you agree that BESS should have the same arrangements when charging and discharging, and that embedded BESS should have the same arrangements as grid connected BESS?	Yes. This will support efficient investment incentives and appropriate treatment of BESS relative to its capabilities.
Q13. Do you agree with our preferred new arrangements for BESS?	We broadly agree. Meridian considers that if the benefits of BESS are to be maximised, the Authority should seek over time to shorten gate closure for BESS to 30 minutes. We note that given the rolling nature of market schedules, a 1-hour gate closure means that, at times, gate closure is effectively 1 hour and 29 minutes. This is still a lengthy window for a technology which is intended to arbitrage prices in a highly volatile market. Shorter gate closure would incentivise additional BESS investments.
Q14. Do you see any issues with how we have defined state of charge constraints?	No, provided the maximum and minimum state of charges can be specified by the BESS operator.
Q15. Do you agree that the benefits of state of charge constraints likely outweigh the costs?	Yes. This approach should support greater utilisation of BESS and avoid BESS operators from having to make late or unnecessarily offer changes. As the Authority notes, this should ultimately lead to more affordable electricity for consumers.
Q16. Do you agree with how we have characterised the differences between various options?	We broadly agree.
Q17. Are there any other options that you think would better achieve the gate closure objectives?	As noted above, we would support the Authority and the System Operator further exploring the potential to reduce gate closure to 30 minutes (while continuing to move towards flexible trading of BESS). The Authority notes that reduced gate closure would be more efficient for BESS. We agree. While Appendix D of the consultation paper concludes that the difference in consumer benefits between one hour and 30-minute gate closure (if trading at full capacity with SoC constraints) is not huge, the Authority's modelling nevertheless concludes that there is a benefit. We consider this benefit is worth pursuing, particularly if it

	improves incentives for BESS investment, which could lead to significant dynamic efficiency benefits over time.
Q18. Do you consider an interim solution is necessary? If so, do you agree with the potential solution we suggested?	Yes, we agree an interim solution would be beneficial in order to ensure that BESS can be utilised more fully while more substantive changes are progressed. Our understanding is the interim solution proposed would not include the introduction of a bi-directional offer form and that this would only be implemented as part of the wider offer changes. If an interim solution were to include the introduction of a bi-directional offer form, further consideration may be needed of the optimal phasing of changes given this would likely require BESS operators to update their current tools and processes.
Q19. Do you have any information that can help us better understand the benefits and costs of different options? This includes, for example, substantiating the system risks, and how to improve our modelling of benefits.	No.
Constrained off payments	
Q20. Do you agree the issues identified by the Authority are worthy of attention?	Yes.
Q21. Do you agree with our framing of the issue?	Yes.
Q22. Do you consider having constrained off payments would affect bidding and offering behaviour from BESS?	We consider it is unlikely to affect bidding and offering behaviour. BESS operators are incentivised to bid up to the maximum price they are prepared to pay and to offer down to the minimum price they are prepared to receive, regardless of constrained off payments.
Q23. Do you agree with our preferred solution?	Yes.