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Submission on the Digitalisation Paper: *Our future is digital*

Introduction

1. Bluecurrent welcomes the Electricity Authority's discussion paper, *Our future is digital* (Digitalisation Paper), released for consultation on 12 June 2025.
2. As a smart metering and data services provider, we are at the forefront of New Zealand's journey to a digital energy future and are therefore highly cognisant of the critical role that smart meter data plays in this journey.
3. Smart meters provide the digital foundation for an increasingly decentralised and renewable electricity system. Data generated by smart meters enables businesses and households to unlock and optimise its value for their benefit and helps ensure the security and resilience of an increasingly complex electricity system.
4. We set out below our responses to the consultation questions. We provide examples of how our ongoing and planned collaborations with other stakeholders (outlined in the table below) support the principles identified in the Consultation Paper as critical for building a digitalised system: data visibility, interoperability, and simple solutions.

Digitalisation principle	Bluecurrent initiative	Benefit to the electricity system and consumers
Data visibility	NOD service with Orion and Aurora	Enables LV network insights and planning
Interoperable systems	High-frequency power quality data service	Supports real-time coordination
Simple solutions	Dynamic Load Control with Meridian	Empowers consumers with automated savings

Responses to the consultation questions

Q1. What could stop or slow digitalisation of the electricity system? What would make it successful? How far should digitalisation go?

5. Like regulatory reforms, the digitalisation of the electricity system is unlikely to stop in the foreseeable future. Consumer expectations – which continue to rise with advances in technology and continuous innovation – will be met by businesses using increasingly sophisticated digital tools and systems.
6. Some of the factors that could slow down the pace of the electricity system's digitalisation include:
 - Infrastructure limitations – These could include, for example, the challenges of transitioning from legacy systems, interoperability issues, and the high cost of digital infrastructure upgrades.

- Complexity of integration and orchestration – The proliferation of connected devices and distributed energy resources (DER) presents the challenge of efficiently integrating them into the electricity system so their value can be unlocked for the benefit of the system and consumers, including those who do not own DER.
 - Resistance to change – This could be manifested in various forms, such as outdated policy and regulations, inability to address the skills gap, lack of awareness of the benefits of digitalisation, and lack of understanding or appreciation of the mega trends shaping the energy and related sectors.
 - Cyber security concerns – Vulnerability to cyber security risk, or lack of capability to respond to it, could stifle initiatives for greater digitalisation.
 - Disorderly energy transition – Failure to balance/address multiple energy issues (affordability, resilience, sustainability) during this transition could cancel out any gains towards greater digitalisation.
7. Some of the factors that could help facilitate or accelerate digitalisation of the electricity system include:
- The right incentives for investment – Continued investment is required to meet consumers' rising expectations for more granular and higher frequency or more real-time data.
 - Fit-for-purpose and flexible regulations – A regulatory framework that facilitates digitalisation is one that incentivises continued innovation and competition and provides optionality for future challenges and opportunities.
 - A culture that embraces digital transformation – The willingness to adopt new or better technologies and business models is essential to be able to 'cut through' the increasing complexity of the electricity system.
 - Robust cyber security measures – It is important to ensure that data is delivered or shared in a secure manner – to preserve data integrity as the electricity system becomes more digitalised.
8. We further discuss the above factors in our response to Question 4.

Q2. Do you agree with how we have defined 'data' and 'information', especially in the context of making data more visible?

9. Bluecurrent generally agrees with how 'data' and 'information' are defined in the Digitalisation Paper, especially in the context of making data more visible to support decision making across the electricity system.
10. We agree that data typically refers to raw or unstructured facts and figures, e.g. text, numbers, coordinates, images, audio or video. We agree that common types of electricity data include, among others, data on consumption, identification, assets, and operations.
11. We agree that data becomes 'information' once it has been organised, processed and interpreted to create meaning and generate insights. An example is Bluecurrent's new outage detection and management solution that integrates three data sources to create a comprehensive picture of 'network health', enabling distribution networks to respond to adverse weather events more quickly and in a more targeted manner. We describe this solution further in our responses to Question 5.

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

12. The demand for data or specific types of data that need to be visible – such as data on power consumption and the performance of the electricity system – continues to evolve with market and technological evolution.
13. The electricity sector has made significant progress in enabling greater data access over the past few years, including the provision of consumption data which all electricity retailers can now access. While solutions to data access issues continue to be enhanced, new data opportunities and challenges have assumed greater prominence, such as the provision of network operational data (NOD) to distribution networks, and more granular and higher frequency or more real-time data.
14. The Authority's forthcoming requirements for LV network visibility represent a critical step forward. As demonstrated through our NOD partnerships with Orion and Aurora Energy, smart meter data provides the most cost-effective solution for distributors to achieve comprehensive LV network visibility. We support the Authority setting LV network visibility requirements as this will drive broader adoption of data services that already exist, accelerating network modernisation while avoiding duplicative infrastructure investment.
15. It should also be noted that digitalisation that enables the delivery of new and innovative services to end consumers is more than just enhancing access to data (or increasing data visibility). It is also about ensuring that services being developed address the unique needs of data access seekers. We encourage the Authority to now focus on building on earlier successes on data access by ensuring flexibility is not stifled for all parties so that innovation that benefits consumers can flourish.
16. In the case of data on the physical assets that make up the electricity system, more granular and timely data is becoming more accessible which provides better information on these assets. The value of putting information on this type of data in a central register may diminish as this and other types of data become more available 'on demand'.
17. The Ministry of Business, Innovation and Employment's (MBIE) discussion paper, *Exploring a consumer data right for the electricity sector* (dated August 2024), proposed an initial core dataset for Consumer Data Right (CDR) designation. MBIE's proposed dataset includes: 1) customer-related data such as the name of current account holder, current plan the customer is on, meter type/configuration, ICP and address, and 2) metered data, i.e. half-hourly consumption data.
18. It is reasonable to expect increasing demand for more complex CDR data as service providers develop and introduce more new and innovative services to the electricity market. For example, information on dimensions of time, seasonality, days of the week, and number of measuring phases may later be required for the CDR dataset. The delivery of more complex data is likely to involve costs that should be considered in the design of the electricity CDR, e.g. costs associated with repeatable methods for customer identification and authorisation, regardless of the detailed datasets that may be identified.
19. Bluecurrent supports the timely introduction of a well-designed and cost-effective electricity CDR. We believe that a key aspect in ensuring its cost-effective implementation and timely delivery of its benefits is to keep the initial CDR arrangements simple and robust. This would also help promote initial consumer uptake.
20. FlexForum, of which Bluecurrent is a member, has commenced a deep dive into 'data and digitalisation'. This includes mapping out the data holders, data access seekers, and the types of data required by different parties across the electricity system, etc.
21. We encourage the Authority to continue coordinating closely with MBIE and FlexForum in the identification of data that needs to become more visible, considering that both workstreams are being informed by inputs from multiple parties across the electricity sector.

Q4. What challenges do you think we might face in trying to increase visibility? What considerations need to be given to data privacy and or cybersecurity? How could increasing visibility create more opportunities for consumers, participants and innovators?

22. Some of the challenges that industry participants face in trying to increase data visibility could include the following:

- Large increase in the number of data users/access seekers – Greater electrification generates increasing demand for data from an increasing number of more diverse sector participants. This requires systems that can robustly manage voluminous data flows between parties so the value of data can be optimised for data users and end consumers.
- More connected devices – The proliferation of connected home devices is increasing the data points available to support more comprehensive energy consumption insights. While data unit costs are declining, these are offset by significant increases in the quantity of data that is delivered across the electricity system.
- Decentralisation of energy resources – The number of data sources that need to be managed and orchestrated to ensure the electricity system is secure and reliable increases as more DERs are connected to the grid.
- Data overload – The demand for data is subject to the ‘revolution of rising expectations’ as more data access seekers demand higher frequency or more real-time data, which requires capabilities to deliver this data.
- Policy and regulatory uncertainty – The regulatory framework may not provide enough certainty or clear signals around data policy or impose regulations that could stifle continuous innovation and investment for building a highly digitalised electricity system.
- Investment in data systems – The transition to new or more advanced technology is not costless. For example, the value of the data that may be easily accessible from data holders may not be unlocked (or fully unlocked) if the data recipient/user does not have the system capable of receiving or optimising the use of that data or data stream.
- Data privacy and security concerns – Some parties may be reluctant to share/release data for this reason.

23. The appropriate data privacy and security settings are important to ensure that consumers’ privacy rights are upheld, and data integrity is maintained. We understand that MBIE is undertaking work on standards for the proposed electricity CDR, in conjunction with the Authority. In our view, this work could be a good starting point for a sector-wide discussion on the appropriate standards for the electricity CDR, including data/communication/IT standards and protocols, and privacy and security settings. Bluecurrent would be interested in participating in technical working groups for the development of standards for the proposed electricity CDR.

24. The opportunities created for consumers, participants and innovators by increasing data visibility – usually enabled by smart meter data – are now widely recognised.

- Opportunities for enhancing consumer choice and innovation – Greater data visibility provides consumers greater control over how and when they use and produce electricity. Granular smart meter data enables the development of innovative tariffs that allow consumers to shift load to times of the day when the network is less congested, and tariffs are lower/at their lowest. This allows consumers to make better decisions regarding the market offerings that suit their profile and participation in demand response programmes that could benefit them.
- Opportunities for distributed flexibility – Granular smart meter data provides distribution networks greater visibility of the DERs that are connected to their low-voltage (LV) network and clarity on

the availability and use of discretionary demand. Distributors can then make appropriate and timely demand response decisions/actions, such as shifting load away from peak periods on the network, reducing or delaying the need for new network investment.

- Opportunities to reduce retailers' costs – Remote data services, enabled by smart meters, remove the need for retailers to physically read their meters, reducing operational and transport costs, the savings from which are eventually passed on to end consumers. Remote meter reading also removes the need for estimates, reducing the number of complaints from consumers about the accuracy of their power bills.
- Opportunities to enhance resilience – More granular and timely smart meter data is necessary to orchestrate processes in an increasingly complex electricity system. This also improves distribution networks' ability to detect faults on their network and local outages, improving their ability to recover from emergencies in a timely manner and minimising supply disruptions in their network coverage area.
- Opportunities for accelerated electrification and decarbonisation – Data visibility enables an orderly, rather than a disruptive, transition to a highly digitalised and low-carbon energy future. Smart meter data enables the efficient integration of more DERs that use renewable energy (such as solar PV, EVs and batteries) into the grid and electricity markets, supporting accelerated electrification and long-term decarbonisation.

25. The Authority's LV network visibility initiative will be transformative for the sector. By requiring distributors to have visibility of their LV network, this will:

- Create immediate demand for existing NOD services, avoiding the need for costly physical monitoring infrastructure;
- Enable all distributors to access the same quality of network insights currently benefiting forward-thinking networks like Orion and Aurora;
- Accelerate the identification and management of constraints on the efficient integration of DERs to the grid; and
- Provide the data foundation necessary for dynamic network pricing and flexibility markets.

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?

26. Bluecurrent has collaborated, and continues to collaborate, with other parties to increase data visibility in the electricity system. Some of our recent and impending collaborations include: 1) NOD agreements with Orion, Aurora Energy, and other distribution networks, 2) our new outage detection and management solution, and 3) upgrading one million meters from 2G to 4G.
27. We are actively preparing to support all New Zealand distributors in meeting the Authority's anticipated LV network visibility requirements. Our existing NOD platform can be rapidly deployed across networks, providing immediate compliance with visibility requirements while delivering cost savings compared to traditional monitoring approaches. We encourage the Authority to set clear timelines and standards for LV network visibility to provide certainty for distributor investment decisions.

NOD agreements with distribution networks

28. Several leading network companies across New Zealand and Australia harness the power of Bluecurrent's NOD service, which has traditionally been delivered once a day (or in some cases every four to six hours) for network planning and optimisation. The ability for distribution networks to see

their LV network data at a granular level via NODs can be enabled for any New Zealand network with customers on Bluecurrent smart meters.

29. Bluecurrent's NOD service provides cost-effective insights for distribution networks as people's energy use patterns change. By applying advanced data analytics and digital technologies, networks will be able to efficiently integrate renewable technologies and target investment to avoid future network congestion. This enables them to move from being traditional networks to intelligent networks which is critical to creating a smarter grid and supporting widespread electrification.
30. For example, Bluecurrent has partnered with Orion since November 2023 to unlock and optimise the capacity and performance of Orion's LV network without building more lines and cables. Orion receives NOD data from 195,000 Bluecurrent meters on an ongoing basis over a five-year period.
31. Our NOD service removes the need for Orion to physically install thousands of meters and monitors throughout its network, which would be significantly more costly and time-consuming and could delay the progress of its decarbonisation journey.
32. In March 2025, Aurora Energy invested in a three-month pilot to gain visibility of its LV network using Bluecurrent's NOD service. More than 60,000 Bluecurrent smart meters provide daily power quality data to Aurora for the first time to help Aurora plan its future network investment. Aurora is using the NOD service to gain insights on safety, network planning and operations, EV use, solar panel use, voltage, and to support its geographic information systems. The service allows Aurora to gain deeper and more real-time insights into its network's performance, enabling Aurora to better understand and respond to the evolving energy needs of its communities.

Outage detection and management solution

33. Bluecurrent is planning to produce an outage detection and management (ODM) solution later this year. Traditional outage detection relies heavily on customer complaints, creating significant delays between fault occurrence and restoration response. This reactive approach results in extended outage durations, reduced customer satisfaction, and increased operational costs.
34. Bluecurrent's ODM solution represents a transformative approach to power network monitoring, specifically targeting LV networks at customer properties. This intelligent system integrates three critical data streams to create a comprehensive picture of 'network health', providing unprecedented visibility into network performance and outage events:
 - Advanced meter heartbeats in 5-minute intervals – provides continuous connectivity status from customer premises;
 - Power quality monitoring – includes real-time voltage, current, and phase angle measurements at 5-minute intervals received every 15 minutes along with key alerts; and
 - Weather data in 10-minute intervals – provides timely information on the environmental conditions affecting network performance.
35. The ODM solution will enable networks and retailers to respond to adverse weather events and restore services more quickly. It can focus on areas most in need through its ability to pinpoint meters that are offline and direct technicians to the site – promoting local resilience.

Upgrading one million meters from 2G to 4G

36. On 1 July 2025, Bluecurrent announced a milestone for one of the most extensive key infrastructure programmes undertaken in New Zealand. Bluecurrent and our field service partner Ventia and connectivity partner Spark New Zealand have upgraded over one million smart meter modems across the country ahead of the 2G network shutdown, with minimal disruption to end customers.

37. This upgrade ensures that our smart meters stay connected and reliable – supporting better data, faster insights, and the ability for more New Zealanders to have access to smarter energy options such as time-of-use and EV plans. This upgrade means better service and smarter energy choices for New Zealand households and businesses.

Q6. What challenges do you think we might face in increasing interoperability? What other opportunities do you think greater interoperability will bring?

38. As the demand for data increases, a more standardised framework for data exchange would prevent technology/vendor lock-in and lock-out and ensure interoperability between smart meters and consumer devices. We support the adoption of widely recognised standards, e.g. standards, protocols and APIs for the electricity CDR and for real-time data exchange. This standardisation would help ensure interoperability between meters and customer devices, promote market competition, and enhance consumer choice.
39. However, any initiatives for greater standardisation should not preclude parties from accessing or providing more customised services, or using different technologies or business models, particularly at the ‘edge of the market’ where a lot of innovation and experimentation occur. This is because highly prescriptive arrangements could:
- Limit competition and innovation – Prescribing specific functionalities rather than setting minimum services or the desired outcomes could result in non-conforming assets being stranded or prevent those with better technologies from entering the market.
 - Unnecessarily raise cost for consumers – There is a risk of overbuilding or ‘gold plating’ services to meet highly prescriptive requirements. This could result in consumers paying for features they do not need or desire.
 - Increase the regulatory burden – Highly prescriptive requirements could make competitive businesses more compliance or regulator focused, rather than focusing on becoming better competitors and innovators in the market to deliver new or improved services to their customers.
 - Be inconducive for a decentralised energy future – In the future, new technical functionalities may not be able to be delivered using today’s technology. It would not benefit consumers if market participants do not have ample flexibility to upgrade or alter technical specifications in a timely manner. This could lead to outcomes where the delivery of services is not keeping pace with technological changes or what consumers value.

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?

40. Bluecurrent supports the adoption of widely recognised interoperability standards that would ensure long-term scalability and innovation. Such standards would be essential for seamless communication between meters and multiple devices, fostering a competitive market for third-party services and promoting consumer choice. We believe this approach will encourage innovation and create a robust ecosystem for increasingly sophisticated data services.
41. In this regard, and as indicated in our response to Question 3, MBIE’s work on standards for the proposed electricity CDR, and FlexForum’s deep dive into ‘data and digitalisation’, could provide good starting points for the consideration of the appropriate interoperability standards.

High-frequency power quality data service

42. Bluecurrent is piloting a high-frequency power quality data service with Vector, New Zealand’s biggest electricity distribution network. This new service delivers batches of five-minute power quality data

reads every 20 minutes – up to 72 times a day. This innovation provides electricity distributors unprecedented visibility of their LV network and supports real-time coordination.

43. Greater LV network visibility gives distributors the ability to more proactively manage faults on their network and more quickly respond to, and recover from, outages and emergencies – improving local resilience. This enables distributors to more efficiently manage their network, reducing the need for costly network investment and helping reduce overall system costs and cost to consumers. Importantly, this improves the quality of electricity supply to the network's customers and the communities it serves.
44. It is in the LV network where the energy transition is largely unfolding. As more New Zealanders adopt EVs, solar panels, and batteries, traditional one-way power flows are giving way to dynamic, two-way exchanges. Electricity distributors need near real-time insights – which is what our high-frequency data service delivers – to enhance predictive maintenance and optimise electricity distribution. This helps improve overall grid reliability and efficiency as the electricity system moves towards greater digitalisation and decarbonisation.
45. Bluecurrent is currently the only provider of this high-frequency power quality data service in New Zealand, which will soon become available in Australia. We expect to make this service available to other New Zealand distribution networks this year through pilots that will enable distributors to make a robust business case. In the future, we will work with customers to make the delivery of critical services even faster.

Q8. What challenges do you think we might face in simplification? How could simplifying create more opportunities?

46. Simplification or the development of simple solutions could require robust supporting applications or systems so a simple and convenient solution can be delivered 'to the delight of the customer', e.g. delivery in real time or automatic updates.
47. Solutions that deliver meaningful insights or use tools that are more responsive and interactive could require significant data mining capability or computing/processing power to deliver the required information in a streamlined and timely manner, e.g. with a few taps of the app or smart device.
48. Simple solutions make it easier for consumers to use data and data services that deliver significant consumer benefits and facilitate digitalisation. This instils confidence in the increasingly digitalised electricity market – increasing new technology adoption and participation in initiatives that benefit consumers, e.g. demand response programmes that incentivise shifting consumption to times of the day when power prices are lower.

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?

49. Bluecurrent is collaborating with other technology and energy service providers to deliver services that simplify solutions for end consumers. This includes our partnership with Meridian Energy that delivers our Dynamic Load Control (DLC) service to Meridian customers. We will continue to provide updates to the sector as other such collaborations are launched.

Dynamic Load Control service

50. Bluecurrent has an ongoing collaboration with Meridian Energy on demand flexibility – considered to be a game-changer for the increasingly digitalised electricity system. Demand flexibility is a powerful tool that helps smooth out demand, lowering costs for consumers and reducing the need for carbon-intensive fuels like coal and gas. While adding more renewable energy resources is essential, it makes our power grid more weather-dependent and volatile. Using demand flexibility is a smarter way to manage electricity consumption, keeping it affordable and reliable.

51. We are partnering with Meridian Energy to roll out our ground-breaking DLC service for Meridian customers. Meridian's Smart Hot Water programme, powered by Bluecurrent, will enable the shifting of electricity use by managing hot water heating loads. During peak times, hot water heating can be remotely turned on and off at an individual customer's premises (if the customer has joined the programme), helping to reduce reliance on non-renewable fuels and smooth out electricity demand. Customers on the programme will get lower bills and \$120 of value back each year, by way of \$10 credit each month. It's a win-win for Meridian customers, who benefit from cheaper power with no impact on their usage, and any reduction in non-renewable fuel use is a win for New Zealand. This programme is a cost-effective alternative to replacing aging ripple relay systems – ensuring a stable and efficient power grid.
52. This partnership with Meridian is just the beginning. We are trialling our DLC service with other New Zealand and Australian organisations, paving the way for broader adoption of demand side flexibility and simpler solutions for consumers.

Q10. Do you have any other comments on this paper?

53. We suggest that the Authority combine its *Digitalisation* and *Decentralisation* workstreams and other work exploring factors and trends shaping the ongoing transformation of the electricity system. This would give stakeholders a more comprehensive picture of the direction and pace of New Zealanders' journey towards a highly digitalised, decentralised, and renewable energy future.

Supporting the Authority's LV network visibility objectives

54. Bluecurrent strongly supports the Authority's focus on increasing LV network visibility. Our NOD service directly addresses this need, and we encourage the Authority to:
- Set clear timelines for LV network visibility implementation;
 - Recognise smart meter data as an efficient source for LV network monitoring;
 - Ensure regulatory settings incentivise use of existing data infrastructure; and
 - Consider how visibility requirements can accelerate value-added data services adoption.
55. The alignment between the Authority's digitalisation objectives and Bluecurrent's existing capabilities presents an opportunity to accelerate electricity system transformation. We encourage the Authority to leverage existing NOD capabilities when setting LV network visibility requirements.

Concluding comments

56. We are happy to discuss any aspects of this submission with the Authority. [REDACTED]
57. No part of this submission is confidential, and we are happy for the Authority to publish it in its entirety.

Yours sincerely

[REDACTED]

Matt Bostwick
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