

9 July 2025

Digitalisation Team
Electricity Authority
By email: digitalisation@ea.govt.nz

Tēnā koutou,

Regulation will drive our digital future

Powerco welcomes the Electricity Authority (**Authority**)'s timely discussion paper and the opportunity to contribute to this important conversation. We agree with the central premise: a more data-driven, technology-enabled electricity system is essential. But we would go further.

Digitalisation is not one strategic option among many — it is an essential enabler for the kind of low-cost, resilient, first-world energy infrastructure that New Zealanders both expect and deserve.

In our submission we suggest specific initiatives the Authority can take to progress sector digitalisation. Our summary suggestions are:

It should not be necessary to regulate firms to digitalise for their own benefit

- Both the Authority and the Commerce Commission (**Commission**) have mature regimes to which have been designed to drive innovation and efficiency using competition where possible and incentive regulation where competition is limited
- These regimes create incentives for industry participants to digitalise where it's a way of cutting costs or to innovate in products and services for customers
- If there is evidence that industry firms aren't digitalising efficiently for their own benefit then the Authority and Commission should focus on removing barriers to competition and efficiency rather than regulating digitalisation as a means of achieving this.

Digitalisation needs regulating if the costs are private but the benefits are public

- Wider digitalisation benefits can require industry participants to expose digital data and services to third parties
 - If the costs of digitalising falls to participants who don't benefit from it, then it won't happen by itself
 - Regulation can ensure that this type of digitalisation occurs for the long-term benefit of consumers
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**Digitalisation
benefits often
depend on
system-wide
implementation**

- Entirely new benefits are available where digital information and services from multiple parties and sectors are orchestrated
- In some cases these benefits are only available when all parties provide quality digital information and services
- Regulation can be a key mechanism to unlocking consumer benefits of initiatives which would otherwise fail because some parties don't provide quality digital information and services

We provide commentary on these three considerations in sections 1 – 3 below, specific examples of what Powerco is currently doing to progress digitalisation in the sector in section 4, and link these observations to the Authority's questions in section 5.

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 [REDACTED]

Nāku noa, nā,
[REDACTED]

Emma Wilson

Head of Policy, Regulation and Markets
POWERCO

1. Incentives exist to digitalise for private efficiency and innovation gains

Both the Authority and the Commerce Commission have mature regimes to drive innovation and efficiency using competition where possible and incentive regulation where competition is limited. Government policy is for *the electricity system to deliver reliable electricity at lowest possible cost to consumers. ... achieved by:*

- a) An efficient wholesale electricity market with many different wholesale buyers and sellers of electricity, managing their own risks, responding to competitive pressures and accurate price signals, continually looking for ways to serve their current and potential customers more effectively than their competitors;*
- b) Efficient transmission and distribution networks; and*
- c) Effectively competitive markets for electricity retail services¹.*

The Electricity Industry Participation Code is the primary mechanism through which the Authority achieves (a) and (c) while Part 4 of the Commerce Act is the primary mechanism through which the Commission achieves (b). Both the Authority and the Commission also have mechanisms/programmes to further incentivise innovation initiatives².

These regimes are designed to create incentives for industry participants to digitalise where it's a way of cutting costs or innovating in products and services for customers. Even in markets where competition is limited, the Commission's regulation of transmission and distribution is designed to simulate the effect of competitive markets. To the extent that digitalisation is a means of achieving innovation and efficiency, the regimes should already incentivise this.

If there is evidence that industry firms aren't digitalising efficiently for their own benefit then the Authority and Commission should focus on removing barriers to competition and efficiency rather than regulating digitalisation as a means of achieving this.

2. Digitalisation needs regulating if the costs are private but the benefits are public

Wider digitalisation benefits can require industry participants to expose digital data and services to third parties. If the costs of doing this shifts from those who benefit from it (consumers) to industry participants (data holders), then it won't happen by itself but regulation can ensure that this type of digitalisation occurs for the long-term benefit of consumers.

Powerco has exposed digital data in some areas of our business (see section 4) and is actively investigating digitalising other services. In our experience the front-end costs of exposing data and services can be significant and broad ranging. As well as the obvious cost of data platform development and operation, there can also be costs

¹ October 2024 Statement of Government Policy to the Electricity Authority, Minister for Energy. Paragraphs 2 and 3

² Including the Innovation and non-traditional solutions allowance (Commission) and the Power innovation pathway (Authority).

related to organisational capability, internal systems, organisational structure, contracted services, web interface, and more. Regulatory intervention would be justified if the benefits of exposing data and services exceed these costs.

Open banking is a good example of how regulatory intervention has been necessary to expose financial data securely with third-party providers, increasing competition and benefitting customers who are able to access meaningful data more easily.

Regulatory intervention has ranged from:

- Facilitation of rule and standard development
- Funding establishment of new capabilities
- Provision of centralised directory services
- Mandating standardised formats for data and service access
- Mandating open data access for authenticated actors
- Mandating 3rd party access to certain banking services for authenticated actors
- Monitoring and enforcement of compliance with regulations and
- Fining participants for non-compliance.

The UK's Open Energy programme³ deliberately adopts successful models and approaches from Open Banking:

- Developing Open Standards: common API standards, data formats, and security protocols to ensure interoperability
- Building Trust Frameworks: "Schemes" (rulebooks for data sharing) and a "Trust Framework" to ensure data is shared securely and legally and
- Facilitating Collaboration: working with stakeholders from across the wider energy ecosystem (generators, network operators, suppliers, new tech companies, consumers) to co-design solutions.

While the programme is implemented by a not-for-profit organisation, Icebreaker One⁴, it was initially backed by public funding and is supported by enabling regulation.

The Authority's paper notes⁵ that the UK has adopted a 'presumed open' principle for electricity data. This is enforced by Ofgem through:

- Licence conditions on energy "suppliers" (retailers in NZ terminology) and network operators, including rules about how data is managed and shared and
- Data Access and Privacy Framework which outlines the levels of access to energy consumption data for various parties (consumers, suppliers, network operators, third parties) and the choices consumers have.

In addition, the UK Department for Energy Security and Net Zero has consulted on evidence to support a "Smart Data scheme" for energy⁶, which explicitly draws parallels with Open Banking.

³ <https://ib1.org/energy/uk/>

⁴ <https://ib1.org/welcome/about/>

⁵ *Our future is digital*, Electricity Authority, June 2025. Section 2.6

⁶ <https://www.gov.uk/government/calls-for-evidence/developing-an-energy-smart-data-scheme>

While New Zealand regulation is not the same as the UK's, the areas where Ofgem and the Department for Energy Security and Net Zero have intervened to regulate are examples where the parties who face the costs of digitalisation are different from the consumers and new-entrants who benefit from them.

3. Digitalisation benefits often depend on system-wide implementation

Entirely new benefits are available where digital information and services from multiple parties and sectors are orchestrated. In some cases the benefits of combining or sharing data depend on the weakest link: they don't work unless all parties nationally provide quality digital information and services. In such cases, regulation can be a key mechanism to unlocking consumer benefits of initiatives which would otherwise fail because some parties don't provide quality digital information and services.

A good example of this is where information about multiple infrastructure assets is overlaid using geospatial data. The NZ National Emergency Management Agency recently consulted on issues and options for a new Emergency Management Bill⁷. This consultation raised the specific issue of what mandatory standards should be set to provide assurance about the performance of the emergency management system, including a consistent approach to hazard and risk information, source, use, and mapping⁸. Powerco supports the regulatory enforcement of infrastructure information definition, access and provision for both emergency management planning and during emergencies⁹.

At the most fundamental level – emergency controllers need to know in real time if roads are open in order to be able to plan network restoration – this requires open access to digital information about infrastructure that enables access to our network. There is significant opportunity for improvement in sharing of information on assets, hazards, risks and responses. During an emergency, improved methods of sharing of information on location and status of essential services, would enable all infrastructure providers to have the same information on the status of criticality, degrees of self-resilience and both short and longer term resilience needs, for example wastewater facilities, hospitals and rest homes.

We strongly encourage building on existing data systems and information exchange protocols, and automated data sharing wherever possible.

⁷ <https://www.civildefence.govt.nz/cdem-sector/legislation/emergency-management-bill>

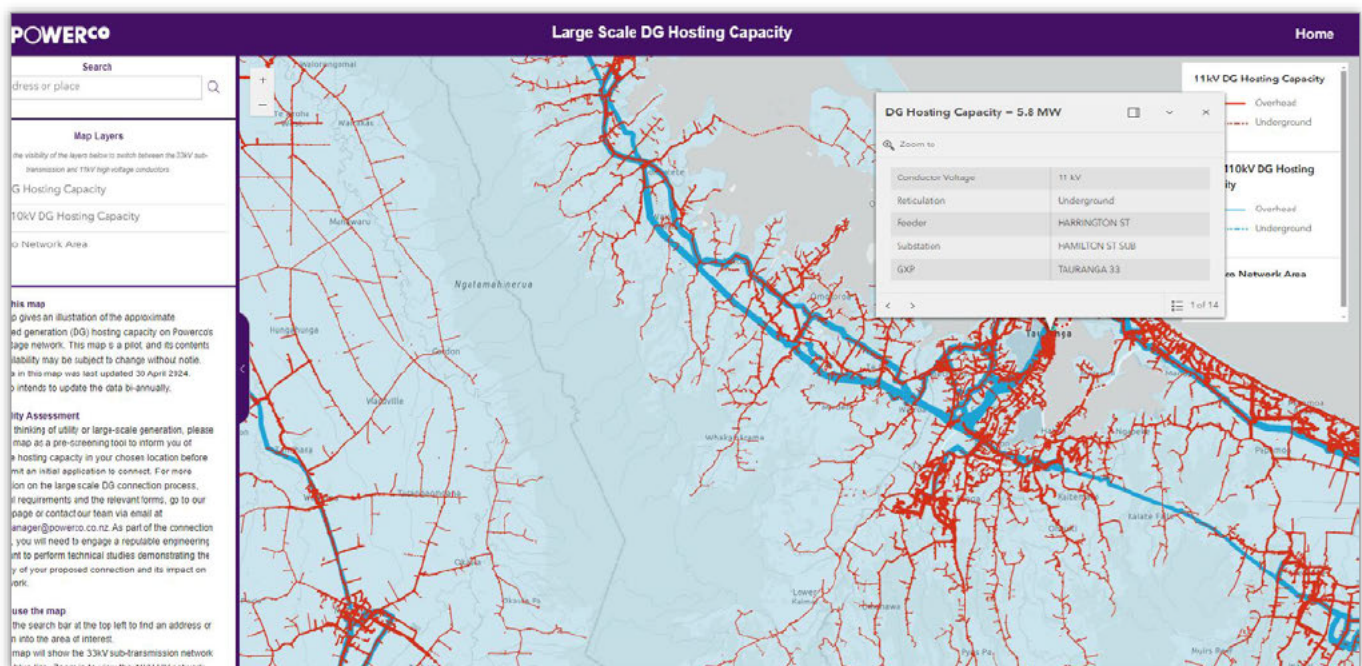
⁸ *Strengthening New Zealand's emergency management legislation*, National Emergency Management Agency, April 2025. Issue 8.

⁹ <https://www.powerco.co.nz/-/media/project/powerco/powerco-documents/who-we-are---pricing-and-disclosures/submissions/2025/national-emergency-management-agency--strengthening-nzs-emergency-management-legislation.pdf>

4. What Powerco is doing and is planning

The Authority specifically identifies the importance of making current and future network capacity and constraints visible to access seekers¹⁰.

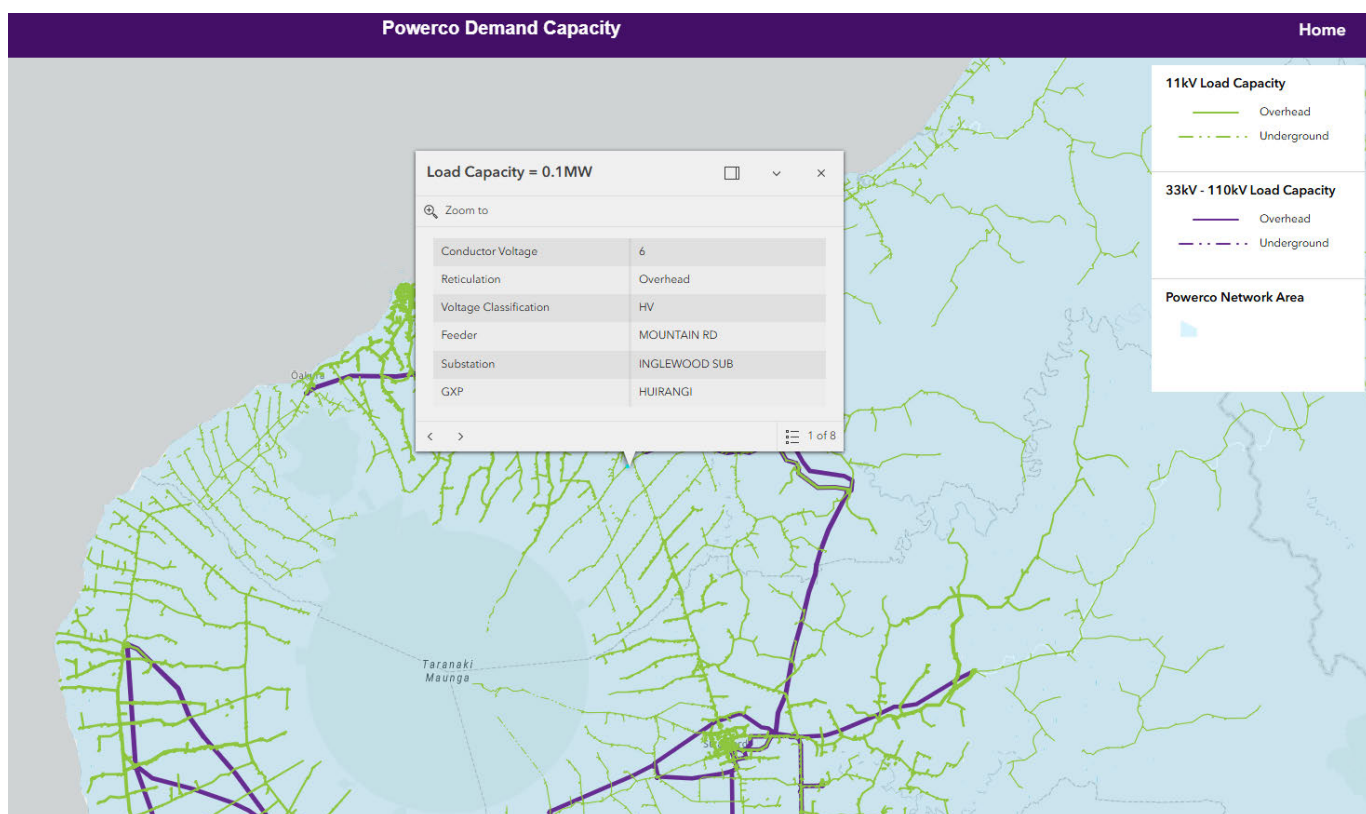
Powerco has developed HV and MV hosting¹¹ and demand¹² capacity maps (see figures below) which we have published on our website since 2023 for access seekers to readily and easily see where there is capacity to connect to our network.



¹⁰ Our future is digital, Electricity Authority, June 2025. Section 2.10

¹¹ <https://experience.arcgis.com/experience/2f2d3bf248b3486183d59ace9fdc13e3+>

¹² <https://experience.arcgis.com/experience/3e5c53d1cc6c4ab0955675bdb0df408e>



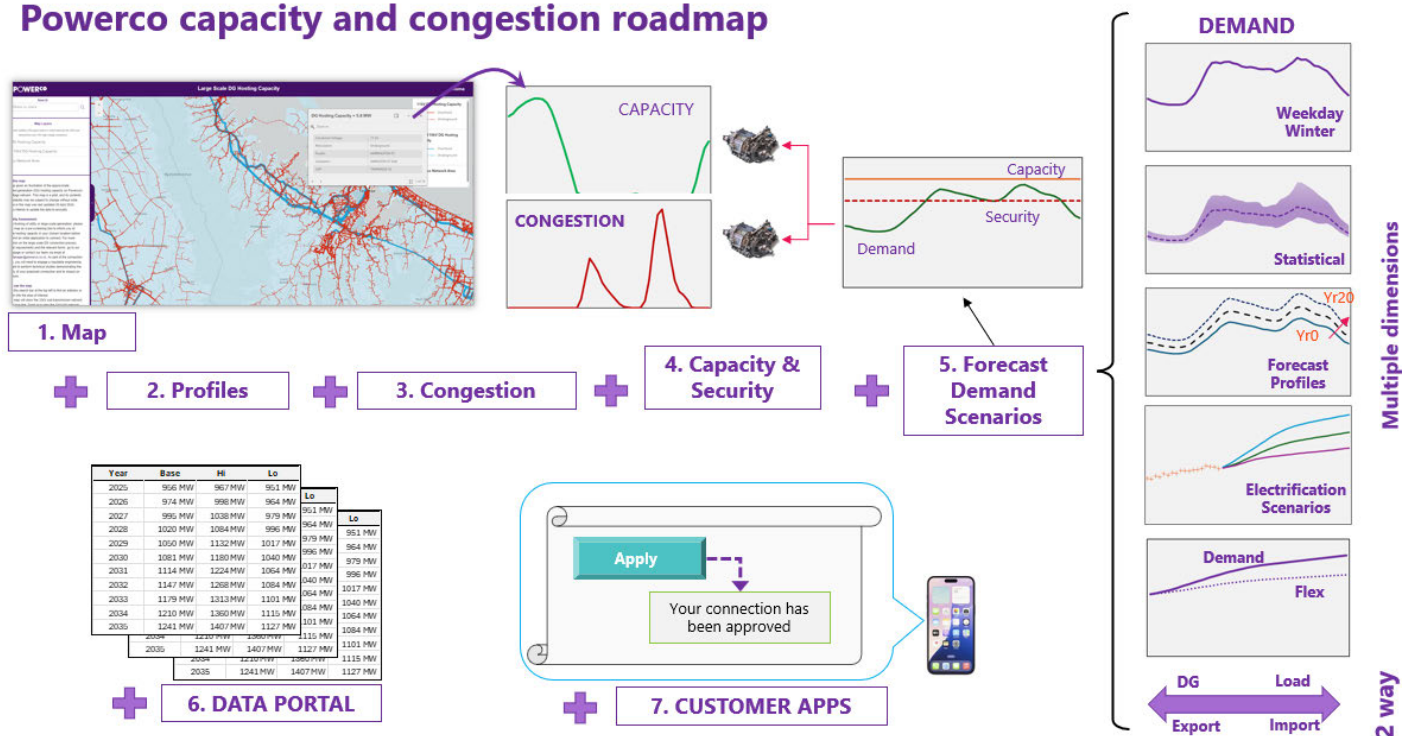
As the Authority notes, EDBs don't currently all have visibility of their LV networks, but providing visibility at this level would provide even greater benefit to consumers.¹³ The Commission's DPP4 price-quality path for Powerco includes a provision that funds smart meter data, a LV visibility platform to carry out analysis of this data, as well as resourcing to start planning and operating our LV networks. These resources will enable us to fully leverage advancements in data to improve our service for customers¹⁴. We note that some, but not all, EDBs received specific provision for LV visibility expenditure.

Ultimately our goal is to provide tools and data to access seekers to allow them to model options for connection and hosting both demand and injection. The schematic below shows our capacity and congestion roadmap – ultimately we aim to offer access seekers automated approval of connection applications based on actual information of the state of the network and forecasts of both capacity and congestion under security constraints.

¹³ *Our future is digital*, Electricity Authority, June 2025. Sections 2.7-2.10

¹⁴ <https://www.powerco.co.nz/-/media/project/powerco/powerco-documents/who-we-are---pricing-and-disclosures/disclosures/electricity-disclosures/2-electricity-asset-management-plans/electricity-asset-management-plan-2024---additional-lv-disclosure.pdf>

Powerco capacity and congestion roadmap



The HV capacity maps were a low cost, self funded innovation, and intended to explore what capacity information could be valuable to customers and what means of communication is effective. The motivation was to provide better service, as part of our core mission and goals rather than to win market share, and also to raise efficiency, though this will mostly be realised when such information is integrated with new digital connection services.

While the regulatory and corporate incentives seem adequate to encourage distributors to share rich network information and provide seamless digital services, there may still be need for regulation where it requires cross industry digital interfaces (e.g. distributor to retailer or system operator).

A point of note is that the map is largely just a navigation tool. It allows information consumers to navigate quickly to the point of interest on the network. The information then conveyed is limited. As indicated in our roadmap, our intent is to expand the information available, especially with more temporal detail (e.g. daily and seasonal profiles and forecasts). This is because access seekers considering their own investments need to understand the future opportunity and value, not only the current state but also the durations and intensity of any future constraint.

Being HV capacity and therefore about larger installations, the target audience of the maps was more commercial scale operators, particularly solar developers and charge point operators, who are broadly interested in locations across the whole network.

The capacity map visualisation leveraged digital tools to surface network wide information with high spatial granularity. This type of interface is adequate for "information consumers" who are essentially browsing infrequently. However, by nature, it introduces a manual or human interaction, which limits the volume and speed of information transfer. In future, integrating digital processes, especially across corporate boundaries, may require

standardised data exchange protocols that can automate data exchange and manage the considerable volumes of data in a timely and consistent manner.

This is notable in terms of the Authority's consultation in that there is currently no data exchange protocol by which information for a subset of the distribution network (and/or connected installations in that localised area) can be easily accessed by industry participants. At present, the only standardised references are at GXP (serving wholesale market trading), or at individual ICP. Hence, the map as a human interface is less about the communication of information and more about easy navigation to a local area of the interest.

Currently, outages on a local section of the network must be communicated to responsible retailers as a list of affected ICPs. As we contemplate future DSO architectures, it is notable that distribution price signals, either embedded in annual pricing or via alternate contracted means, will need to target highly localised parts of the network with different price parameters. This would require a mechanism to digitally communicate price signal parameters to responsible traders specific for each ICP, especially to enable retail traders to then automatically (via digital systems) repackage price signals into competitive retail offerings for just those customers in the constrained location.

If more efficient and sharper dynamic price signals are to be achieved, the communication of price points would need to be in near real time - more suited to the rapidly evolving operational protocols like Open ADR.

Electrification and DER uptake is also expected to result in more volatility in wholesale market prices and power flows, this in turn introducing even more volatility back into distribution power flows. As distributors raise capacity utilisation, operating closer to limits and more dynamically, the binding of constraints will be more common, sending strong price signals and requiring communication of highly dynamic operating limits (dynamic operating envelopes). The real time communication of demand, capacity and price information will not only be needed between DSO and retail trading agents, but also between the system operator (SO) and each DSO. This part of the industry digital architecture is critical since significant commercial decisions will hinge on timely and accurate information exchange between DSO and SO.

Notable also in our roadmap is the intent to develop congestion information to complement capacity and to also expand the information to include multiple dimensions of demand (scenarios, variance etc) as well as the same need for spatial and temporal granularity. While capacity information is mainly of interest to access seekers (and their designated agents), congestion (i.e. constraint) information is of value to existing customers and their retail agents, as it indicates where flexibility and DER may have network value. Congestion, when monetised, forms the basis for price signals, that then impact commercial arrangements and financial transactions.

The initial information shared via our capacity maps was a singular data point (minimum anytime hosting capacity). As indicated in our roadmap, the volume of data is expected to increase exponentially as we add multiple dimensions of forecast demand and time series profiles. This volume of data quickly overwhelms visualisation approaches and necessitates some form of data portal so stakeholders can ingest and use the detail. This in turn requires agreement between parties as to protocols and interfaces, so that information consumers can easily ingest network information into their own digital systems. Given most consumers of capacity information (e.g. connection service providers) have a local and sporadic interest (only when seeking access), this seems less of a priority for industry wide communication standards, protocols and interfaces.

Notably, many of the “consumers” of network information will not be “end consumers”; they will be commercial entities (retail agents, electrical contractors, DER installers etc). End consumers should not need to be directly exposed to technical network information or expected to manage risks and costs associated with volatile industry markets. However, as the Authority notes, and aligned with the Ministry’s Consumer Data Right (CDR) work, consumers need digital tools to readily assess competing retail options as a function of their expected demand profile and the retail products of interest. Retail products will need to repackage and hedge risk, as distribution price signals become more granular by location. This again highlights the need for a future DSO to be able to communicate digitally with the retail industry so that distribution price signals can be seamlessly ingested into retail systems that can then produce outputs supporting consumer choice.

In this regard we see some need for new industry protocols and standards related to the B2B communication of common datapoints related to network capability, opportunity and price. This could be considered an evolution of EIEP protocols, but a digital equivalent would need to be more centred around internet protocols and formats and provide for near real time data exchange.

5. Responses to the Authority’s questions

Questions	Comments
Q1. What could stop or slow digitalisation of the electricity system? What would make it successful? How far should digitalisation go?	<p>Digitalisation enables productivity and efficiency but also adds to electricity demand. EDBs increasingly respond to the efficiency incentives under Part 4 by adding digitally intelligence to their networks and preparing to scale up in response to increases in energy demand associated with increases in local computing.</p> <p>As we discuss in sections 2 and 3 above, where the parties who incur the costs of digitalisation don’t get any benefit from it then there’s a muted incentive on them to digitalise, even where there are public benefits. We have outlined in our submission that regulation will assist to drive consistency and uptake of digitalisation by industry participants.</p>
Q2. Do you agree with how we have defined ‘data’ and ‘information’, especially in the context of making data more visible?	<p>Yes. We note that the Authority defines “data” as “raw facts or figures which by themselves may have limited value” and “information” “processed data that has context and meaning”.</p> <p>It may be useful for the Authority to identify a third tier of “insights” to capture the practice of generating intelligence from data. For example: data might be X kV, information might be that the average voltage across feeder y is Y kV, and the insight might be a prediction that feeder y is trending towards over-voltage risks.</p>

Questions	Comments
Q3. What data do you think needs to be more visible?	The UK Open Energy programme has a process to prioritise use cases for digitalisation ¹⁵ . Their initial assessment has 27 priority use cases ¹⁶ . Data should be made visible to solve problems, use-case by use-case – it's not necessary to build an open data pool on the off chance that it might be needed as this will only slow down implementation without benefitting consumers.
Q4. What challenges do you think we might face in trying to increase visibility? What considerations need to be given to data privacy or cybersecurity? How could increasing visibility create more opportunities for consumers, participants and innovators?	<p>In our experience there are four major obstacles to increasing visibility:</p> <ul style="list-style-type: none"> • Legacy system complexity – where existing systems were not designed with openness/interoperability in mind. This makes integration costly and technically challenging • Data fragmentation – where data is stored in siloes, inconsistent formats and/or quality • Capacity & capability gaps – where some participants may not be resourced or technically equipped to expose and manage data securely • Privacy & security – where increased visibility and sharing of data increases relies on strong and effective cyber controls and clearly defined rules. <p>Existing participants have a strong incentive to pursuing data visibility that enables more efficient operation such as enhanced network planning, asset optimisation and risk management.</p> <p>Where data sharing benefits third parties but imposes cost and complexity on incumbents, it's unlikely to happen voluntarily which could slow the introduction of new services, business models and technologies from innovators and new-entrants.</p>
Q5. What work are you planning or doing to increase visibility within the electricity system? Are you aware of any work that contributes to this goal?	Section 4 explains how Powerco already provides digital hosting information for both demand and supply connections and our focus on improving the granularity of the information to the LV and supplementing it with forecasts and analytic tools to support access seekers of all sorts.

¹⁵ <https://energy.icebreakerone.org/2021/12/01/open-energy-pilot-use-cases/>

¹⁶ <https://docs.google.com/spreadsheets/d/104fSg8MgLxrgkhtqAMCwQ-4SuJtreJG8M5F9HAa7Eg/edit?gid=0#gid=0>

Questions	Comments
Q6. What challenges do you think we might face in increasing interoperability? What other opportunities do you think greater interoperability will bring?	<p>Coordination across the industry is a major interoperability challenge in its own right. New Zealand has 29 EDBs and around 30 retailers to say nothing of meter data service providers, meter owners and new entrants. Each business has evolved its own systems, vendors, data models, and digital maturity levels. Without national standards or frameworks, the risk is that every participant builds their own version of digitalisation, leading to duplication, inefficiency, and fragmentation. The ENA Future Network Forum's work on resolving this may be more effective with regulatory enforcement.</p> <p>As customers demand new and changed services from EDBs, Part 4 incentives should ensure that the cost of delivering them to a quality customers require is minimised.</p>
Q7. What work are you planning or doing to increase interoperability within the electricity system? Are you aware of any work that contributes to this goal?	<p>Powerco participates in several groups across the industry which are exploring efficient means of improving interoperability. The joint ENA Future Network Forum (FNF), EEA and EECA FlexTalk project has developed working Open ADR pilots and the FNF standardised processes for network connection and providing information on network capacity¹⁷,</p> <p>We intend to build on this work in our Localflex initiative with Our Energy, Unison and potentially several other EDBs funded by the Commission's INTSA mechanism¹⁸.</p>
Q8. What challenges do you think we might face in simplification? How could simplifying create more opportunities?	<p>While national standards will be essential to ensure effective simplification and simplification, legacy complexity in existing systems and capability is an obstacle to implementing these standards.</p> <p>Pilots such as those referred to in Q7 are an example of partnerships which can realise early benefits of simplification, before national standards are implemented.</p>
Q9. What work are you planning or doing to increase simplification within the electricity system? Are you aware of any work that contributes to this goal?	<p>Section 4 provides detail about the initiatives to publish network hosting capacity that Powerco has already implemented and our plans for future capability.</p> <p>As we discuss in that section, complexity is what it is. The challenge for the industry is to understand it, break it down, and repackage information that is meaningful for users – whether end consumers or other industry participants.</p>

¹⁷ <https://www.ena.org.nz/our-work/working-groups-and-forums> and <https://eea.co.nz/what-we-do/projects/flextalk/>

¹⁸ <https://comcom.govt.nz/regulated-industries/electricity-lines/projects/2025-reset-of-the-electricity-default-price-quality-path/powerco-intsa-application-approval>

Questions	Comments
	<p>The primary interface for end consumers is their retailer. The technical and commercial complexity and volatility of the industry is managed, hedged and rebundled for them by retailers into appropriately simple offers.</p> <p>Even when EDBs provide information directly to access seekers, they use technical intermediaries, who can benefit from detail and complexity to produce competitive and will depend on interoperable standards to ingest that detailed data.</p>
<p>Q10. Do you have any other comments on this paper?</p>	<p>It would be helpful for the Authority to present the work programme in section 5 as a timeline of specific initiatives addressing the obstacles to industry-wide digitalisation that the paper addresses, specifically visibility, interoperability and simplification where the costs of making changes fall on different parties from those who benefit from them.</p> <p>In Q6, we discuss how the Authority could build on the work that the FNF and other industry groups have done on developing standards to enforce their effective implementation through regulation. Embedding industry-led problem-solving initiatives within a regulatory workplan that addresses public benefit problems and effects them through regulation, monitoring and enforcement could be a low-cost and effective means of shaping industry rules and regulations to support New Zealand's transition to a digitalised future.</p>