Format for submissions

Wholesale market arrangements for battery energy storage systems – Code amendment consultation

Submitter	Pacific Power Resources Limited

Questions	**Comments**
Issue 1:Dispatch requirements for BESS when charging	
Q1. Do you agree with our proposal to require BESSs to be dispatchable while consuming?	We support requiring BESS to be dispatchable across their full operational range, including while charging. BESS are highly controllable assets, and dispatchability when charging improves system security, sharpens wholesale price signals, and removes the administrative cost and uncertainty of the current dispatchable-purchaser application process. We support the 10 MW threshold for grid-connected stations submitting dispatchable bids, which sensibly exempts small embedded systems. This obligation should be paired with arrangements that let owners realise the value of that flexibility — in particular full-capacity trading and, crucially, shorter gate closure (issue 3). Dispatchability obligations and efficient trading arrangements need to advance together. In addition, we think the Transmission Pricing Methodology review should also recognise this obligation, in that it makes BESS 'controllable' during charging which is a key point of difference with traditional load. As such we believe TPM pricing should be aligned with BESS as a generator, rather than as both a generator and load.
Q2. Do you have any comments on our proposed Code drafting for issue 1?	
Issue 2: bids and offer forms for BESS	
Q3. Do you agree with our proposal to have separate offers and dispatch for interruptible load and generation reserve?	Agree.
Q4. Do you agree with our proposal that BESS owners have 10 price bands for	BESS is unique compared with conventional generation in that it has millisecond ramping

their bids and 10 price bands for their offers. If not, how many price bands do you think they should have?	capability – as such it's very flexible with 5 minute dispatch. We think ten price bands for both bids and offers should be the minimum. A BESS's efficient prices depend on the interaction between expected market prices and state of charge, so we need more granularity than conventional generators to reflect the opportunity cost of stored energy at different storage levels. We would not support fewer than ten and our position is more is better. We also ask the Authority to keep open the option of increasing the number of bands in future as trading strategies mature.
Q5. Do you agree with our proposal that BESS owners not be required to submit maximum up and down ramp rates?	Agree. BESS can change output far faster than the five-minute dispatch horizon, so a mandatory maximum up/down ramp-rate submission serves no operational purpose and would only add compliance burden. Removing it is a sensible simplification.
Q6. Do you agree with our proposal to address issue 2?	Agree. A single bi-directional trade form, a single energy dispatch, and treating the BESS as a single entity reduce set-up costs for new entrants, simplify system coordination, and unlock fuller participation in MFK and future ancillary services. We strongly support enabling full BESS participation in MFK, with maximum flexibility. BESS are ideally placed to provide frequency keeping — their ability to instantaneously regulate up and down makes them well suited to the service — and arrangements should allow them to provide it when idle, charging or discharging. In the NEM, frequency services have been among the best early market opportunities for BESS, and we see no reason for New Zealand to constrain that. We also support removing any minimum participation size and co-optimising MFK with energy and reserves. More broadly, we consider frequency keeping should be fully externally (market) procured rather than regulated in the code through asset owner performance obligation requirement, which can produce suboptimal outcomes by tying up plant (such as thermals) that is better placed to provide other services.
Q7. Do you have any comments on our proposed Code drafting for issue 2?	
Issue 3: gate closure arrangements for BESS	

Q8. Should BESS owners be able to withhold energy if requested to do so in a grid emergency?	Yes. BESS owners should be able to — and should be expected to — withhold stored energy where the System Operator requests it in a grid emergency that spans multiple trading periods.
Q9. Should BESS bid and offer arrangements be aligned?	Yes. Aligning these arrangements for BESS removes unnecessary complexity and the distortionary incentive to connect to distribution networks rather than the grid. We support full alignment of gate-closure arrangements across bids and offers and across operational states.
Q10. Do you think greater clarity is needed around the circumstances which allow trade revisions after gate closure?	Yes. Uncertainty about when trades may be revised after gate closure is problem that will drive conservative trading and underuse of BESS.
Q11. Do you agree that, to align with forecast schedules, the SoC constraint that applies in the dispatch schedule should be based on energy availability over a half hour period? If not, do you think it should be based on energy availability over a 5 minute period, or the energy availability over the time remaining before the end of the trading period?	We note the downside the Authority identifies — that energy available within a period could be reduced where a BESS clears in only some dispatch schedules — and would support keeping the "time remaining in the trading period" alternative under review. More fundamentally, SoC constraints are a deliverability tool; they ensure dispatched quantities are feasible but do not compensate for the inflexibility of one-hour gate closure, and shorter gate closure would lessen the need for them.
Q12. Should state of charge constraints account for round trip losses? If not, why not?	Yes. SoC constraints should account for round-trip losses. Ignoring them would make the SoC constraints, and therefore dispatch, inaccurate and difficult to comply with.
Q13. Do you agree that the WITS manager and clearing manager require SoC constrained bid and offer information to perform their functions?	Agree that the WITS manager and clearing manager need SoC-constrained bid and offer information to perform their functions, subject to two points: (a) raw SoC telemetry that could reveal an owner's trading strategy should be handled appropriately and not exposed in a way that disadvantages BESS owners; and (b) owners must be given clear, timely visibility of how their trades are being constrained in the schedules so they can recalibrate as forecasts change.
Issue 3: final proposal	
Q14. Do you agree with our proposal to make gate closure arrangements the same between operational states and between grid-connected and embedded BESSs?	Agree with aligning gate-closure arrangements, and we strongly support the same treatment for embedded and grid-connected BESS, and across charging and discharging. A common set of rules removes confusion, levels the playing field, and avoids a distortionary incentive to connect embedded rather than grid-connected.

	However, alignment should be at a shorter gate closure, not one hour. One-hour gate closure merely brings BESS into line with conventional generation; in our view this is an inefficient outcome that appears to be driven by the System Operator's (Transpower's) legacy system capabilities rather than by optimal market design. While we note the Authority has commented on the differences to markets such as NEM, that just signals to us that our SO and market approach needs to evolve with evolving future power system. Long gate closures seem to be misaligned with the intent of BESS to accurately firm and price intermittent renewables. Our preference is to align everyone at 30-minute gate closure now, with a committed pathway toward re-submission up to the trading period (see Q19).
Q15. If we decided to make gate closure one hour for embedded BESSs, do you consider a legacy clause may be warranted? If so, what do you consider the details of that clause should be?	Our stronger preference is that gate closure be reduced for all BESS to 30 minutes (or less), which would render this issue largely moot.
Q16. Do you agree with how we propose to incorporate round-trip losses in calculating state of charge constraints? If not, is there a better alternative to ensure state of charge constraint accuracy?	Agree. We do not have a better alternative to propose, however, we note that round-trip losses are decreasing as technology improves so we would want any decision to reflect this reality.
Q17. Are there any other factors that need to be taken into account in adjusted capacities and limits?	We would caution against being unduly prescriptive about BESS operation through SoC constraints given the limited operational experience of BESS in the wholesale market — where an owner cannot meet its obligations it can be penalised accordingly, which may be a more efficient discipline than prescription.
Q18. Are there are any other reasons why a BESS owner should be able to, or need to, revise their trades after gate closure? If so, what?	The better way to reduce reliance on revisions is to reduce the gate-closure period itself.
Q19. Do you agree with our proposal to address issue 3?	Our position is: support the proposal as far as it goes, but go materially further and faster on gate closure. We support full-capacity trading with SoC constraints, the alignment of gate-closure arrangements, and the interim solution — these deliver real, early benefits and we welcome them. But one-hour gate closure is not the optimal arrangement for BESS, and

	SoC constraints address only the quantity (deliverability) problem, not the price problem of efficient bids and offers changing after gate closure. This goes to the core of the efficient operation of the future energy system with much more intermittent renewables and ensuring the right price signals. The core inefficiency is an asymmetry in flexibility between BESS and intermittent renewables: solar can vary minute-to-minute, yet a BESS cannot update its bids minute-to-minute and is expected to predict and compensate for solar swings an hour ahead. As proposed, the model would underutilise BESS in exactly the periods they are most valuable — managing the rapid net ramp rates and forecast errors characteristic of high-renewable systems. We can already see how grid operation changes at high renewable penetration by analysing Australia (NEM) and the US (ERCOT); New Zealand should learn directly from those energy-only markets, both of which allow offers to be re-submitted right up to the five-minute trading period. We note that gate closure of 15 minutes is possible under the current system, which would be our preferred. Even then it falls short of efficiently incentivising BESS investment. If the obstacle to shorter gate closure is the System Operator's system capability, then the solution investment should be prioritised; market design should not be constrained by legacy operational limitations. We acknowledge the genuine system-security considerations the System Operator raises, and we are not arguing for these to be set aside. But the costs of conservative trading and one-hour gate closure are real and recurring, fall directly on efficient BESS investment, and are ultimately borne by consumers.
Q20. Do you have any comments on our proposed Code drafting to address issue 3?	
Issue 3: Interim proposal	
Q21. Are there any other factors that need to be taken into account in adjusted capabilities under our interim proposal??	

Q22. Are there any other reasons why a BESS owner should be able to, or need to, revise their trades after gate closure under our interim proposal? If so, what are these reasons?	
Q23. Do you agree with our interim proposal to address issue 3?	Agree, and we regard the interim solution as important. We support the interim solution as a sensible workaround, but it should not be mistaken for the destination. It does not resolve the underlying inflexibility of one-hour gate closure.
Q24. Do you have any comments on our proposed Code drafting for our interim proposal to address issue 3?	
Issue 4: constrained off payments	
Q.25. Do you agree with the Authority's decision not to propose removing constrained off payments for BESSs while charging at this stage? If not, why not?	Agree, and we welcome the decision.
BESS owners' existing obligations	
Q26. Do you consider our proposed Code amendment accurately captures BESS owners' obligations in Parts 13, 14, and 15 of the Code?	
Regulatory Statement for the proposed Code amendment	
Q27. Do you agree with the objectives of the proposed amendment? If not, why not?	Agree. We would give explicit weight to supporting efficient investment in new BESS capacity, which the current arrangements discourage, and to recognising the distinct role of standalone storage. Unlike co-located storage (whose siting is usually driven by the renewable resource), standalone BESS can be located close to existing network constraints where there may be no land available for generation, which magnifies the system value of getting these market arrangements right.
Q28. Do you agree the benefits of the proposed amendment outweigh its costs?	Agree. The implementation costs are modest relative to the efficiency, competition and reliability benefits of more efficient BESS use across a growing fleet.
Q29. Can you provide any evidence or further information about potential benefits or costs?	Beyond energy arbitrage and reserves, BESS can provide synthetic inertia and can correct for intermittent renewable forecast errors and net ramp rates — services that will become increasingly valuable as solar and wind penetration rises. As that occurs, there is likely to be a need for more specific contingent services that BESS are well placed to provide,

	as already seen in markets such as the NEM and ERCOT. We encourage the Authority to analyse grid operation in Australia and the US directly, as the clearest available evidence of how these benefits materialise at high renewable penetration.
Q30. Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority's statutory objective in section 15 of the Act.	We agree the proposal is preferable to the conservative-trading alternatives. However, we want to be clear that our preferred option among those the Authority assessed is full-capacity trading with SoC constraints AND reduced gate closure — not the one-hour version. Why not 30 minutes, or 15 minutes (as it sounds like the technology platforms could support in their current format?)
Q31. Do you agree the Authority's proposed amendment complies with section 32(1) of the Act?	
Code drafting	
Q32. Do you have any comments on the drafting of the proposed amendment?	