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Electricity Authority | Te Mana Hiko

By email to:
OperationsConsult@ea.govt.nz.

Tēnā koutou,

RESPONSE TO SUBMISSION ON COMMON QUALITY AND WHOLESALE MARKET ARRAGNEMENTS FOR BESS AND BESS-HYBRID STATIONS

Unison Networks Limited (Unison) and Centralines Limited (Centralines) are consumer-owned electricity distribution businesses serving communities in Hawke's Bay, Taupō, Rotorua, and Central Hawke's Bay. Thank you for the opportunity to comment on the Electricity Authority's consultation on common quality and wholesale market arrangements for BESS and BESS-hybrid stations.

As consumer-owned entities, we operate in the best interests of the communities we serve. Guided by our vision, and values, we strive to deliver economic benefits to both our customers and community shareholders, while championing a sustainable energy future. We are committed to maintaining the right balance between keeping electricity affordable and making strategic investments that secure the long-term reliability and resilience of our network. In all aspects of our operations, we place strong emphasis on meeting industry compliance requirements, ensuring we uphold all relevant standards. This approach not only supports New Zealand's transition to new energy solutions but also enables our communities to access cleaner, smarter, and more flexible energy options, now and for generations to come.

Executive Summary

We support the Authority improving regulatory clarity for BESS and hybrid assets. Current Code arrangements, designed for conventional generation, create uncertainty for obligations, participation, and compliance.

The Authority should prioritise proportionate, technology-neutral settings that reflect system outcomes at the point of connection and support efficient investment.

We support:

- Removing ambiguity and adopting the five-level asset classification framework
- Station-level assessment of obligations, aligned with actual system impact
- Proportionality, ensuring obligations, telemetry, and idle-state requirements are justified by system benefit
- Technology neutrality, with consistent treatment regardless of connection point
- Explicit recognition of distribution-connected and aggregated assets (e.g. VPPs)
- Greater consideration of connection-point specific impacts (voltage, harmonics, visibility)

The framework must also:

- Align with harmonics and network visibility workstreams
- Remain adaptable to future flexibility and distributed participation
- Avoid introducing costs that deter efficient deployment of storage

International experience suggests that effective integration of hybrid and storage assets has relied on outcomes-based, technology-neutral frameworks that assess performance at the point of connection (e.g. Australia's NEM), alongside progressively enhanced visibility and dispatch arrangements (e.g. UK and US ISO markets).

A consistent theme is avoiding overly prescriptive asset-level requirements that constrain optimisation or impose uncompensated obligations.

The Authority should ensure New Zealand adopts a similarly flexible, system-outcome-focused approach, rather than embedding detailed prescriptive requirements that may limit efficient hybrid operation as the market evolves.

1. Balancing Operational Certainty and Investment Efficiency

We support improving operational clarity for the System Operator as BESS deployment increases.

However, obligations should be guided by a clear test: do the system benefits outweigh the costs imposed on investment and consumers?

The Authority should prioritise options that:

- Deliver required system outcomes
- Minimise compliance complexity
- Preserve flexibility in asset design and operation

This is particularly important for idle-state obligations and compliance frameworks, where costs may arise without corresponding revenue streams.

2. Support for the Five-Level Asset Classification Framework

We support the proposed framework as a better reflection of modern inverter-based and hybrid assets.

However, each classification layer must clearly improve operational understanding or compliance clarity. The Authority should avoid introducing definitional complexity that does not deliver measurable system benefit.

3. Asset Owner Performance Obligations for Idle BESS Operation

Obligations for idle operation should be strictly proportionate to demonstrated system value.

- Voltage support: may be appropriate where low cost and system benefit is clear
- Frequency obligations: require stronger justification, particularly where there is no market revenue

Where services are valuable, market-based procurement is likely more efficient than mandatory obligations.

4. Frequency Management Obligations

We support station-level obligations, as this aligns with how the system experiences performance.

This approach:
- Reflects actual system outcomes
- Reduces compliance complexity
- Avoids unnecessary battery cycling
- Supports innovation in hybrid design

BESS should not be required to compensate for other assets where obligations are not applied equivalently. Maintaining technology neutrality is critical.

5. Wholesale Market Arrangements

Greater clarity is needed for hybrid participation.

Arrangements should:
- Reflect physical capabilities of hybrid assets
- Avoid unnecessary metering complexity
- Remain adaptable to evolving configurations

The Authority should prioritise outcomes-based approaches that enable flexibility rather than prescribing structure.

6. Future Flexibility Market Integration

We acknowledge that distribution-level flexibility and local network services are outside the immediate scope of this consultation.

However, BESS deployment is increasingly multi-functional and system wide. Storage assets are expected to participate across wholesale energy, reserves, and ancillary services, while also supporting voltage management, congestion relief, non-network solutions, and distribution-level flexibility services.

The operational and compliance frameworks established through this work will therefore directly influence how effectively these resources can participate across multiple value streams and coordinate across system layers.

Equivalent treatment across connection points

While this consultation is focused on transmission-connected assets, the Authority should explicitly consider whether the proposed arrangements deliver equivalent and technology-neutral treatment for:

- distribution-connected BESS
- behind-the-meter storage
- aggregated resources (including virtual power plants)

A growing share of future deployment is expected to occur in these forms. If the framework is implicitly designed around transmission-connected plant, there is a risk that:

- equivalent services are subject to different or misaligned obligations
- participation pathways for distributed and aggregated resources are less clear or more complex
- efficient investment signals are distorted across connection points and business models

The Authority should therefore apply a clear principle:

Assets providing equivalent system services should face equivalent obligations and be able to participate on comparable terms, regardless of connection point or aggregation model.

Failure to do so risks embedding a transmission-centric framework that does not scale efficiently to a more distributed, inverter-based system.
Implications for framework design

To remain effective over time, the framework should:

- support coordination between wholesale and distribution-level services
- enable participation by aggregated and behind-the-meter resources
- avoid hard-coding assumptions about asset location or configuration
- remain adaptable as flexibility markets and operational models evolve

Taking this approach will improve investment certainty, support efficient deployment, and ensure the framework remains aligned with the direction of system transformation.

7. System integration and Alignment

BESS integration sits within broader system changes, including:

- HV network visibility
- Harmonics and power quality frameworks
- Increasing inverter-based penetration

The Authority should ensure consistency across these workstreams, avoiding overlapping or conflicting obligations.
A coordinated approach will:

- Improve investment certainty
- Support efficient deployment
- Reduce implementation risk

Additional Considerations

- Technology neutrality: consistent treatment across generation, storage, and hybrids
- Service stacking: enable participation across multiple value streams
- Transmission–distribution coordination: recognise cross-network impacts
- Implementation practicality: ensure telemetry and compliance are proportionate

Clarification of preferred options

While our submission focuses on the key principles that should guide the Authority's approach, these can be readily mapped to the options presented in the consultation. In

general, we support approaches that maintain proportionality of obligations, avoid imposing costs where there is no clear system benefit, and enable flexibility through station-level arrangements where appropriate. We are comfortable with the Authority interpreting our submission as favouring options consistent with these principles.

Metering and DC-coupled configurations

Metering requirements should be no more granular than necessary to support dispatch, settlement, and compliance outcomes, particularly for DC-coupled configurations.

Injection constraints and scheduling

Scheduling should reflect physical constraints where this improves system efficiency without introducing material additional complexity.

Conclusion

We broadly support the Authority's direction.

The effectiveness of the framework will depend on implementation. Obligations must remain:

- Proportionate
- Operationally practical
- Flexible to evolving technologies

Getting this balance right will determine whether the framework supports efficient investment and delivers consumer benefit or creates unnecessary cost and complexity.

Ngā mihi nui,

JASON LARKIN / TARRYN BUTCHER
GM COMMERCIAL AND REGULATORY / REGULATORY MANAGER
TARRYN.BUTCHER@UNISON.CO.NZ

Format for submissions

Common quality and wholesale market arrangements for BESSs and BESS-hybrid stations – Issues and options consultation paper

Submitter	Unison Networks and Centralines

Section 3: Terminology

Questions	Comments
Q3.1. Do you support the proposed 5-level structure for generating asset definitions?	The proposed framework better reflects modern inverter-based and hybrid assets and improves regulatory clarity. It provides a credible foundation for future Code development.
Q3.2. Do you foresee any implementation issues or unintended consequences associated with the 5-level structure for generating asset definitions?	The key risk is added compliance complexity without operational benefit. Each classification level should be retained only where it improves system understanding or compliance outcomes. The framework must also remain adaptable to evolving technologies.
Q3.3. Do you have any feedback on the System Operator's recommendations in its *Hybrid Plant Integration* report?	We broadly support the System Operator's recommendations, particularly improving visibility and clarity of obligations. However, implementation should remain outcomes-focused and proportionate, avoiding additional compliance layers that do not improve system performance.

Section 4: Asset owner performance obligations for 'idle' BESSs and BESS-hybrid stations

Questions	Comments
Q4.1. Do you agree with how the Authority has defined the 'idle' operating state of a BESS and a BESS-hybrid station? Please give reasons if you do not agree.	The definition is appropriate. It clearly distinguishes assets that remain electrically connected but are not actively providing services, enabling proportionate consideration of obligations.
Q4.2. Do you consider that frequency management obligations should apply to an idle BESS and an idle BESS-hybrid station? Please give reasons if you do not agree.	We are cautious about applying frequency obligations in the idle state. These should only be applied where system benefits are clearly demonstrated and costs are recoverable. Market-based procurement is likely more efficient where services are valuable.
Q4.3. Do you consider that voltage support obligations should apply to an idle BESS and an idle BESS-hybrid station? Please give reasons if you do not agree.	Voltage support obligations are more justifiable where they can be delivered at low cost with tangible system benefit. However, they should remain proportionate and not deter investment.
Q4.4. Do you foresee any implementation issues or unintended consequences that we have not discussed in this paper?	Key risks include: • incentives to alter operating states to avoid obligations • uncompensated costs reducing investment • misalignment with future flexibility markets • increased monitoring complexity

	Design should avoid creating barriers to storage deployment.
Q4.5. What do you consider to be the key benefits and costs associated with applying frequency- and voltage-related AOPOs to BESSs and BESS-hybrid stations in the 'idle' operating state? Please quantify these benefits and costs if possible.	Benefits: increased availability of system support, improved resilience Costs: compliance burden, telemetry, battery degradation, reduced investment incentives Application should depend on whether benefits materially outweigh these costs. Quantification is not currently available.

Section 5: Applying the AOPOs to BESS-hybrid stations

Questions	Comments
Q5.1. Which option for applying frequency AOPOs to BESS-hybrid stations that are in the injection or consumption operating state do you support? Please give reasons for your answer.	We support Option 2A (station-level obligations). This best reflects system impact and preserves flexibility for asset optimisation.
Q5.2. Do you consider there to be options for applying frequency AOPOs to BESS-hybrid stations in the injection or consumption operating state that are preferable to those identified by the Authority? Please give reasons for your answer.	No preferable alternative identified. Option 2A provides the strongest balance of system alignment, simplicity, and technology neutrality.
Q5.3. Do you foresee any implementation issues or unintended consequences associated with applying the frequency AOPOs to BESS-hybrid stations in the injection or consumption operating state that are not identified in this paper?	The primary risk is that overly prescriptive compliance arrangements could constrain innovation in hybrid plant design and operation. The Authority should avoid creating obligations that require BESS components to compensate for limitations of other technology components where equivalent obligations do not apply to standalone assets.
Q5.4. What do you consider to be the key benefits and costs associated with the options for applying frequency AOPOs to BESS-hybrid stations that are in the injection or consumption operating state? Please quantify these benefits and costs if possible.	Benefits include: • simpler compliance assessment; • reduced monitoring complexity; • technology neutrality; • support for innovation and operational optimisation. Potential costs are limited and largely associated with updating operational and compliance frameworks.
Q5.5. Which option for applying the voltage support AOPO to BESS-hybrid stations that are in the injection or consumption operating state do you support? Please give reasons for your answer.	We support a station-level approach. Compliance should reflect outcomes at the point of connection, not internal configuration. .
Q5.6. Do you consider there to be options for applying the voltage support AOPO to BESS-hybrid stations in the injection or consumption operating state that are preferable to those identified by the	No preferable option identified. Station-level obligations maintain accountability while preserving flexibility.

Authority? Please give reasons for your answer.	
Q5.7. Do you foresee any implementation issues or unintended consequences associated with applying the voltage support AOPO to BESS-hybrid stations in the injection or consumption operating state that are not identified in this paper?	Implementation should align with harmonics, system strength, and inverter frameworks to avoid conflicting obligations.
Q5.8. What do you consider to be the key benefits and costs associated with the options for applying the voltage support AOPO to BESS-hybrid stations that are in the injection or consumption operating state? Please quantify these benefits and costs if possible.	Benefits: flexibility, alignment with system outcomes, reduced complexity Costs: implementation adjustments Benefits are expected to outweigh costs.
Q5.9. Do you consider that clause 8.23 should be revised to move the point of compliance from the generating unit terminals to the point of connection to the transmission network (on the high voltage side of the connection transformer)? Please give reasons for your answer.	es. Measuring at the point of connection better aligns with actual system impact and improves clarity.
Q5.10. Do you consider there to be an alternative that is preferrable to a reactive power export/import requirement of ±39.5% or ±33% of maximum continuous MW output power, measured at the generating station's point of connection to the transmission network (on the high voltage side of the connection transformer)? Please give reasons for your answer.	No preferred alternative. Final settings should remain technology-neutral and practically achievable.
Q5.11. Do you foresee any implementation issues or unintended consequences associated with moving the point of compliance under clause 8.23 from the generating unit terminals to the point of connection to the transmission network that are not identified in this paper?	Key risk is inconsistency with connection agreements and emerging technical frameworks. Alignment across these areas is important.
Q5.12. What do you consider to be the key benefits and costs associated with moving the point of compliance under clause 8.23 from the generating unit terminals to the point of connection to the transmission network? Please quantify these benefits and costs if possible.	Benefits: clearer compliance, improved transparency, alignment with outcomes Costs: monitoring updates, potential retrofits Approach is justified where benefits exceed transition cost.
Q5.13. Do you consider that legacy arrangements would be needed for existing generation? Please give reasons for your answer.	Yes. Transitional arrangements may be required to avoid inefficient retrofit costs for existing assets.

Section 6 questions: Wholesale arrangements for BESS-hybrid stations

Questions	Comments
Q6.1. Do you agree with the preferred option of requiring BESS-hybrid stations to offer by technology component except in certain circumstances, over the alternative option of creating new obligations for BESS-hybrid stations? If not, why not?	We support the preferred option. It maintains alignment with existing market structures while avoiding unnecessary new obligations.
Q6.2. Do you agree with our characterisation of the benefits and costs with our preferred option? Are there any other aspects we should consider?	We agree with the assessment. A key additional benefit is preserving flexibility for future market evolution. .
Q6.3. Do you agree station dispatch arrangements should be extended to accommodate BESS-hybrid stations that are offered by technology component? What, if any, other issues do you see with the station dispatch arrangements that are in addition to those identified above?	Yes. Extending station dispatch arrangements is a practical and proportionate solution, provided flexibility is maintained for future configurations.
Q6.4. Considering the options above, how should the System Operator manage network injection from a BESS-hybrid station where injection is limited by inverter capacity? What implications would this have on your processes or systems?	Injection limits should be managed based on whole-of-station physical capability, avoiding unnecessary dispatch or metering complexity unless clearly justified.
Q6.5. Do you agree with our preferred approach to calculating constrained costs for DC-coupled BESS-hybrid stations? Can you provide any insights about what metering arrangements would be required to enable this approach?	The approach is broadly appropriate. Metering requirements should be no more granular than necessary to support settlement and dispatch, particularly for DC-coupled configurations. Future interactions with distribution-level services should also be considered.