19 August 2025

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

Tēnā koutou,

The future operation of New Zealand's power system

Powerco welcomes the opportunity to contribute to the Electricity Authority (**Authority**)'s consultation on the expected capabilities and functions needed from electricity distributors, the system operator, traders, and/or various third parties.

As an "issues and options" paper, the Authority proposes three Distribution System Operator (**DSO**) models. Debating models for future industry architecture seems somewhat premature at this stage. We encourage the Authority to focus on outcomes sought for consumers and the capabilities necessary to deliver them. Determining model options before we're clear on capabilities and functions risks suboptimal decisions being made in an area critical for New Zealand's evolving energy landscape and an increasingly electrified economy.

The hybrid model maintains optionality	• We support the Authority's preference for some version of the hybrid DSO model, as it provides flexibility to deliver benefits to consumers as part of the wider energy system. • We caution against picking one variant of "DSO" as a 'winner' by overly incentivising it. • The hybrid model is the only model with flexibility to maintain optionality.
Define capabilities, roles and functions first	• Capabilities, roles and functions should be clearly defined prior to determining which entity they sit with and the appropriate DSO model. • The Baringa report is a good starting point, as it details the likely allocation of the 62 functions that EDBs will require to support a least cost secure transition. • Understanding these capabilities is fundamental to enable them to develop and evolve over time.
The NZ context calls for a tailored solution	• Learnings from Australia and Britain are useful base for discussions. • However, differences and similarities need to be understood when comparing to other jurisdictions. A key difference is the unique New Zealand nodal spot market, which obviates much of the bulk flex that overseas markets contract to manage grid constraints. • The overseas drivers for an iDSO are less relevant in the New Zealand context and could potentially preclude competition and innovation for the required capabilities.

We comment on these observations in our responses to the consultation questions attached. We are always keen to meet with the Authority to discuss and develop the ideas in our submissions. In the meantime, if you have any questions or would like to talk further on the points we have raised, please contact Emma Wilson (Emma.Wilson@powerco.co.nz).

Nāku noa, nā,

Emma Wilson
Head of Policy, Regulation and Markets
POWERCO

Responses to the Authority's consultation questions

Questions	Comments
Q1. Do you agree with the explanation of the distribution system operator (DSO) role/ entity, and the explanation of the distribution system operation (DSO) functions that one or more DSO entities would be required to perform?	We agree that one or more DSO entities are likely to be required to perform distribution system operation (DSO) functions. We do not believe that enough consideration has been given to the definition and explanation of how the distribution system operator (DSO) role/entity would interact with wholesale and retail markets. As the Authority's 2024 consultation on *The future operation of New Zealand's power system*[1] noted, generation dispatch through the market involves the real time balancing of whole of system supply and demand – there is no directly equivalent role for EDBs. By contrast, the operational aspects of "network constraint management" (i.e. considering the grid as a "network") has a direct distribution parallel, including managing large interconnected DG, albeit with significant contextual differences. Understanding subtle differences like these between Transpower system operation functions and DSO functions will ensure that decisions on DSO models aren't made that distort energy markets. The ENA's Future Networks Forum initial assessment of Capabilities, roles and functions to enable distributed flexibility[2] in provides a good basis through distinguishing between roles and functions and the terminology used in NZ, Australia and Great Britain. This taxonomy identified 16 core functions delivered through 62 enabling activities that EDBs will require to support a least cost secure transition. We support Authority engagement with this work and continued work around the ENA FNF "capabilities, roles and functions" which are already geared to the New Zealand context.
Q2. Do you think we are correct that the themes we identified in submissions to the initial consultation paper mean we should focus mostly on system operation at the distribution level, and on the new functions required for effective distribution system operation?	Yes. Equally important to focusing on the functions required for effective distribution system operation, is how to efficiently organise the functions to enable outcomes that ensure long term benefit to consumers, by: • Lowering the cost of the regulated service, and • Enabling consumers to use the network in new ways. While focusing on system operation at the distribution level is key, the wider energy system needs to always be considered due to very nature of it being a system. An example of this is how decentralisation and DER uptake requires careful consideration of how distributed resources are efficiently deployed within the wholesale and retail markets, while ensuring there is visibility and coordination across distribution, grid and generation dispatch to ensure a stable and reliable system. The

[1] https://www.ea.govt.nz/documents/4479/The_future_operation_of_New_Zealands_power_system_.pdf Table 1 on p. 18
[2] https://ena.org.nz/assets/2024-Sept-Webinar-capability-roles-and-functions-presentation.pdf

Questions	Comments
	wholesale market is already effective in regard to central generation dispatch and grid security but may require improvements in forecasting as DG intermittency and DER create more uncertainty and variability in grid power flows and overall system demand. It is inevitable that distributed solutions will play a vastly larger role in the future of our energy system than they have in the past due to the exponentially improving price-performance of DERs. This drives a growing need for additional capabilities to manage the future system, especially in the distribution space. Conceptually, a DSO is an entity that encapsulates these, plus traditional DNO responsibilities. We would therefore recommend more immediate focus on understanding these capabilities, and the complex interactions between them, before attempting to define which entities they sit with. In terms of the DSO models presented, the hybrid model offers the most flexibility in how industry architecture, roles and responsibilities can evolve.

Q3. Do you think we have accurately covered the main changes to the distribution system in this section? If not, what have we missed or where have we gone wrong?	Enabling the two key consumer benefits in Q2 will require new EDB capabilities in two areas:
	
	1. Lowering the cost of the regulated service by deferring or avoiding network capex and operational costs.
	
	• Planning & Network Development
	  ○ Customer insights
	  ○ Demand forecasting
	  ○ LV visibility
	  ○ Network model
	  ○ Probabilistic planning
	• Market development
	  ○ Engaging flex in the market
	  ○ Flexible network pricing
	
	2. Enabling consumers to use the network in new ways by supporting bidirectional flow and trading on local networks
	
	• Network operation
	  ○ Operational capabilities
	  ○ Flexibility management system (ADMS DERMS).

Q4. Do you agree with how we have defined the problem, as the need for a more coordinated framework of integrated system operation?	Yes, we agree with the need for a more coordinated framework. However, we consider further work on the DSO models as they are described in the consultation and diagrams needs to occur, to minimise interface complexities between markets.

Questions	Comments
Q5. In your view, what aspects of the Australian and British deliberations around DSO models are relevant to New Zealand?	The ENA FNF's *Capabilities, roles and functions to enable distributed flexibility* and associated Baringa report[3], adequately discuss the mapping of British and Australian distributor capabilities and should be used as the starting point for discussions. It is the differences as much as the similarities that need to be understood when considering other jurisdictions. A key material difference of note is understanding the unique New Zealand nodal spot market, as it is a major differentiator with UK and Australia. The New Zealand market can resolve all grid constraints via the market, which obviates much of the bulk flex that overseas markets "contract" to manage grid constraints. This doesn't directly impact a DSO, but it appeared to give impetus to the 'contracted approach' in overseas jurisdictions (particularly the UK), especially given these were the high value and easily identifiable flex needs. Use of distribution price signals, in a highly complementary manner to the nodal spot price, looks to have been largely over-looked.
Q6. What do you think about the direction of research conducted in New Zealand by bodies such as the ENA, NEG and SIDG on the challenges of preparing to perform DSO functions?	As mentioned previously (Q1 and Q5), they provide a good basis for understanding the capability, roles and functions required for a future system operator.
Q7. What is your view about the need for an independent DSO (iDSO)? Should we consider an iDSO now as an option to perform all DSO functions, or a subset of functions related to market facilitation? Or can that decision wait until the market for flexibility services is more developed?	The overseas drivers for an iDSO are less relevant in a New Zealand context and potentially would reduce competition and innovation for the capabilities EDBs will require to meet consumer needs in future. This is given the background that each EDB could use a different permutation of collaboration, outsourcing and in-house delivery to meet each of the 62 activities identified in the ENA FNF's Capabilities, roles and functions to enable distributed flexibility to support a least cost secure transition. Inclusion of an iDSO in the cost benefit analysis on possible models would quickly conclude the inefficiency in a New Zealand context.

[3] Baringa, Potential models for distribution system operation in Aotearoa, April 2025

Questions	Comments
Q8. What do you think about the three DSO models proposed by the Authority?	Considering three potential DSO models at this stage has limited benefit until capabilities, roles and functions are clearly defined, and those capabilities and potential models are subject to detailed assessment and cost benefit analysis. They are valid options and provide useful reference points for discussions, as demonstrated by their inclusion in the Baringa report. The industry needs to be careful not to 'pick' one variant of "DSO" as a 'winner' by overly incentivising it, as this will lead to adverse consequences. Ensuring a level playing field for the most efficient investment in providing energy to customers must be the goal and, as the GPS notes *It is not the Electricity Authority's role to prefer one form of supply over any other*[4].
Q9. Do you prefer one model over the others?	At this stage with the information available and our first-hand experience, we support the Authority's preference for some version of the hybrid DSO model out of the three described. Early indications are that the hybrid is the only model with the flexibility to accommodate the majority of identified capabilities efficiently, as shown in table 2 of the consultation document. Until further detailed work to understand the core capabilities and functions is undertaken and a subsequent full cost benefit analysis is conducted of possible models, we consider it prudent to retain optionality. Development in the evolving energy system and market is rapid and will help inform decisions, not selecting a preferred model at this time will ensure that no efficient options are removed or incentives created for a sub-optimal model.
Q10. Given the hybrid model can take several forms, what do you think would be the best allocation of DSO functions between the TSO and one or more distributors as DSOs?	The ENA FNF Capabilities, roles and responsibilities paper and the Baringa report provide a strong indication of the likely allocation of a significant portion of the 62 identified functions that have clear alignment to the TSO or DSOs in a hybrid model. The challenge is those remaining functions that could be aligned with either. As such we consider that is it is too early to focus on assigning functions until further work has occurred to assess options to deliver the most long-term benefits to consumers.

[4] *October 2024 Statement of Government Policy to the Electricity Authority*, Minister for Energy. Paragraph 31.d

Questions	Comments
Q11. How would you rank the DSO models in terms of enabling the process of price discovery in the market for flexibility services to approach the wholesale market ideal of security-constrained economic dispatch	Rather than ranking the DSO models, the focus should be on understanding and enabling the mechanisms and capabilities for price discovery in the market for flexibility services. Some form of security constrained economic dispatch at distribution is worth exploring, but there are considerable challenges, complexities and costs which could outweigh the limited value opportunity at the distribution level. We would be keen to work with the Authority to consider and potentially trial such an option, in accordance with MDAG's recommendation. There are a number of other simpler mechanisms that exist to support the price discovery in distribution flexibility which allow for varying degrees of granularity, dynamism, and transparency to allow for efficient dispatch of flexibility resources: • Locational (e.g. TOU) pricing, such as requiring distributors to pay rebates for peak-time consumer supply – potentially with stronger locational price signals specific to the area of constraint • Flexibility procurement – which allows for more granular credit for export than pricing • Dynamic pricing – which can engage flexibility in management of the many security constraints at the distribution level. They all have different roles to play at different times, under different circumstances, which are likely to be complementary. When considering the enablement of price discovery in the flexibility market, we encourage the Authority to continue industry engagement as all of the above mechanisms will need to balance cost and complexity against added value, so a cost benefit analysis on this topic is important to support DSO model discussions.