31 July 2025

Future Security and Resilience team
Electricity Authority
By email: fsr@ea.govt.nz

Tēnā koe,

A regulatory roadmap for battery energy storage systems – consultation

We welcome the opportunity to respond to the Electricity Authority (**Authority**)'s paper on a regulatory roadmap for battery energy storage systems (**BESS**). BESS will be key in the delivery of a least cost and secure transition in Aotearoa New Zealand, particularly because BESS creates greater demand-side and supply-side flexibility. We recognise that a proportional and appropriate regulatory response to the increased uptake in BESS is necessary to ensure that this flexibility is optimised, and consumers have the ability to effectively interact with the electricity grid if they want to.

Regulatory settings must encourage both uptake and interaction, rather than acting as a barrier. Although we broadly support the roadmap, we have identified opportunity areas and have some concerns, which we raise through-out this submission. We would like to emphasise that each regulatory and strategic change set-out in this roadmap must be consulted on to ensure that markets are competitive, there are appropriate market incentives, and the supply of electricity is safe and reliable.

Our summary observations are:

Any regulatory changes must be proportional to the benefits they offer and support the development of markets

- This is an emerging and dynamic space that interacts with a complex and continuingly evolving industry. Any regulatory changes must ensure that the market can continue to develop and maintain its competitiveness – by not picking winners and losers.
- We support a goal of minimising the cost of the transition while maintaining safe and reliable supply. Non-network flexibility solutions, including BESS, will help achieve this.
- All industry participants will require appropriate market incentives. Over incentivisation could result in network reliability and supply issues and create unintended consequences, including increased costs to consumers in the long term.

Agreeing what BESS are will help reveal their benefits

- The Authority needs to clarify its definition of a BESS – this is particularly important in a legislative context, and also relevant for treatment in the connection queue.
- The roadmap ignores the role of distribution connected BESS. Powerco believes these BESS will play an important role in the future flexibility of the network, and in outage management, while supporting the future market. We can provide the authority with insights on numerous practical examples of distribution connected BESS.
- We would appreciate clarity on a roadmap, or directional plan, for ESS more generally, particularly given the dynamic and fast-paced nature of this space.

Broader limitations within the sector could hold up BESS deployment

- Without a complete understanding of how investment incentives impact customers and industry participants, alongside other uptake uncertainties, it will be difficult to predict how BESS, and ESS more generally, will evolve.
- Although there are current limitations within the forecasting space, centralising intermittent forecasts may not align with a distributions system operator (DSO) future, where DSO's will have deep visibility into the network.
- The lack of low voltage (LV) data, and the lack of data sharing across networks will impact the effectiveness of consumer BESS uptake.

Powerco is in a strong position to provide unique data, insights, and operational understandings in this space, which could help to shape future policy, strategic and market thinking. We see value for both Powerco and the Authority in meeting to share insights and test thinking. To arrange such a discussion, or if you have any questions on the points we have raised in the submission, please contact Emma Wilson (Emma.Wilson@powerco.co.nz).

Nāku noa, nā,

Emma Wilson
Head of Policy, Regulation and Markets
POWERCO

1. Any regulatory changes must be proportional to the benefits they offer and support the development of markets

BESS, ESS, and other non-network flexibility solutions are all part of an emerging and dynamic space that interacts with a complex, layered and continuingly evolving industry. While BESS provides an opportunity to minimise the cost of transition, it is important that regulatory changes are appropriate, proportional and ensure the market can continue to develop and maintain its competitive nature.

1.1. BESS will be key in minimising the cost of transition

We agree that BESS will be key in minimising the cost of transition in Aotearoa New Zealand. We believe this is due to the demand-side and supply-side flexibility created by BESS. BESS can also be scaled, so long as it is economically viable, to suit the circumstances of a large range of customer, industry and community types.

We see BESS as a key tool in increasing supply-side flexibility, as increased intermittent low-cost generation will require complimentary energy storage. At the same time, increased intermittency will displace other forms of generation, which will require a greater number of fast response ancillary services such as BESS.

Electrification will result in steep demand change across the existing network, which will present numerous constraints given original networks were not designed for such a reality. BESS is invaluable in avoiding upgrades solely to accommodate additional demand or deferring upgrades until an asset's end of life replacement. This is particularly valuable for low-voltage network infrastructure.

BESS can also be used to improve the reliability of supply during an outage, meaning BESS could be a key tool in facilitating network improvements. We see BESS as both a non-network solution that increases network flexibility, and as a tool to provide resilience and reliability as networks progress works necessary for the transition.

1.2. Allowing the development, and supporting the competition, of markets

The roadmap highlights numerous regulatory responses that the Authority plan on developing in response to BESS uptake, which includes assumptions about the future direction of the market. We support the development of a roadmap.

It is important, however, that the roadmap and any regulatory changes that occur as a result, allow for the continued development of how BESS and ESS are engaged in the market. This means that regulatory changes not only need to be structured around the current market but also need to allow the market to naturally take shape through competition.

Future regulatory changes and frameworks must be consulted on, so industry bodies have the ability to engage with the Authority on the state of the market, it's near-term direction, and whether the proposed changes would create any barriers or have unintended consequences. As an electricity distribution business (EDB) and an industry participant, Powerco has unique insights that will help the Authority gain a deeper understanding about the current market, and the possible future direction of the market.

1.3. Balancing BESS uptake and the safety and reliability of supply

The Authority's roadmap correctly identifies and acknowledges the greater role that de-centralised generation and supplementary technology, such as BESS, will play in the future of the network. It also identifies how this will increase network flexibility. However, the roadmap does not include comments about how de-centralised generation could impact EDBs.

The regulated business model and accountabilities of EDBs mean that EDBs have a responsibility to minimise losses, maintain quality in their supply, and an efficient level of security and reliability. Increased de-centralisation, especially when that de-centralisation does not have appropriate regulatory settings and frameworks around it, could have a significant impact on the network, particularly if take up occurs at a rate faster than natural market growth.

Although we take our obligation to maintain a secure and reliable supply that minimises losses seriously, we think there is a need for the Authority to reflect possible network impacts, and flow on implications, in its development of regulatory settings for BESS and other forms of de-centralising technology. Again, Powerco would appreciate the opportunity to discuss these issues with the Authority and provide insights into how regulatory settings can strike the right balance between market competition and maintaining the quality and reliability of supply.

1.4. Appropriate regulatory settings and incentives

Appropriate regulatory response and incentives will be key in ensuring the market can develop and be competitive, whilst balancing take up with the safety and reliability of supply. Powerco is of the view that the market will provide the appropriate incentives needed for both industry participants and customers, and that the introduction of regulatory or other non-market developed incentives may distort market outcomes. However, in the event there are barriers, regulatory response may be required.

We believe there should be a focus on ensuring there are appropriate regulatory settings that allow any incentivisation developed through the market to flow through to industry participants and consumers, such as allowing industry participants to develop business and pricing models related to BESS. To ensure regulatory changes and settings are appropriate, each regulatory and strategic change set-out in this roadmap must be consulted on.

2. Agreeing what BESS are will help reveal their benefits

Agreeing on what BESS are, how they are legislatively defined, and the nuance between the different classifications of BESS will ensure that the regulatory settings surrounding BESS are fit for purpose and reflect how customers and industry participants utilise BESS.

2.1. Load, distribution generator, or both?

How a BESS is defined (particularly legislatively) will determine how customers and industry participants (such as EDBs) can interact with a BESS and with each other. The most important part of the BESS definition, in our view, is whether BESS is a load, a distributed generator, or both.

We believe that the Authority should clarify their view on this matter. The following questions may help the Authority's consideration of how to define BESS for legislative and regulatory purposes:

1. Is there an intention for EDBs to be able to charge connection costs for BESS above incremental costs as contemplated in the Authority's February 2025 consultation paper on the distributed generation pricing principles?[1] Currently, the Code only allows EDBs to charge up to the incremental cost for distributed generation. This means, if there is an intention, or a future intention, for there to be an ability to charge above incremental costs, a distribution generation definition for BESS will be limiting.
2. Can EDBs recover ongoing shared costs through network tariffs? And if so, is this just in relation to charging? If this is the intention, then it is likely that BESS will, at least in some capacity, need to also be defined as a load.
3. Can EDBs use price signals to allocate export (or import) capacity when constrained?

Although the roadmap covers the Authority's intention to change definitions, we think it is imperative that there is industry wide consultation on these definitions, and a shared understanding before prescriptive legislative or regulation changes are made.

The Commerce Commission considered the regulatory treatment of EDB-owned batteries in a staff discussion paper as part of its 2015 Input Methodologies review.[2] Uptake has accelerated over the last decade, and both the Commission and the Authority have provided specific relevant guidance on cost allocation, related party transactions and EDB involvement in markets for flexibility services. It is important that future regulatory decisions by the Authority are consistent with and build on the Commission's regime as well as its own.

2.2. Treatment in connection queue

We recommend that the Authority clarify how BESS should be treated in the connection queue. Currently, BESS is assessed either as load (when charging) or as generation (when discharging), but not as a single asset with both behaviours. This creates uncertainty for applicants and may delay or disadvantage storage projects, even when they provide network benefits such as reducing peak demand or relieving congestion.

2.3. Distribution connected BESS for network purposes

Distribution network connected BESS installed to support a wide range of network needs is becoming more common. The technical and operational characteristics of network installed BESS can vary greatly. Powerco are of the view that distribution connected BESS use cases need to be considered further by the Authority, particularly when developing definitions and designing regulation, in order to avoid disincentivising the use of BESS when they

[1] https://www.ea.govt.nz/projects/all/distribution-pricing/consultation/distributed-generation-pricing-principles/
[2] IM-review-emerging-technology-pre-workshop-paper-30-November-2015.pdf

are the optimal solution or disincentivising the interaction of network BESS with unregulated markets. We note that this is an emerging space, and it is difficult to predict the exact role and scale that distribution connected BESS will have in the future of the network.

Powerco have a unique understanding of such BESS and have lived experiences with their application within different network and community settings. The Whangamatā BESS project, which improves reliability and prevents outages for the town's central business district, the Greerton trial, where low voltage BESS has been installed on some power poles and the Ngātea outage response which utilised BESS during an outage, all provide unique examples of how Powerco has utilised BESS at a network level to ensure flexibility and reliability of supply for a community.

We would appreciate the opportunity to discuss such projects with the Authority, including sharing insights we have about the role and application of such projects, the regulatory settings needed to ensure they are viable and successful, and any data we have gathered as a result of our projects.

2.4. An ESS roadmap more generally

As technology and markets develop, ESS will continue to develop. Although we agree that there is a need for a BESS roadmap, we also see the need for an ESS roadmap more generally.

Rather than being reactive to market changes, we see benefits in planning for a future where ESS uptake is more significant and localised than expected, to ensure the regulatory responses are appropriate and timely. There will naturally be a cumulative network impact from the simultaneous uptake of BESS and other ESS, which will need awareness, understanding and communication across the industry to avoid potential issues and silo impacts. Early discussions will help to ensure this. Powerco would appreciate the opportunity to be involved in such conversations, and believe we have insights that will be useful in developing early-stage thinking.

3. Broader limitations within the sector could hold up BESS deployment

The current limitations within the energy sector in Aotearoa New Zealand could impact the deployment and uptake of BESS. These limitations are broadly developed through a lack of understanding, driven by data and forecasting issues. We see potential opportunity for some of these limitations to be partially addressed through the development of regulatory settings for BESS.

3.1. Understanding customer incentives

We are still learning what incentivises customers and industry participants to change their energy patterns, invest in new technologies, or interact with the network in new ways. If part of the Authority's goal is to enact appropriate incentives for customers and industry participants to not only take-up BESS solutions, but to also interact with each other through BESS, it may not be clear what responses will result from different incentives. As highlighted in our response, given there is a need for regulatory settings to simultaneously ensure regulation is not a barrier, allow the market to respond and remain competitive, and provide proportional incentives, the lack of understanding in this

space will make incentive design difficult. This will be compounded by the fact that BESS, and ESS, is an evolving space, and so too is how customers respond to incentives, and what they value.

Despite this industry wide issue, Powerco (and other industry participants) have undergone various projects in an attempt to better understand customer behaviour, and reaction to differing incentives. Powerco is also committed to continuing to develop its understanding. We see an opportunity for us to share our insights and understanding with the Authority, as well as discussed how planned future projects may be helpful for future policy and strategic thinking.

3.2. Forecasting

We note that the roadmap outlines a solution to current network forecasting issues by proposing a new hybrid forecasting arrangement which seeks to improve the accuracy of forecasting wind and solar generation capabilities.

As load patterns change and DSOs begin to own and have access to more data as the distribution system becomes more decentralised, there is a significant opportunity for DSOs to improve centralised forecasting, given they will have deeper visibility into the network and small-scale distributed energy sources. We would be interested in discussing this with the Authority, in particular to gain an understanding of how the Authority intends to reconcile centralising forecasting in a context of greater decentralising, and how they intend to structure interactions and information sharing (if any) between industry participants to ensure forecasting is reliable.

3.3. Data and data sharing issues

There are currently data issues, inaccuracies, and blind spots across the industry. Because BESS is dynamic, and because it can interact with the network at multiple different levels, these data issues present numerous challenges. Notably, there is not a complete overview of LV networks across the country. How BESS interacts with these networks, when and how often, may not visible, which will make future modelling and regulatory changes difficult.

Although this is still an emerging space, and the answers are not completely clear, we would like to discuss with the Authority how regulatory settings, including definitions of BESS, may have an impact on data as well as how regulatory settings could be used to develop data related to BESS. Powerco is currently working on congestion modelling and LV data improvement projects the insights, opportunities and learnings from which we could discuss with the Authority if this is of interest. Such information may help the Authority in its thinking on applications and fees related to LV.

Currently there is a lack of data sharing between industry participants. Regulatory roadmaps and changes for decentralising technology, such as BESS, presents an opportunity to consider if more robust data sharing is required across the sector, and if so, how would this work. Again, Powerco is of the view that we can provide insights in this space.