Your views on the opportunities and challenges of a digitalised electricity system

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Submitted: **10/07/2025 2:53:00 pm**

Reference: **c21fe6e5-834b-4bdf-99b2-b316002f84da**

Summary of information submitted

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Yes

Who are you submitting as? *

Industry participant

First name *

██████

Last name *

██████

Email *

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1. What could stop or slow digitalisation of the electricity system? What would make it successful? How far should digitalisation go?

What Could Slow or Stop Digitalisation?
Digitalisation of the electricity system risks being slowed by several key barriers, most notably limited data access, lack of interoperability, legacy infrastructure, and cybersecurity concerns. Many electricity distribution businesses (EDBs) operate with outdated systems that are not equipped to handle high-resolution data or integrate new technologies like distributed energy resources (DERs). A major constraint is the limited and costly access to granular consumer and connection-level data, which affects both EDBs and third parties, while privacy regulations often lag behind what technology can support. The absence of standardised protocols further fragments the system, preventing seamless communication between devices and platforms. Critically, as digital systems expand, so too does their vulnerability, making robust cybersecurity measures essential. Without strong protections and public trust, efforts to share and leverage energy data may stall. Ensuring secure, affordable, and standardised access to data is therefore central to unlocking the benefits of a digital electricity future.

What Makes Digitalisation Successful?
Digitalisation of the electricity system will be most successful when supported by clear governance, strong national coordination, and strategic investment. A shared roadmap with well-defined roles and responsibilities ensures alignment across the sector. Mandating interoperability through open technical standards is also critical, enabling seamless integration of devices and systems, encouraging innovation, and avoiding vendor specific platforms. Equally important is empowering consumers with data portability, ensuring they and their authorised agents can access smart meter and billing data easily and securely. These foundations create the conditions for a more flexible, efficient, and consumer-driven energy future.

How Far Should Digitalisation Go?
Digitalisation should be pursued as an enabler of a more reliable, affordable, and low-carbon electricity system, not as an end in itself. Its scope should focus on delivering actionable intelligence, such as real-time visibility of DERs, data-driven pricing and flexibility markets, and empowering consumers with access to usage data and tariffs. Open, secure data platforms and integration with broader sectors like transport and building management are also key. However, digitalisation efforts must be proportionate to the benefits, targeted at solving real-world problems like peak demand and connection delays, and aligned with wider regulatory and social objectives such as equity and resilience

2. Do you agree with how we have defined 'data' and 'information', especially in the context of making data more visible?

While the Authority rightly highlights data visibility as a key enabler of better coordination and market outcomes, the current use of 'data' and 'information' in the paper tends to blur an important distinction. Data refers to raw measurements, while information is processed, contextualised, and actionable, what decision-makers and market participants truly need. Without this distinction, there's a risk of focusing on quantity over usefulness, leading to data fragmentation, low usability, and barriers to participation. Clearer definitions would

help delineate roles across the data value chain, support proportionate regulation, and encourage investment in analytics, APIs, and interoperability. We recommend the Authority refine its framing to distinguish between raw data, information products, and actionable insights, in line with international best practice.

3. What data do you think needs to be more visible?

Q3. What data do you think needs to be more visible?

The Authority should prioritise improving visibility of data that enables better decision-making across network investment, market participation, resilience, and innovation, while ensuring strong governance and security protections. This includes both operational system data and consumer-facing information that supports efficient outcomes for all parties.

Unison has made good progress in increasing visibility at the 11kV and above level, including the publication of network capacity and constraint maps. However, visibility at the low voltage (LV) level remains limited due to data access barriers. Addressing these barriers would enable more granular hosting capacity assessments, support better investment decisions by EDBs, and facilitate more efficient connection of distributed energy resources (DER), such as solar, batteries, and EV infrastructure.

Key data areas that need greater visibility include:

• Network capacity and constraints at LV level, including location-specific data on congestion, voltage, and thermal limits.

• Forecasted and real-time flexible load and generation, enabling better system optimisation and demand-side response.

• A comprehensive DER register and metadata, detailing where assets are, how they perform, and how controllable they are.

• Visibility into flexibility market participation and outcomes, including offers, prices, and performance, to build trust and support learning.

• Consumer access to smart meter and usage data, empowering consumers and third parties to drive innovation and competition.

Enhancing visibility in these areas will support a more dynamic and efficient electricity system, while also aligning with New Zealand's broader decarbonisation and affordability goals.

4. 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?

The success of digitalisation hinges not just on publishing more data, but on ensuring the right data is accessible, secure, and useful. A strategic, coordinated, and standards-based approach, with consumer trust and equity at the centre, will enable New Zealand to capture the full potential of a more digital electricity system.

Challenges in Increasing Visibility

Increasing data visibility in the electricity system presents several challenges, even when there is strong intent to improve. Data is often fragmented across multiple parties, such as

EDBs, retailers, MEPs, and aggregators, with inconsistent formats, access rights, and quality, making integration difficult. The lack of common data standards adds further complexity, increasing costs for new platforms and excluding potential participants. Regulatory misalignment across agencies can create uncertainty or duplication of effort. In some cases, data holders may be reluctant to share data due to concerns about commercial advantage or loss of control. Additionally, smaller EDBs and market participants may face capability and funding constraints that limit their ability to invest in the necessary digital infrastructure. Addressing these issues will require coordinated leadership, clear roles, and targeted support to ensure the benefits of visibility are widely and fairly realised.

Data Privacy and Cybersecurity Considerations

Data privacy and cybersecurity must be core considerations in any digitalisation effort to ensure trust, manage risk, and protect consumer interests. Data sharing should follow the principle of minimisation, only the necessary data should be shared for a specific purpose, avoiding the release of full raw datasets when not needed. Anonymisation for smart meter and consumer usage data is essential, to safeguard individual privacy. Clear access controls and audit trails must be in place to define who can access what data and under what conditions. All systems should adopt cybersecurity best practices by design, adhering to recognised standards and frameworks. Finally, consumers should have clear, user-friendly mechanisms to control who can access their data, supported by transparent governance and consent processes.

Opportunities Created by Greater Visibility

Increasing visibility, when done securely and appropriately, creates significant opportunities across the energy sector. For consumers, better access to their own usage data enables personalised energy services, demand response participation, and informed decisions, such as optimising solar and battery investments. For market participants like retailers and aggregators, greater visibility supports the development of innovative tariffs, virtual power plants, and flexible load offerings. For innovators, access to standardised, open datasets, such as network capacity, DER registries, and flexibility dispatch records, reduces integration barriers and enables the development of new tools and services, including forecasting, optimisation, and energy management platforms.

Telecom operators use network data visibility to optimise infrastructure, offer usage-based plans, and preempt outages. Tools like OSS/BSS systems and real-time analytics are industry standard. Greater visibility in electricity (e.g. network capacity, DER exports, real-time LV demand) could enable similar optimisation, improve service reliability, and underpin dynamic pricing or flexibility markets.

5. 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?

Unison is actively working to increase visibility within the electricity system through a range of initiatives. We have published hosting capacity and constraint maps at the 11kV and above level to support more efficient connections and encourage flexibility providers to engage through requests for pricing. We have also partnered with other distributors in a joint application to develop the LocalFlex platform, which will enable EDBs to publish flexibility opportunities and allow aggregators and asset owners to register resources such

as batteries, solar, and other storage. In parallel, we are progressing a low voltage (LV) smart meter data project aimed at improving visibility of constraints at the LV level, enabling proactive identification of issues such as voltage non-compliance and supporting more targeted investment.

6. What challenges do you think we might face in increasing interoperability? What other opportunities do you think greater interoperability will bring?

Improving interoperability is not just a technical task, but a strategic coordination effort across the sector. It requires:
1. Clear national direction (e.g. mandated standards, code updates)
2. Support for smaller players to adapt
3. Alignment of incentives to move away from closed systems
4. A consumer-first approach to ensure portability and accessibility

Challenges to Increasing Interoperability
Increasing interoperability in the electricity system faces several challenges. A key barrier is the lack of common technical standards for data formats, communication protocols, and Application Programming Interfaces (APIs), which makes it difficult for devices and platforms to exchange information reliably. Many legacy and proprietary systems also create vendor lock-in (vendor specific platforms), restricting innovation and leading to higher long-term costs. The roles and responsibilities of EDBs, retailers, MEPs, aggregators, and market operators are often fragmented, with inconsistent systems and incentives, complicating coordination. Regulatory frameworks can also lag behind technology deployment, resulting in costly retrofits or missed opportunities. Additionally, some smaller participants may lack the resources or capability to implement interoperable systems, increasing the risk of fragmentation and inequitable outcomes. Overcoming these challenges will require coordinated effort, forward-looking standards, and targeted support. Like EDBs, retailers, and MEPs in the electricity sector, banking sector has historically operated in silos, with limited data standardisation. The advent of open banking tackled this by introducing common data standards and APIs, compelling incumbents to allow customer data sharing with third parties (with consent). Strong regulatory coordination (like PSD2 in Europe or CDR in Australia) was key to overcoming commercial reluctance and enabling secure interoperability, something the electricity sector could emulate in NZ.

Opportunities Created by Greater Interoperability
Greater interoperability offers significant opportunities to enhance efficiency, innovation, and consumer choice across the electricity system. It enables the development of scalable flexibility markets by allowing aggregators, retailers, and DER owners to coordinate resources across platforms and networks, helping reduce peak demand and defer costly infrastructure upgrades. Open standards also streamline the integration of solar, batteries, and EVs, lowering costs and improving network planning.
Interoperability supports innovation by making it easier for startups and service providers to develop new tools and services without needing bespoke integrations or proprietary data access. It also improves system visibility and resilience by allowing seamless data exchange between systems like metering, SCADA, and DER management tools, enabling faster fault response and real-time awareness. Finally, it empowers consumers by giving

them more control over their data and the ability to switch providers or engage with new energy services more easily through standardised platforms.

7. 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?

Unison is actively working to increase interoperability within the electricity system by enabling the provision of standardised geospatial data files to a range of external parties, including civil defence, local authorities, roading agencies, and contractors.

We, along with all EDBs and traders, use the Electricity Information Exchange Protocols (EIEPs) to support structured and standardised data exchange. These protocols enable consistent communication across the sector on key matters such as outages, consumption, pricing, customer details, billing, and system reconciliation. These efforts support more coordinated operations, improve data consistency, and enhance collaboration across the sector.

8. What challenges do you think we might face in simplification? How could simplifying create more opportunities?

Challenges to Simplification

Simplification in the electricity system is about removing unnecessary friction, duplication, and complexity that can hinder innovation, participation, and responsiveness. In a digital environment, simplicity becomes a strategic advantage, but achieving it is not without challenges. One key issue is that complexity is deeply embedded in legacy systems, regulations, and processes that have evolved over decades. Efforts to simplify can also raise concerns about unintended consequences, such as impacts on reliability or fairness, especially when existing rules or protections are removed or consolidated. Different stakeholders may have divergent views on what simplification means, what benefits one group may be seen as a risk by another. Additionally, regulatory and institutional inertia can slow progress, with outdated processes and IT systems remaining in place simply because "it's always been done that way." To succeed, simplification efforts must focus on user needs, standardisation, and thoughtful process redesign, guided by the principle of "minimum effective complexity" to ensure outcomes are preserved while enabling wider participation.

Opportunities Created by Simplification

Simplifying the electricity system can unlock a wide range of opportunities across the sector. It lowers barriers to innovation by making it easier and more cost-effective for new entrants, such as aggregators and energy app developers, to participate through streamlined processes and standardised APIs. For consumers, simplification enables faster switching, easier access to smart meter data, and smoother enrolment in services like demand response or solar, encouraging greater engagement and choice. It also reduces administrative and compliance burdens by consolidating reporting requirements and minimising manual processes, particularly benefiting smaller participants. Importantly, simplification improves equity by making the system more accessible to smaller networks, communities, and consumers who might otherwise be excluded by complexity. Finally, it

enhances data quality and system efficiency by eliminating duplication, reducing errors, and enabling better automation.

9. 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?

Unison, alongside other EDBs, is actively involved in a range of initiatives aimed at simplifying the electricity system. This includes developing a common Load Management Protocol to standardise how retailers and distributors coordinate during network or grid emergencies, covering not just traditional hot water load but also emerging technologies like EV chargers. To improve the customer experience, EDBs are aligning processes and terminology through connection journey mapping and a customer segmentation project aimed at building a shared understanding of customer needs and pain points. In support of better data management, the sector is adopting ISO 55013 principles by developing a common data framework and terminology. Additionally, Unison is collaborating with several other networks to develop a Minimum Viable Product (MVP) for hosting capacity, guided by consumer requirements. These efforts collectively aim to reduce complexity, improve consistency, and make the system more user-friendly for all stakeholders.

10. Do you have any other comments on this paper?

We commend the Authority for its comprehensive and timely paper recognising the critical role digitalisation plays in transforming the electricity system. Digitalisation is essential to achieving a more reliable, affordable, and low-carbon future, enabling better system visibility, enhanced consumer empowerment, and greater innovation. We recommend that the Authority focuses on clear governance, data access, interoperability, and simplification that provides a strong foundation to address existing challenges and unlock the full potential of a modern, flexible electricity network. In doing so, the Authority may find valuable insights in the banking and telecommunications sectors, where data visibility, open standards, and consumer trust frameworks have enabled innovation, competition, and better service outcomes.

Written feedback and/or supporting documentation

We will publish all survey responses on our website alongside your name and organisation (if applicable). Are you happy for the Authority to publish your submission? If you think we shouldn't publish any part of your survey response, please select 'No' and let us know what parts should not be published and why in the box below. *

Yes