Our Future is Digital - Consultation Paper

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

In The Middleware Group's view, there are a range of factors that could slow or stop digitalisation of the electricity system. Specifically, we believe these are key factors that may slow/impair digitalisation:

- Fractured and complex market consisting of a large number of competing actors, some of whom are vested in the status quo.
- Lack of clear target use cases and benefit articulation might result in poor adoption and lack of investment.
- Lack of alignment with international standards could introduce barriers for innovative global Energy Tech companies to operate in New Zealand.
- Inability to quickly improve/clarify digital standards in response to requests from sector participants could stifle innovation and adoption.

To ensure success, it is our view that the Authority should:

- Promote a standards-based approach that includes a collaborative model to enable rapid and responsive standards development.
- Be transparent so the wider market is aware of activity, agreed plans and the expected benefits, so they can reliably make investment plans.
- Engage a wide variety of stakeholders, including consumers, to obtain a diverse range of perspectives and ensure a broad set of target use cases are enabled.
- Draw on international standards and experience to avoid reinventing the wheel and to minimise barriers for overseas innovators.
- Articulate and gain consumer support for the economic and environmental opportunities that the programme can enable.
- Create a sandbox for industry use to minimise barriers for new entrants, such as Energy Tech innovators.
- Collaborate with early adopters who are willing change champions, demonstrating value and encouraging broader engagement.

In our opinion, digitalisation should extend as far as possible and practicable. Middleware firmly believes that an open, transparent electricity sector is a core component to enabling an 'open everything' digital economy in Aotearoa.

Question #2	Do you agree with how we have defined ‘data’ and ‘information’, especially in the context of making data more visible?

Middleware suggests expanding the definition of data to encompass structured data, moving beyond solely 'raw' or unstructured facts and figures. We believe that data is only useful if it is usable, and usability is predicated on being adequately structured, with clear, consistent, and well understood definitions. Beyond the definition of data, however, Middleware endorses the Authority’s view that data should be visible unless there is a good reason for it not to be (for example, privacy).

We would also encourage the Authority to promote the availability of data on a far more granular basis. It is our view that planning for granular, real-time data early in the digital transition is paramount to ensure that future use cases have a rich source of data to draw on. These use cases may not initially be well articulated or even recognised, but having access to well defined, standardised data and data sources is often the pre-requisite.

Ultimately the definition of data and information is not critical at this juncture; the important aspect in our opinion is that there is value in both, and that value will support all entities in the system at various levels of aggregation and abstraction.

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

We agree that greater granularity, specificity, and regularity in data sharing are essential to enable 'smart consumption.' This level of data provision is crucial for shifting towards new models of power consumption and generation, where consumers are active participants, not passive recipients.

By giving consumers (or their preferred Energy Tech app) access to real-time consumption and production data, down to the appliance level, we unlock the potential for innovative products and services. These, in turn, empower consumers to better understand their energy options and make more informed decisions, such as prioritising renewable energy sources or adjusting usage in response to price signals, grid conditions or other factors.

Furthermore, New Zealand’s unique and complex topography, combined with the desire to transition away from carbon-based fuels, demands highly visible, granular, and real-time data shared across the entire energy system. Such transparency is essential to support greater efficiency and resilience across networks, generators, and consumers alike.

We would also like charging models to be open and transparent so it is easier for consumers to compare providers and understand their bills - recognising that this may be challenging with complex bundled products and plans e.g., electricity, gas, and internet services.

Fundamentally, we believe accessible, real-time data is a cornerstone of New Zealand’s `smart consumption` energy future.

Question #4	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?

As with our answer to Question 1 above, Middleware believes the obvious challenge to increasing visibility is the structure of the market currently and its complexity. For example:

- Where will responsibility for development and hosting of APIs fall - across retailers, distributors, generators, system and market operators and other participants (including, potentially, consumer infrastructure and equipment suppliers)?
- Some entities may be too small and lack the resources to invest independently in transitioning to granular, digital capability.
- Legacy systems may limit the speed at which transition can occur.
- It may be challenging to balance:
  - the regulatory demands of Consumer Product Data Act focused on retail/consumer relationships.
  - the industry oversight responsibilities of the EA, and
  - the broader outcomes sought by the electricity industry as a whole.

Middleware recognises the challenges of ensuring privacy and cyber security while transitioning to a digital future. At a very high level, these include (but are not limited to)

- Managing privacy risks inherent in granular usage data; this could reveal when people are at home, potentially what devices they use, when they shower etc.
- Managing potentially conflicting interests across tenants, landlords, bodies corporate and other multi-party arrangements that may expose sensitive personal information.
- Establishing industry wide policies for data access and control, with interoperable authentication, access control and consent management infrastructure
- Retaining data authenticity, accuracy, and privacy as it is aggregated and anonymised for use in data lakes, merged and compared across system boundaries and/or consumed by ML and AI tools etc.

Transitioning to a data and digital future creates significant opportunities for consumers, participants, and innovators. Some examples of use cases across the system include:

- Products that reward a consumer's ability to manage real-time consumption according to grid capacity, generation mix and spot-pricing status.
- Accelerating the market for smart devices and home automation that can respond to grid conditions.
- Providing insights, potentially AI-assisted, to allow industrial and commercial consumers to optimise their operations.
- Prioritising emergency response activities based on a real-time map of which homes/buildings are still operational.

Question #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?

Middleware is uniquely positioned to contribute insight and innovation to the evolving electricity system. As a boutique IT consultancy focused on integration, we're not a retailer, generator, lines company nor equipment manufacturer. Instead, we bring a fresh perspective, one focused on helping New Zealanders securely interact and thrive in an increasingly connected world.

We see the future electricity system as open, digital, and consumer-empowered, characterised by 'smart consumption' and shaped by interoperable systems that form part of a broader "open everything" ecosystem in Aotearoa.

To support this vision, we launched our energy sector engagement at the Downstream conference in Christchurch, where we were a proud Platinum sponsor. At the event, we introduced an "open everything" use case that spans electricity, health, and banking, demonstrating the power of cross-sector interoperability. We also shared practical insights and lessons from our work in open banking, health and government that are directly relevant to the future of a digitalised electricity system.

We are now engaging with regulators and sector participants across the electricity system, providing advice on standards, strategy, capability and enabling technologies.

We are also developing an Open Energy Accelerator, a sector-specific solution built on the foundation of our proven Open Banking Accelerator, which has been instrumental in supporting the New Zealand banking sector transition to an open standards framework under the Customer and Product Data Act.

Looking ahead, we're committed to continuing our Downstream sponsorship, deepening our sector engagement, and delivering practical solutions, aligned with our broader strategy to foster interoperability and open data frameworks across New Zealand's digital economy.

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

As with our response to Question 4, Middleware believes that the challenges to increasing operability are primarily the shape and complexity of the current market and New Zealand's geography. In particular, we recognise that:

- The structure of the NZ market, with its complex regulation and diverse range of industry participants - retailers, distributors, generators and system and market operators - may present challenges in developing standards-based interoperable API driven infrastructure.
- The diverse nature of the consumer base and its cost to serve - particularly in remote and sparsely populated areas - may present a barrier to models that assume modern consumer infrastructure and continuous data connectivity . There is a risk of extending the 'digital divide' into energy consumption and local generation.

Middleware sees significant opportunity for all participants in the electricity system through greater interoperability. Strategically, we see the transparent access and sharing of data across the system as foundational to the emergence of a new ecosystem of market participants. We anticipate the rise of 'Energy Tech' businesses, akin to Fintechs in the financial services industry, bringing to market a wave of new, innovative, and interconnected services.

Importantly, we don't see Energy Techs as being limited to the energy sector any more than we expect Fintechs to remain confined to traditional financial services. Instead, we expect these tech companies to deliver integrated, cross-sector solutions that tap into the broader "open everything" marketplace, blending services from previously siloed industries to create entirely new value propositions.

Question #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?

Please see our response to Question 5.

In addition, Middleware is applying its deep expertise in open data, open systems, standards development, technical architecture, and integration to provide thought leadership and drive innovation in the digital transformation of regulated industries.

This is an environment in which we have extensive experience, having led the development of open standards across banking, health, and government, delivered integration capabilities for a diverse set of clients across a range of industries, and actively engaged with regulators and other stakeholders in the energy sector.

A key lesson from our work in advancing open standards is the value of leveraging progress made in international jurisdictions. By building on global experience and adapting it to New Zealand's unique context, we're able to accelerate implementation while ensuring interoperability, compliance, and relevance to the local market. Let's not reinvent the wheel.

Question #8	What challenges do you think we might face in simplification? How could simplifying create more Opportunities?

We foresee a range of challenges associated with simplification. At a high level these are associated with the existing complexity across the system, and the embedded nature of this legacy will be difficult to simplify. In particular, we believe:

- Adopting and adapting new standards can be challenging: resource intensive initially, and slow to become embedded across a system. The introduction of new and extensible standards therefore should be implemented and introduced as soon as possible to allow for the slow pace of change.
- There is inherent complexity in the system and also a degree of obfuscation in some products, which makes it difficult for new entrants and consumers to understand how the market operates and how they can optimise their engagement. Participants may persist or increase complexity to maintain their market position.
- Electricity retailers often provide combined services/packages (e.g., gas, internet, etc.) and ensuring these are accounted for may prove challenging.
- There is a risk that a crude focus on 'brute' simplification may create a 'one size fits all' model that could inhibit innovation or opportunities for considering new ways of working.

In our view, the initial focus for work associated with simplification should be on transparency. We believe this would help the market drive simplification and innovation by allowing all participants access to the same data and competing to deliver new types of services. Pricing transparency and clarity around obfuscatory noise in plans would also help to drive simplification by exposing the underlying logic and allowing consumers to make informed decisions about their options.

Question #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?

Middleware is actively championing the Open Energy Accelerator as part of our broader commitment to advancing standards-based frameworks for secure data sharing and digital engagement across fintech, health, and government sectors. With our mission to connect New Zealanders securely so they can interact and thrive in an interconnected world, we consider we have a role to play within the electricity landscape.

Based on our experience driving open banking adoption through our Open Banking Accelerator, we are working to support and encourage sector participation in an open energy market. We are actively working on our Open Energy Accelerator product which will - simply and efficiently - support organisations in meeting their obligations under the Consumer Product Data Act, and we believe will be a critical factor in transitioning the sector to a digital first posture.

Question #10	Do you have any other comments on this paper?

In preparing our response, Middleware identified several additional points for consideration by the Authority:

- The role of AI and analytics: Emerging technologies, such as analytics platforms, large language models (LLMs), and related AI tools are likely to play a role in this future model. These technologies will present both opportunities and challenges that will need to be addressed as part of the strategic approach to enabling a digital future.
- Cross-sector interoperability: It is important to recognise that the electricity sector does not operate in isolation. As the Customer and Product Data Act evolves, new sectors will increasingly seek to interact with electricity sector data and digital services. We anticipate this will be driven in part by regulation and in part by consumer and business demand. This broader ecosystem context should be considered as part of the Authority's strategic approach.
- Resiliency and emergency response: We note the reference to incorporating the "Lifelines viewer" into the Common Operating Picture in NEMA's presentation to the EA's Security and Reliability Council (Feb 2025). As well as connectivity, access to real-time electricity consumption data (i.e., indicating people in residence and service connectivity) could provide significant value to emergency coordinators and responders.

As consultation and engagement evolves, it would be helpful to direct respondents to the introductory material on the EA website, as well as the "101" guides provided by Transpower and ASXEnergy. This would help those unfamiliar with the wider system understand its intricacies and help inform their engagement and feedback.

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