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Submission on the Proposed Real-time Data for Consumers Rule

Introduction

1. Bluecurrent welcomes the Australian Energy Market Commission's (AEMC) consultation paper on the proposed *National Electricity Amendment (Real-time data for consumers) Rule* and *National Energy Retail Amendment (Real-time data for consumers) Rule* (the Consultation Paper), dated 10 October 2024.

2. Bluecurrent supports the intent of this reform, especially the steps that will deliver timely meter data to customers to allow them to better understand their energy bills. Bluecurrent's corporate purpose is "*Unleashing smarter futures today, by delivering data and services to drive a sustainable world*". Bluecurrent is a data service company and as such has an explicit interest in delivering data and services that enable our customers and their consumers. This submission reflects our position on the proposed changes to the real-time data framework and the broader implications for consumers, metering providers, and other market participants.

3. We look forward to further engagement on the development of a practical and effective real-time data framework.

4. Our feedback focuses on the key areas outlined in the Consultation Paper, including consumer access to data, potential cost impacts, interoperability, cyber security, and privacy considerations. We highlight some of the operational challenges, technological capabilities, and the investments required to meet evolving market and regulatory expectations. We provide a balanced perspective that considers broader technology pathways to deliver consumer benefits, and the technical and economic realities involved in enabling real-time data access while protecting consumers' interests and maintaining current metering functions and services.

5. We have considered several mega trends in preparing our submission:

    - **Consumer expectations**: As consumers embrace their roles in the energy transition – through increased penetration of solar, battery storage, EVs, and energy efficient "smart home" applications – the demand for greater control (direct or indirect), and therefore information on consumption (aggregate and for relevant controllable demand or production), is expected to increase. This is a progressive increase in expectations over the medium to long term. We must also be clear to understand the customer needs (or use cases) and ensure data and insights are provided according to those needs, to the parties that can deliver net benefits to consumers (including the consumer) and the consumer is not overwhelmed or facing significant cost increases for data they do not require. For example, the customer use case for solar or EV is significantly different to general understanding of energy consumption over a period. Here, the solution provided to customers differ both in returns and costs. Our expectation is that the availability of consumers' solutions to simplify and automate real or near real-time decisions and optimisations will expand rapidly.

    - **Connectivity and storage**: Advances in communications and storage capabilities are enabling more efficient and affordable data management across all aspects of human endeavour, including metering infrastructure. This needs to be carefully assessed together with the significant increases in demand for data services. Unit costs are expected to reduce over time,

however, these reductions are offset by the significant increases in the quantity of data expected to be sent across the network.

- **Connected appliances** – The proliferation of connected home devices (e.g. Wi-Fi and Bluetooth-enabled) is increasing the data points available in support of more comprehensive energy consumption insights. Metering capabilities are responding to meet these additional collection points, adding supporting connectivity options. In addition, APIs and protocols are becoming more standardised to enable meters to "talk" to these appliances.

- **Technology advancements**: Advancements – such as AI and advanced data mining tools – are bridging the gap between data collection and actionable insights, allowing stakeholders to transform raw data into valuable information for decision making. Significant investments in data storage and insights platforms are underway and will be required for the foreseeable future.

6. While metering companies play a crucial role, especially in the provision of remote data services, a collaborative ecosystem involving retailers, customer energy resource (CER) providers, and other technology and energy stakeholders is essential to maximise data's potential for consumers.

Definition of "real-time data"

7. A key consideration in assessing the impact of this reform is defining "real-time data". We recommend that the definition of "real-time data" is specific to the context, or use case, against which the demand for "real-time data" is applicable. For example:

    - **Remote access to real-time data**: This supports the provision of active power data values (kWh) for both consumption and generation through methods other than a direct or local connection to the meter. For this type of data, there can be a latency of up to 5 minutes between either receiving a request for real-time data or the scheduled data collection time, and when the real-time data is transmitted from the metering provider's systems (as measured at the metering provider gateway) to the requester. Due to current technological constraints and associated costs, this level of service is presently only available as a one-time, non-frequent, chargeable data request. However, with future technological advancements, we anticipate that this could become a frequent and cost-effective data service for customers, though such developments are likely to be years, rather than months, away.

    - **Local access** – For applications requiring frequent access to real-time data, consideration needs to be provided to local connection where data is required to be provided in seconds.

Application of "real-time data" to primary consumer use cases

8. As mentioned above, we recommend that the AEMC approach this definition through careful consideration of the consumer needs, and primary use cases. To provide an explanation, we foresee two potential use cases that may necessitate more frequent data from smart meters:

    - ***Enabling consumers to have better insights to inform energy usage, and potentially more control over bills:***

      In this case, we believe historical data supplied by a metering provider is a valuable resource for consumers, offering insights into patterns of energy consumption and enabling them to make informed decisions on usage optimisation. By analysing past data, consumers can identify peak usage times, track long-term energy trends, and assess overall efficiency. In consideration of the trends in 5 above – connectivity, storage, metering capability, insights solutions – we believe historical data will be provided on a more frequent basis (e.g. moving from 24-hour to 4-hour delivery, and potentially 15 minutes). This is a technology transformation anticipated over the next three to five years – balancing customer demand benefits with the costs of providing the service.

When necessary, historical data can be complemented by real-time data access (e.g. 5-minute delivery), allowing consumers and energy providers to respond immediately to specific events or enquiries. This combination of historical and real-time data is powerful, providing a comprehensive view of energy use while enabling quick adjustments to be made when needed, such as during peak loads or unexpected usage spikes.

The availability and utilisation of real-time data is expected to grow through time as the use cases and data requirements are disclosed through consumer/supplier preferences and technology changes. This may at times mean that there are limitations and that other technical solutions (discussed in this submission) are both more cost effective and faster to deliver. A decision now to pre-specify the solution set within meters is likely to impose significant costs on consumers and suppliers - for use cases with very limited specificity.

As we move towards the provision of increased frequency of consumption data to customers or their agents, the speed of change needs to balance the benefits to consumers with the uptake of these services, the demands for extra data, and the likely costs of providing this. For example, Victoria's decade-long experience with smart meters and mechanisms to make more timely data available to customers have seen limited uptake of these services. It is important to ensure that the availability of data is not confused with actionable information. Actionable information requires the integration of both raw data such as that obtained from a meter and a range of other data (consumer preferences, available devices, CER, temperatures, time of day, market conditions, etc) to allow value adding (net of cost) decisions to be either implemented or considered.

- ***"Real-time" management of specific appliances or CER like solar and battery systems:***

  Metering data can be provided in two primary forms:

  - **Remote metering data** allows CER systems to access detailed energy insights from the retailer, supporting data-driven decisions on energy usage and storage. However, remote data is not currently available in a continuous real-time delivery, making it suitable for usage trends and not recommended for instant adjustments.

  - **Existing solutions** are available and in use by CER suppliers – for example, deploying their own equipment such as DIN rail meters and CT clamps that provide the necessary information to the CER device. While this can be seen as wasteful as there is already a meter on site, this solution avoids the issues faced with integrating with other parties' assets. We understand that CER devices are now being deployed with a built-in meter which avoids the cost of installing a dedicated meter. These systems just need a CT clamp and a cable back to the CER device. We understand from previous discussions with CER providers that they prefer this solution which gives them complete control over the system.

9. As illustrated above, there are currently solutions in place to meet both customer use cases, and these solutions are improving with advances in available technology.

10. The development of future services needs first to be considered in the reality of today, the roadmap of possibilities, together with commercial realities. It requires a collaborative approach between metering service providers, retailers, distribution network service providers (DNSPs), other service providers (e.g. CER systems and aggregators) and of course regulators.

11. In responding to the consultation questions (below), our submission is grounded in these two customer use cases. We note these are yet to be confirmed and therefore recommend that the AEMC carefully establish the need for these use cases prior to implementing new obligations. Doing so without substantiated demand could unnecessarily increase consumer costs without added or overriding benefit.

Cost implications

12. While we outline some types of costs associated with potential solutions in this submission, further validation is needed to refine these estimates. Many costs are external to metering providers and require input from third-party device suppliers and meter manufacturers.

13. Several key factors affect solution feasibility and cost estimates:

    - **Data sampling frequency** - determining if data should be sampled at trading intervals (5 minutes) or at shorter intervals.
    - **Data delivery latency -** clarifying the speed of delivery to the end user or device, whether in seconds or minutes.
    - **Required data points** - determining if data should only include consumption and generation values, or if it also needs to include power quality data (PQD) like Current (I), Voltage (V), and Power Factor (PF) for each measurement element. It is essential to define whether data is required for individual elements or for the premises overall to inform meter configuration needs.
    - **Data exchange protocols** - confirming whether data exchanges should follow standard protocols or can be proprietary.

In support of an outcomes approach with clear cost recovery mechanisms

14. We support the AEMC's approach to focus on outcomes rather than defining solutions; however, we urge the AEMC to clearly define the requirements and establish cost recovery mechanisms, particularly if the requested data exceeds standard metering obligations. While Energy Consumers Australia (ECA) suggests that metering providers should not pass on data-related costs to customers when providing a real-time data service, we consider it reasonable for requesting parties to pay prices appropriate to cover the costs (direct and indirect) when additional or higher-frequency data is involved.

15. The proposed reform should also consider the impact of increased data demands on the physical meter itself. Meters have shifted from collecting data at 30-minute intervals to 5-minute intervals, a six-fold increase in data storage requirements. Additionally, recently introduced network tariff requirements by some DNSPs have doubled the data channels recorded, from two to four channels per meter. The upcoming power quality data (PQD) obligations under the *Accelerated Smart Meter Deployment Rule* will further require all meters to record PQD on top of the data used for settlement, network, and retail billing. Since the meter's available resources (CPU and memory) are finite, it is essential that the provision of real-time data, whether locally or remotely, does not compromise its primary functions. Any regulation mandating new services such as real-time data should specify the priority services (or if all must be accommodated) and should be cognisant of the cost implications, including recoverability of the cost of replacing meters with more capable devices.

Responses to the consultation questions

Question 1: What are the benefits of improving access to real-time data?

a) What are the anticipated use cases of real-time data?
b) What is the value of the benefits that flow to consumers?

16. The Consultation Paper states the potential benefits of the reform:[1]

[1] Page 8 of the Consultation Paper

> The rule change request considers that it would be beneficial for all consumers to have access to real-time data. It identifies the following benefits of improving access for all consumers:[20]
>
> 1. Consumers would have more control over their bills - consumers would have better insights to inform their energy use.
> 2. Consumers would save money by avoiding inefficient duplicative costs - consumers would not need to incur additional costs to install separate devices to access real-time data.
> 3. More consumers would take up services which help lower bills - improved access to real-time data may improve product and service offerings.

17. Each of these benefits can be achieved through various means. For customers to **understand their energy bills**, access to consumption data needs to be contextual and span an extended period. Viewing data over time — not just single point-in-time meter readings — provides the insights customers require to understand usage patterns that impact billing. Access to recent historic consumption data allows customers to have a view of how their usage fluctuates across different periods, such as peak versus off-peak times, or weekdays versus weekends.

18. This data enables customers to map their energy habits against retail tariff structures, enabling them to estimate costs more accurately and compare retailer offerings. For example, they can see how shifting certain activities, like laundry or heating, to off-peak times might reduce their overall bill. Unlike real-time data, which offers a snapshot of immediate consumption with no context, recent historical data supports a broader view, helping customers identify patterns that contribute to bill predictability and control.

19. The *National Electricity Rules* (NER), particularly Clause 7.14, already provide a framework for accessing this data. Retailers and DNSPs are required to provide customers with meter data upon request, under the *Meter Data Procedure*. The ECA considers customer access to this data under these provisions to be limited and not timely enough. Should this be the case, then the delay is not because the meter data is not available. Metering providers deliver processed smart meter data from communicating meters to these participants daily, with data from the previous day sent by 6:30 am.

20. This data could be made available to the customer by retailers or DNSPs shortly after receipt. Improving the existing *Meter Data Procedure* obligations by placing timeframes to make data available to the customer will encourage retailers and DNSPs to develop platforms that can deliver the data more efficiently.

21. There are examples of this already in the National Electricity Market (NEM). Victorian DNSPs provide customers on their network with a portal that allows customers to view (and download) their smart meter data. These portals also allow customers to request “catch-up reads”, allowing viewing up to the latest completed trading period. This process works by sending a message to the meter requesting the unread periods.

22. While DNSPs control the meters in Victoria, there is no reason why the same approach could not be taken for the rest of the NEM. Existing B2B transactions enable requests among market participants to support request and receipt of “catchup reads” from the metering provider. In our view, this provides the best method of allowing the customer to get access to more timely meter data and solves the issue related to customers’ access to metering data.

23. We agree that there is value for customers in gaining easy and timely access to their meter data, and to make that available can quite easily be achieved. However, the provision of real-time data is not necessary to realise these benefits.

24. The other key use case that we understand to be a driver for access to real-time data is the emerging **‘meter-to-machine’ requirement**, where devices behind the meter need data from the meter itself. This requirement is largely driven by parties implementing controls on CER devices. DNSPs now require customers to support DNSP control of devices to manage export generation to address network

performance issues. To be effective and meet the requirements of the DNSP, CER devices need information on current export levels to balance generation from batteries or PV systems with the premise's load, ensuring minimal or no excess generation is exported.

25. Meeting this requirement presents additional complexity compared to the previous use case. Meter-to-machine could be satisfied using a similar approach to providing data to the customer, where data is collected remotely by the metering provider and then sent to the requesting party. This party would then need to be responsible for either sending control messages to the device based on the data received, or forwarding the data itself to the CER device to take the necessary actions. The viability of this approach is dependent on many factors, such as the frequency of a data feed, the type of data required, and the permitted latency in data delivery – which all translate to costs. As we discuss in Question 8 (below), metering providers have contracted with telecommunications providers to deliver the existing product set. A requirement for "real time" data would necessitate the renegotiation of existing contracts. While the cost implication of this is unknown, we expect that it would be higher than the existing cost as it is equivalent to moving from a single brief call per day to a constant call and connection. Any cost/benefit analysis would need to be informed by additional cost data.

26. An alternative approach to remote collection for meter-to-machine data is to provide a **local connection method** that allows a CER device to talk to the meter directly or as already outlined obtain equivalent data via a local CT. Meeting this requirement directly from a meter has its own considerations. These include:

    - **Lack of existing demand for real-time data connections** – Meters currently deployed have not been specified by our customers to provide direct from meter real-time data feeds. As demand for new services increases, so does capability – such as local connection (wired and wireless) – and we expect meter manufacturers could provide this capability to Australia in the future on the back of market demand. An alternative is to enable local access to the meter through additional equipment that would need to be installed. Both options require capability that is not generally in the current meters being deployed. We discuss this further under Question 2.

    - **Lack of standards between devices** – Even if meters had the capability for local connection, there is little in the way of standards implemented by meter and other device manufacturers that allow for easy integration. Where some level of standardisation is supported, this is usually implemented by an appliance manufacturer, which means that manufacturer specific configuration is required by devices wishing to integrate. We discuss this further under Question 2.

27. To meet the requirements of parties such as DNSPs, CER suppliers often deploy their own equipment such as DIN rail meters and CT clamps that provide the necessary information to the CER device. This solution avoids the issues associated with integrating with other parties' assets. We understand that many CER devices are now being deployed with built-in meters which avoids the cost of installing a dedicated meter. These systems need a CT clamp and a cable back to the CER device. We understand from previous discussions with CER providers that they prefer this solution which gives them complete control over the system.

28. Until the issues of meter capability and interoperability are solved (assuming this is the lowest cost solution), it is likely that additional equipment will be required. Therefore, the costs to support local connection to the meter will be greater than those incurred by the customer under existing CER provider solutions.

Question 2: What are the costs of improving access to real-time data?

a) What are the types of costs that would be incurred to improve access?
b) What is the magnitude of these costs?
c) Who would incur these costs?
d) Do the benefits of improving access to real time data outweigh the costs?

29. The types of costs involved in providing real-time data largely depend on specific "real-time" data requirements. The anticipated costs for enabling more timely access to meter data may be classified into two solutions:

    - **Remote data retrieval** - In this approach, metering providers remotely access the meter, retrieve the required data through their systems and processes, and package it into messages sent to the requesting party. Alternatively, the data can be made available for the requesting party's application or device to collect directly.

    - **Local data access** - Here, local access is enabled, allowing the customer's device or application to connect directly to the meter and request data on site, ensuring the meter data remains within the premises.

30. Additionally, we have outlined common costs associated with both solutions. These include expenses related to system upgrades, security measures, customer support, and compliance adjustments.

Costs related to remote access

31. Under the remote access solution, metering providers collect meter data using existing processes and systems designed for standard market data collection. This approach simplifies data access for users, as they would not need to connect locally or handle complex meter-specific integration issues. Standardised processes for requesting and receiving data between initiators and recipients further simplify usability. However, enabling remote access generates the following costs:

    - **Telecommunications costs -** Where real-time data is required outside of standard collection schedules which are typically once per day, additional telecommunications costs will be incurred. Although we predict unit costs of connectivity to reduce over time, costs also increase proportionally with the amount and frequency of data requirements. For high volumes and frequency use cases, such as minute-by-minute data requests, remote access may be cost prohibitive relative to alternatives. Further work is required with telecommunications suppliers to determine the right balance of data amount and frequency to costs, with careful consideration of use cases.

    - **Application integration and standardisation costs** - Applications or devices requesting meter data from metering providers must integrate with the metering provider's platforms. While existing standards like the B2B procedures can provide structure for data exchange, some use cases may require enhanced data types (e.g. PQD transactions for technical data). Where data requirements fall outside current exchanges, new B2B formats may need to be developed, increasing integration costs.

    - **Meter programming costs** - In cases where the required data is not currently collected, meters may need to be reprogrammed to capture additional data types, leading to potential hardware and software adjustments.

32. The table below summarises the anticipated cost areas, with the potential for additional expenditures depending on the specific requirements and technical complexities of each use case.

	Remote access costs (delivered via MP systems)	
Types of costs	Meter Data to customer (assumes last trading interval meets requirement)	Meter to machine
Costs		
Customer support to connect	Solution Dependant[1]	Yes
Ongoing cost for Data	Yes	Yes
Meter Data System changes	Yes	Yes
Meter Data provisioning changes	Yes	Yes
3rd party integration costs[2]	Yes	Yes
Fit for purpose measures		
Remote access fit for purpose	Yes	Requirement dependant[3]
Notes		
1 Assumes the customer will be using an application provided by the retailer, DNSP, AEMO, or third party in which they would take responsibility for supporting the customer with their access. If MPs are required to provide this application, then MPs will need to support the customer.		
2 These relate to costs incurred by parties requesting and receiving the data from the MP. The application or devices would need to be able to request and receive the data in a format that is agreed with the MP. Use of B2B standards would allow some level of interoperability.		
3 Use of remote access for 'meter to machine' requirements will depend on the type of data and how often data is required. The additional telecommunications charges to collect and transmit data in short intervals may not be cost effective compared to local access.		

Costs related to local access

33. Enabling local access allows devices and applications to connect directly to the meter, retrieve data on site, and avoid data transmission beyond the premises unless needed for other purposes by the metering provider. However, implementing local access involves specific costs and technical considerations:

- **Connection method options**
  - ***Wired Connection***: A direct connection, as proposed in the ECA rule change request, will require the meter to provide a physical socket to support a wired connection. Until changes are made to the meter, additional equipment may need to be installed. For safety reasons, any solution should consider if a trained technician would be needed for any added component fitting, unless connection points are deemed safe for customers to do the fitting themselves.
  - ***Wireless Connection***: Low-powered options like Bluetooth or Wi-Fi could simplify local access and will require the deployment of wireless communication modems. If these are not already installed, then additional hardware will need to be installed by a trained technician to enable wireless connections, and the meter will need to be programmed to communicate with the newly installed component.
- **Device interface development**

  Application and device providers will need to create compatible interfaces to connect with meters directly. If meter and device manufacturers do not align on a universal standard, development costs may rise significantly as device providers must create multiple interfaces for different meter types. Ideally, standardisation across all meter providers would minimise these costs.

- **Standards enhancement**

  Additional costs may be incurred to expand or update existing market standards to accommodate the requirements of local access. If the industry opts to integrate new or enhanced standards for interoperability, resources will be needed to develop, test, and deploy these standards effectively.

34. Using a wired local connection presents safety issues because devices need to be physically connected to meters with cables or other hardware. Engaging with the meter panel involves risks that our technicians are trained to handle using proper processes and procedures. We are concerned about customers managing the connections themselves.

Wired connection - new communications port[2]

35. In this scenario, the smart meter will be modified to make available a new port that is accessible for the customer to plug a cable into. Assuming that the port is not permanently open (an approach that is worth considering to keep costs low), the metering provider will activate the port, allowing the customer's application to request and receive data over this connection.

Wired connection - existing optical port

36. All Bluecurrent smart meters currently have an optical port on the face of the meter, used primarily by metering providers for data collection and on-site programming. This port could also be repurposed to provide customers with local access, though it requires an optical read head, a device that attaches to the port and communicates with the meter via specialised software on a laptop, tablet, or a similar device.

37. Challenges with the optical port include:

    - **Cost** - Optical read heads may cost several hundred dollars, though some less expensive options that meet necessary standards are available from overseas sources.

    - **Power requirements** - The read head needs power, either from an external device or battery, which may complicate setup.

    - **Device compatibility** - Software is required to operate the read head and communicate with the meter, which may limit access to those with compatible devices.

38. While the optical port is typically intended for temporary use, adapting it for regular customer access could offer a workable alternative to installing a new port. However, the costs and logistics around optical heads and compatible software may limit the practicality for widespread customer use.

Wireless local connection

39. An alternative to a physical connection, wireless local access offers another approach for customers to access meter data directly. Bluecurrent's deployed meters currently use a modular modem connected to a communications port under the meter cover for cellular communication with our systems. This

[2] The ECA rule change proposes that local access can be established by using ports that are already in the meter. Use of these ports is not possible for the following reasons: 1) The majority of meters installed have only a single communications port and this is used by the modem for remote access and therefore is not available. 2) The existing ports have not been designed to allow consumer provided devices to be plugged into and to do so creates an opportunity to damage the meter and the consumer device. We do not consider that using existing ports is a viable option and a new port will be required to be provided.

modem could be upgraded to support additional wireless methods like Bluetooth or Wi-Fi, enabling local access for customer applications or devices.

40. Implementing this feature would involve the initial costs of developing and integrating compatible wireless technology, but future generations of smart meters are designed to include built-in Bluetooth or Wi-Fi support without relying on the modem port. We are working with our meter manufacturer to understand when these capabilities will become available in new models, and at what cost.

41. This approach allows customers more convenient access to meter data without the need for physical connections or specialised devices, potentially simplifying integration with home energy management systems. This approach may however require appliance and consumer interfaces (e.g. APIs and/or mobile application) to support the optimal use of the consumption data.

42. The following table summarises the categories of costs that are likely to be incurred by various stakeholders in enabling local connections to the meter.

	Local Access		
	Wired connection		
Types of costs	Existing Optical Plug	New Comms port	**Wireless Connection**
Costs			
Meter redesign required	No	Yes	No
Additional hardware required	Customer[1]	MP (Solution dependant)	MP
Firmware upgrade	Yes	Yes	Yes
- Security/access enhancements	Yes	Yes	Yes
- integration of new hardware	No	No	Yes
Customer side meter manufacturer integration software	Yes	Yes	Yes
Customer support	Yes	Yes	Yes
Site visit required	No	Solution dependant	No
3rd party integration costs	Yes	Yes	Yes
Ongoing cost for Data	No	No	No
Fit for purpose measures			
Suitable for customer app	Maybe[2]	Maybe[2]	Yes[3]
Suitable for machine support	Maybe[2]	Yes	Yes[3]
Work with non-comm meters	Yes	Yes	Yes
Notes			
1 Assumes that the MP will be responsible for enabling local connection to the meter and the customer will be responsible for providing the apps and devices to plug into the meter. In this case, an optical read head would be required, and a device to connect to it.			
2 Connecting to a customer side application or device may be problematic using the physical port.			
3 Assumes customer end point is within wireless range. Customer may need to install range extenders.			

Costs common to wired and wireless local access

43. Regardless of whether local access is established using a wired or wireless method, the following types of costs are expected to be incurred:

- **Commissioning** – If local access is not plug-and-play, enabling local connection may require a site visit to assist in setup and activation. This would involve labour costs and potential scheduling complexities to ensure compatibility with customer devices.

- **Customer support** – Ongoing resources will be required to assist customers in connecting their devices to the meter. This includes developing a secure access framework (e.g. time-based tokens, pairing mechanisms) and providing technical support to address connectivity issues and device compatibility.

- **Integration with the meter** – Connecting devices to the meter, whether wired or wireless, is associated with compatibility challenges. Meters typically run proprietary firmware, and even those supporting standard protocols like DLMS or Modbus may have manufacturer-specific implementations, partly due to them being designed for industrial applications. A standardised solution is needed to better support mass market metering across the NEM, addressing challenges that have so far been resolved in the C&I market through site level customisation / integration.

Magnitude of costs

44. Determining the magnitude of costs is highly dependent on the use case requirements. We believe that remote collection may be the lowest cost option compared to local collection but depending on specific requirements – especially the frequency of data and the allowable latency.

45. Real-time data service adoption affects costs. Low uptake may strand investments, while high usage may require significant investment (assuming pricing is efficient). Data collection systems face physical limits (in the short term and subject to commercial negotiations), such as those from telecommunications providers, which may be costly to address.

46. Due to the short timeframe to respond to this consultation and a lack of detail on the use case requirements, we have been unable to develop any indicative costings. We have requested information from our meter vendors on the likely impact on our costs should changes be required.

47. Apart from the cost of making changes to meters to satisfy real-time data requirements, another consideration is the time it would take for any changes to be made available. We cannot comment on this currently as the services required are not sufficiently specified.

48. Cost related to customer support should not be underestimated. We have experience of several retailer programs that have been discontinued because of the high cost of supporting customers with their device connection issues.

49. We have not attempted to estimate the costs for the development of software that allows applications and devices to connect to the meter as the specific services are not sufficiently defined.

Who would incur these costs?

50. Costs associated with changes to the smart meter design will be incurred by meter manufacturers and passed onto metering providers via the cost of the meter. Increased costs for telecommunications changes related to higher frequency data collection will be passed on to the metering provider. The metering provider will need to make changes to their systems and processes.

51. Ultimately, all increased costs will be passed on to the customer, either directly or indirectly.

Do the benefits outweigh the costs?

52. In our view, it is too early to tell if the benefits will outweigh the costs. We note that customers in Victoria have had access to more timely metering data for over ten years, but we believe the uptake has been low. It should be recognised that a significant volume of data can be generated by a smart meter, but that additional analysis is required to translate this into actionable information.

53. This reform addresses access to the data, but without an appropriate tool set to help customers interpret and understand what is being presented, this reform may not deliver the benefits intended.

Question 3: Do metering parties currently have a competitive advantage?

a) Do you agree with the proponent that metering parties have a competitive advantage in providing services not related to their core functions of settlement, billing and maintenance?
b) How would any competitive advantage impact the costs of new energy services to consumers?

54. We disagree that metering providers currently hold a significant competitive advantage in offering non-core services. As detailed above, enabling access to meter data, whether locally or remotely, involves substantial costs, at least in the short to medium term. It is likely to require additional equipment to be installed until the existing capability of the smart meter is enhanced.

55. In practice, **installers of CER often use cost-effective alternatives**, such as CT clamps and other sensors, to record data. These methods are frequently more affordable for both customers and vendors, sidestepping compatibility and integration issues, and allow CER vendors to innovate. Additionally, many CER devices now feature built-in metering, enabling vendors to retain full control over the system without needing to integrate with third-party smart meters. Feedback from CER vendors indicated that they may avoid integrating with metering providers' systems to maintain control and avoid additional integration costs. Furthermore, some PV systems, for example, only integrate with their manufacturer's meters, even if real-time data were available from other providers.

56. With the ongoing installations of CER equipment in some jurisdictions, customers may now be required to send advanced PQD to DNSPs as part of their connection agreements. This suggests there is existing competition for providing this data to DNSPs. Although it is unclear whether DNSPs compensate for this data or if customers bear the cost directly, connection requests may be subject to approval based on their agreement with those terms, offering DNSPs an alternative to obtain PQD from sites without reliance solely on traditional metering providers.

57. We also maintain that providing services related to metering data remains within the core function of metering providers. Under NER Clause 7.6.2, it is anticipated that metering providers will develop innovative products and services. In previous submissions, we have argued that Clause 7.6.2 should be revised to eliminate certain conditions that currently hinder innovation and the development of new service offerings.

Question 4: Do DNSPs need more than PQD to improve network planning and operation?

a) Do the benefits of improving DNSP access to real-time data outweigh the costs?
b) What are the use cases for DNSPs and other network planners to have access to real-time data other than advanced PQD?

58. **Access to PQD through reforms:** With the *Accelerating Smart Meter Deployment* (ASMD) reforms, DNSPs will gain access to a basic PQD service at no additional cost to them[3]. For more frequent and

[3] In Bluecurrent's submission on the Accelerated Smart Meter Deployment draft determination - page 2, we pointed out that the cost of this decision is not zero and that we have limited to no ability to recover this additional cost.

advanced PQD services, DNSPs can negotiate with metering providers to obtain data on an enhanced basis, which includes PQD recorded and delivered more frequently as needed.

59. **Use of basic PQD data for planning and fault detection**: Daily-delivered basic PQD data supports DNSP needs for network forecasting, planning, and trend analysis, which can help in identifying emerging faults. The AEMC's *Metering Services Review* indicated that daily basic PQD largely meets the needs for most DNSP use cases, with advanced PQD reserved for situations requiring more immediate fault detection and resolution.

60. **Real-time data *vs* advanced PQD:** The Consultation Paper does not clearly state if real-time data access for DNSPs is intended to circumvent the costs associated with advanced PQD services. If DNSPs were to access real-time data directly through this rule change instead of through negotiated advanced PQD services, the cost would depend on the frequency of required data retrieval. The same cost principles would apply regardless of whether DNSPs access advanced PQD or real-time data—higher frequency incurs higher costs for metering providers, both OPEX and CAPEX, whether accessed through advanced PQD services or real-time data frameworks. Therefore, we support DNSPs' access to meter data to remain under the advanced PQD services and not as part of this reform.

61. **Ensuring a net benefit for new services:** We anticipate developing additional services for DNSPs that are designed to provide a net benefit, ensuring that the advantages of enhanced data access outweigh the associated costs. Therefore, we support a framework that encourages DNSPs to evaluate the benefits versus the costs for any new service, rather than simply requesting the service. This aims to ensure that the benefits of any additional data services justify the costs involved.

Question 5: Who should have a right to real-time data in the NER?

Should consumers, their authorised representatives or any other part, including DNSPs, have a right to access to real-time data?

62. We believe access to real-time data should be limited to the customer and the customer's authorised representative. DNSPs already have access to both basic and advanced PQD services, which adequately meet their operational requirements, thereby making use of a real-time data framework unnecessary for DNSPs.

63. We agree with the AEMC's conclusion that "providing data may be challenging in some cases, for example, due to the location of the meter".[4] Consequently, any obligations imposed on providers should be fulfilled based on reasonable endeavours.

Question 6: How should real-time data be defined?

a) Do stakeholders agree with the proposed definition of real-time data and customer power data?
b) What should be defined and/or further expanded in AEMO procedures?
c) Should data be validated or not?

64. **Defining Real-Time Data**: We do not agree with the current proposed definition of real-time data, which states that data should be either "received instantaneously" or, if not possible, "within no more than 300 seconds (5 minutes)." This definition creates several issues:

- **Latency:** While some use cases could allow for data collection and transmission within a specified timeframe, enforcing a fixed delivery time is unrealistic. Data transmission involves multiple stages across various networks and systems, each with inherent latency. Once the data leaves the metering provider's system, it traverses telecommunications and internet infrastructure, possibly Australian Energy Market Operator (AEMO) systems, and further

[4] Page 13 of the Consultation Paper

networks before reaching the end recipient. This process introduces delays beyond the metering provider's control.

- **Compliance challenges:** Ensuring compliance with such a rigid delivery timeframe would be infeasible. The sender cannot guarantee when the recipient receives the data due to network and processing delays, and it is unclear how compliance with receipt timing could be validated by either party. Placing obligations on transaction receipt timing would be difficult to monitor.

- **Clarity of definition:** The proposed definition lacks specificity on the exact type of data required as real-time. Smart meters are capable of recording numerous data points, but they must be programmed to collect specific values at defined intervals. Vague requirements could lead to discrepancies in data availability, potentially requiring upgrades to meters to increase memory capacity or processing power, ultimately shortening meter lifespan and driving replacement costs. A clear and precise definition is essential to ensure that meter providers and manufacturers can prepare the necessary capabilities without compromising meter resources.

65. We propose an alternate definition of real-time data:

Real-time data units of measurement:

Active power (kWh) values for consumption and generation recorded by the meter for the most recent completed *trading interval* (5 minutes); or

Instantaneous values that are supported by the meter, e.g. current (amps), voltage (volts) and Phase angle or Power Factor (where phase angle is not available).

Real-time data performance requirements:

Where real-time data is provided by means other than local connection (where a device or application connects directly to the meter), metering providers are to meet the following performance requirements:

- The period between receiving a request for real-time data, and when real-time is sent from the meter provider systems is within 5 minutes – measured from meter provider gateway.

- Metering providers may limit the number of requests to one per 300 seconds (5 minutes).

Where real-time data is provided by means of a local connection the third-party CER controller provider and metering service provider should be free to agree the specification most appropriate for the monitoring needs and ensure it does not impact on the primary revenue metering function the market requires.

66. We do not support the validation of real-time data due to its critical characteristic of timeliness. Our expectation is that real-time data should be collected directly from the meter with minimal or no post-collection processing by the Metering Data Provider's (MDP) meter data management system, which typically handles validations. If validation were required, MDPs would likely face challenges in meeting the necessary timeliness for real-time data delivery. Furthermore, if real-time data is provided via local access, the data remains on-premises and cannot be subject to validation routines.

Question 7: How should real-time data be accessed and shared?

a) Do parties, other than metering service providers, need to locally connect directly to the meter to access real-time data? If so, what changes are needed to enable this?
b) Are there alternative data sharing arrangements that should be enabled by a rule change, if made?

67. We understand that some stakeholders support a local connection for meter-to-machine data exchange. However, local access currently poses significant challenges, such as standardisation across different meters and devices, variations in connection methods (wired or wireless), and limited built-in capability in existing meters. Enabling local connection in the short to medium term will likely require interim solutions until meter manufacturers can incorporate this capability. If there is sufficient market demand for local access, these issues may be resolved over time, and manufacturers could begin to include such functionality in meters. Achieving a low-cost, interoperable solution that allows customers to connect their devices to meters easily, however, will require substantial investment in both time and capital.

68. Remote access presents an alternative to local access, whereby data is collected by the metering provider and bypasses many of the technical challenges associated with local access. However, remote access entails higher ongoing costs due to additional telecommunications, data processing, and packaging expenses. This approach also raises challenges in transmitting data back to the device on the customer's premises, likely requiring integration efforts by device providers to receive and interpret the data provided by metering providers. Depending on the specific frequency and latency requirements, remote access may not always serve as a viable substitute for local access. A thorough understanding of these requirements will be essential to assess its practicality.

Question 8: Who should bear the costs of accessing real-time data?

a) Should all consumers bear the cost of accessing real-time data?
b) What should be the benefits of a dispute resolution framework and how should it operate?

69. We are open to the idea of socialising the costs of providing real-time data, provided there is a clear path for metering providers to recover these costs. However, this approach has certain drawbacks, including:

- **Cross-subsidisation** - The service may primarily benefit a smaller subset of customers, such as those who own CER, but its cost could be borne across all customers. This means that customers without CER may end up subsidising those with CER.
- **Obscured service costs** - Socialising costs can obscure the actual expense of providing the service, which might lead to overuse. Without visibility into the true costs, customers may request services that exceed their actual needs, resulting in unnecessarily high expenses.
- **Innovation limits** - When customers do not face the full cost of the service, they have less motivation to seek alternative, more efficient methods. This can stifle innovation and hinder the development of more cost-effective solutions.
- **Costs are dependent on demand -** The service costs vary based on customer requirements. One customer may need real-time data occasionally, for example, when reviewing their usage patterns, whereas another might require a 24/7 constant feed for an in-home display. These differing demands result in significantly different costs, making it challenging to spread the costs evenly among all customers.

70. The Consultation Paper suggests that metering providers may charge customers for the direct costs associated with real-time data access. At present, metering providers lack a direct relationship with end customers, which presents a challenge in delivering and recovering costs for this service. We expect that any real-time data service will be treated in the same manner as existing services where the costs are presented to the customer via the customer's retailer.[5]

71. We note that the Consultation Paper suggests that customer and customer authorised representatives:

[5] Noting that metering providers generally have limited to no ability to pass additional costs onto retailers for services the retailer has not sought.

> "...should pay metering parties for new and direct costs incurred to make real-time data available, but not for data collection or production costs."[6]

72. The Consultation Paper also suggests that metering providers may charge customers for direct costs incurred in enabling real-time data access. Currently, metering providers lack a direct relationship with end customers, creating challenges in both delivering the service (we do not know who the customer is) and recovering costs (we are not set up to bill end customer services). We anticipate that any charges for real-time data services will be managed similarly to existing services, with costs communicated to the customer through their retailer (see footnotes 3 and 5). However, should this not be the case, then metering providers face significant costs to build the capability to bill customers receiving real-time services.

73. We have concerns regarding the exclusion of "data collection" costs from customer charges. These are significant costs for metering providers, which increase with the frequency of data collection. Metering providers face charges from telecommunications providers based on the frequency of meter interactions and the volume of data transmitted. With increased frequency, we will incur additional telecommunications costs, plus additional cloud storage costs and investment in people, which could be substantial. We believe that metering providers should be able to recover these costs from customers as part of the real-time data service.

74. Regarding the need for a dispute framework for challenging 'direct' charges, we believe the most efficient way for metering providers to provide the real-time data service to the customer is via the customer's retailer, rather than directly. Therefore, the existing customer protections and disputes resolution frameworks already in place should suffice.

Question 9: What changes would be required to ensure interoperability?

a) Would changes to the minimum services specification requirements be the most effective way to ensure interoperability of real-time data?
b) Would any other changes be required to facilitate interoperability, for example, changes through device standards?

75. We do not agree that the minimum services specification in the NER is the appropriate mechanism to ensure interoperability. This specification defines the services that a metering installation must support but does not outline a standard for interoperability. Under the current specification, metering providers can meet service requirements in various ways, which does not inherently promote a standardised approach and enhances competition and innovation. If interoperability becomes a priority, we expect these requirements to be clearly defined within the meter installation standards under Clause 7.8.2 of the NER or integrated into the metrology procedures.

76. For cases where meter data is collected remotely and provided to a customer, the B2B procedures define a common interface that facilitates interoperability between requestors and providers. These procedures appear to be a more suitable option for establishing a standard specifically for cases where meter data is provided from metering providers' systems to another party (i.e. non-local access).

77. To ensure interoperability for local access between meters and devices, standards would need to be adopted by both meter manufacturers and original equipment manufacturers (OEMs) of CER and other devices. We anticipate that the process of developing and adopting these standards could take several years.

78. We also note that the minimum services specification only applies to communicating meters. Any meters that are not communicating are not subject to the specification. If there is an intention to allow standardised local access communication between the meter and a CER device, then any requirements

[6] Page 17 of the Consultation Paper

included in the minimum specifications would not apply, and another method of specifying this standard would be required.

Question 10: Do existing arrangements sufficiently protect consumer privacy and maintain cyber security for any real-time data framework?

a) Would any additional consumer privacy and cyber security protections be required if a real-time data framework were implemented?
b) Do you consider other work programs could provide any additional protection required, such as the Roadmap for CER Cyber Security?

79. Use cases accessing real-time data through metering providers' collection systems can leverage the existing security framework with minimal changes, which could streamline implementation and maintain current privacy and cyber security standards effectively.

80. For cases involving local access, particularly via a physical wired connection, ensuring secure access to the meter could be challenging. Metering providers lack control over the external device connecting to the meter, making it difficult to enforce robust security standards. Establishing a secure framework under these circumstances may prove costly and is likely to be imperfect, potentially placing a cumbersome burden on the customer. Therefore, if physical local access is required, an "always open" model, where security is primarily reliant on physical access to the meter, could provide a simpler and practical approach.

Question 11: What other changes would be required to enable a real-time data framework?

Would any other changes be required, for example, to clarify data and storage arrangements or to implement relevant best practice features from other frameworks?

81. As discussed above, the proposed reform must consider the impact of the provision of real-time data on the other services and function of the meter. Resources such as CPU and memory on the meter are finite and real-time data must not impact the provision of the current primary contracted functions which are to provide: 1) data and services for retailers and their consumers, and 2) settlement data to support wholesale market settlement.[7] Regulation should at least provide direction regarding which services have primacy over others, or if all services must be met, then cost recovery must be provided so the metering provider can replace the meter with a higher specification device.

Question 12: Do you agree with the proposed assessment criteria?

Are there additional criteria we should consider or criteria included here that are not relevant?

82. We believe that the additional costs associated with the proposed rule change, as identified in this submission, should be given due consideration as these would have significant implications for market efficiency (second assessment criterion) and implementation considerations (fourth assessment criterion). For example, there will be cost impacts where there is: 1) very low uptake, or 2) very high demand from customers which could not be serviced by metering providers regardless of any increased investment. The proposed reform needs to acknowledge these scenarios.

[7] Other services are already supported and provided via contract, different meter types for different use cases (e.g. solar), remote disconnection and reconnection, VPP related services, PQD, etc.

Concluding comments

83. We are happy to provide further information in support of our submission. Please contact Paul Greenwood (Industry Development Australia) at Paul.Greenwood@bluecurrent.com.au.

84. No part of this submission is confidential, and we welcome the AEMC publishing it in its entirety.

Yours sincerely

Neil Williams
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