AUSTRALIAN ENERGY MARKET COMMISSION

DETERMINATION

Directions Paper

National Electricity Amendment (Real-time data for consumers) Rule 2025

National Energy Retail Amendment (Real-time data for consumers) Rule 2025

Energy Consumers Australia

30 January 2025

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About the AEMC

The AEMC reports to the energy ministers. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the energy ministers.

Acknowledgement of Country

The AEMC acknowledges and shows respect for the traditional custodians of the many different lands across Australia on which we all live and work. We pay respect to all Elders past and present and the continuing connection of Aboriginal and Torres Strait Islander peoples to Country. The AEMC office is located on the land traditionally owned by the Gadigal people of the Eora nation.

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Summary

We envision a future where all consumers access the benefits of real-time data

1 The Commission considers that all consumers should have access to real-time data as part of their electricity service.

2 Real-time data, being energy data that is recorded and provided to consumers instantaneously, can inform and support consumers to:

- gain a deeper understanding of energy use patterns, in real-time, to make more informed decisions on their energy use, potentially creating bill savings
- take advantage of innovative energy products and services to get more value from the way they use energy, including (for those consumers that adopt them) their consumer energy resources (CER), and save money on bills.

3 We consider that giving consumers access to real-time data directly from their smart meters may be the most efficient way of meeting the objective of universal access to real-time data. However, not all smart meters can provide real-time data cheaply, meaning the cost and benefits to individual customers of accessing the data from the meter are likely to be mismatched in the short term.

4 We therefore propose a staged transition to universal consumer access to real-time data from smart meters, which balances the costs and benefits to customers over time.

5 For the next 15 years, after any rule is made, retailers may charge consumers for access to real-time data from the smart meter. This charge would seek to cover any upfront costs to enable access. This could be a one-off charge or split over multiple bills, as agreed between the retailer and customer. However, retailers may not charge consumers any ongoing costs to provide real-time data. After 15 years, retailers would be required to provide real-time data to consumers without any charge.

6 This directions paper outlines:

- a definition of real-time data to clarify the service to be provided
- a framework to enable access to real-time data that includes obligations on metering service providers (MSP) and retailers to make the data available, offer it to consumers and publish prices to support efficient service provision
- a 15-year transition period to support real-time data being provided directly from the meter to minimise the costs to all customers and better match cost recovery to beneficiaries.

Access to real-time data supports a consumer-centric energy system

7 Our Strategic Narrative, published in October 2024, sets out our vision of a consumer-centric, net-zero energy system, where all types of households with varying levels of participation, including vulnerable consumers, will benefit from the energy system. Our vision highlights the goal of giving consumers access to clear and actionable information.

8 Improving access to real-time data supports this vision and affirms the importance of consumer choice:

- for those consumers who wish to actively participate in decisions on their energy use, real-time data provides better information to make more informed decisions

- consumers who choose not to actively participate can still benefit by granting third parties access to their real-time data. These parties can use the data to help consumers lower their bills or get more from their CER investments.

9 Effective coordination of data and technology will facilitate an energy system that is cost-effective, resilient, secure and flexible. Household and business consumers will benefit from cheaper energy bills if they use insights from their real-time energy data to optimise their usage.

10 Other actions we are progressing that are aligned with the Strategic Narrative include work on issues for consumers under the regulatory framework. This work seeks to benefit consumers individually and collectively, by better understanding consumer behaviours and preferences, and exploring how the energy system can better inform, empower and protect consumers.

We seek your feedback on our proposed approach to enable access to real-time data from smart meters

11 This paper is published as part of our assessment of a rule change request submitted by Energy Consumers Australia (ECA) on 24 June 2024. The rule change request highlighted that:

- all consumers would benefit from access to real-time data from the smart meter
- it is difficult to access real-time data from smart meters
- we should make a rule to enable consumers and their authorised third parties to access real-time data from smart meters

12 We initiated our assessment of the rule change request on 10 October 2024 by publishing a consultation paper, which sought stakeholder input on the proposal articulated in the rule change request. We asked stakeholders what changes were needed to improve access to real-time data and whether the benefits of accessing real-time data from smart meters would outweigh the costs.

13 In response, stakeholders had mixed views on the costs and benefits based on the different circumstances of each consumer.

14 The purpose of this paper is to outline and seek feedback on our proposed approach to enable access to real-time data, from smart meters, for consumers and third parties. Specifically, we seek input on the changes needed in the Rules and AEMO procedures to enable our proposed approach to deliver the greatest net benefit to consumers.

15 We welcome stakeholder views on alternative approaches that would deliver better outcomes for consumers.

16 Written submissions responding to this directions paper are due by **20 February 2025**.

Access to real-time data is currently limited which creates inefficiencies and limits consumer choice

17 Access to real-time data from smart meters can be difficult to negotiate with MSPs, who are the custodians of the data. In practice, consumers and third parties seeking access to the data are bypassing the custodians and instead installing separate digital meter readers on or around the meter.

18 While consumers who install such devices are already accessing the benefits of real-time data, this access comes at a cost. Customers are responsible for the cost of any additional metering infrastructure required to capture the data.

19 Stakeholders consider that:

- it may be more efficient for consumers and third parties to access real-time data from smart meters instead of through other devices
- doing so would lower the costs of real-time data to consumers
- consumers and third parties should have the ability to choose whether to access real-time data from smart meters if the benefits outweigh the costs.

All consumers should have access to real-time data

20 We consider that all consumers should have access to the benefits that real-time data provides, and that to achieve this objective, real-time data should be made available to all customers at low cost. We consider that the most efficient way to achieve this outcome would be to deliver that access via the smart meter.

21 We have consulted with stakeholders on the costs and benefits of accessing real-time data from smart meters, for diverse individual customers and for all customers in aggregate. Two important challenges emerged through this process:

1. The current fleet of smart meters, and likely many of the meters to be installed as part of the accelerated rollout, do not have in-built real-time data functionality. Retrofitting or replacing these meters to enable the necessary functionality would come at a cost to customers.
2. The benefits of accessing real-time data from smart meters would not outweigh the costs for all consumers in all situations, given:

- the materiality of upfront costs
- the existence of cheaper alternatives
- evidence of low consumer demand for real-time data to date.

We propose a staged implementation approach that delivers access efficiently and equitably

22 To address these challenges, we propose a staged approach to implementing universal access to real-time data from the smart meter. Our approach would ensure all consumers have access in the future, whilst giving consumers the option to access the data from smart meters in the near term, if the benefits outweigh the costs for them.

23 The upfront costs to enable access remain high where meters need to be retrofitted or replaced, and the market is still developing and testing real-time data solutions. If meters are replaced at end-of-life with meters that already have in-built real-time data functionality, this would significantly lower the cost of accessing real-time data from smart meters. The average physical life of a smart meter is 15 years.

24 We propose that for 15 years, from the commencement of any rule made and aligned with the typical meter replacement time frame, consumers who want access to real-time data from smart meters may pay a one-off charge to retailers. This may not represent value for all consumers, depending on the price. As is the case today, some consumers could choose to install alternative devices, if these are perceived as better value.

25 If a consumer chooses to pay to access real-time data from the smart meter, access should be ongoing for the consumer and free for any third party who subsequently requests access.

26 Our approach would ensure that, during the period when the costs of enabling access to real-time data is expected to be material (over the next 15 years), the costs are not spread across

consumers such that consumers would be paying more than the benefit they receive from real-time data.

27 To ensure that the cost of accessing real-time data remains competitive, we propose that the AER annually publishes the price of accessing real-time data for each retailer and MSP. This would enable consumers and third parties to identify retailers and MSPs that offer low cost access to real-time data and incentivise MSPs to compete to offer low cost real-time data solutions.

28 After 15 years, from the commencement of any rule made, we propose that consumers and third parties should not be directly charged to access real-time data from smart meters. We consider that 15 years is sufficient time to enable the market to develop low-cost solutions to access real-time data and significantly reduce upfront costs.

29 MSPs could ensure that all meters currently installed are replaced at end-of-life, in 15 years, with meters that have in-built real-time data functionality or MSPs would have to absorb the cost of retrofitting meters on an as-needs basis. This approach would encourage the market to deliver solutions that would provide real-time data to consumers and third parties at lowest cost.

30 We consider that a transition period of 15-years supports positive consumer outcomes. During the period:

- MSPs and retailers can work to develop and test the lowest-cost solutions
- there is no need to replace smart meters already paid for by consumers that are not nearing end-of-life
- reporting and transparency will enable customers to compare the costs of getting access across service providers and (together with the obligation on MSPs) minimise any competitive advantage that may be retained by MSPs.

An outcomes-based framework could underpin access while retaining room for innovation

31 We propose an outcomes-based framework to support access for consumers and third parties. This framework would impose high-level requirements on retailers and MSPs, but would not prescribe how these requirements are met — giving retailers and MSPs flexibility to collaborate and innovate solutions to deliver the intended outcomes.

32 We propose the following key changes to the Rules to enable access to real-time data from smart meters:

- **A definition of real-time data** being voltage, current and phase angle recorded every second and delivered within a second. An explicit definition would ensure that consumers have instantaneous access to real-time data and clarify the data points, how often the data is recorded, and how fast it is delivered to meet all consumer needs. AEMO procedures would further clarify our proposed definition.
- **Retailers would be required to:**
  - offer real-time data access to all customers and explain to customers the benefits and costs of real-time data specific to the customer's needs.
  - provide real-time data to a customer upon request:
    - within 20 business days if a meter needs to be retrofitted or replaced or
    - within 10 business days if metering infrastructure does not need to be upgraded

- These obligations would create an easier process for retailers to identify customers who would require real-time data, increase customer awareness of the benefits of real-time data, and lead to an uptake in real-time data products and services.
- **MSPs would be required to provide**
  - real-time data to customers upon a retailers request. This should be included in the commercial contract between retailers and MSPs.
  - a one way stream of real-time data at a minimum, in a way that:
    - facilitates multi-party access to the data and
    - enables multiple different devices to easily and securely read real-time data.
- **Third parties would be required** to seek a consumer's consent to access real-time data. As outlined below, we are seeking stakeholder views on third party access pathways.
- The AER would be required to publish the price of accessing real-time data for each MSP and retailer.

  These obligations set expectations for the outcomes-based framework and align with the intent of the rule change request to provide seamless, easily accessible, and secure access to real-time data for consumers and authorised third parties.

We are seeking input on approaches to enable third party access to real-time data from smart meters

33 Consumers can benefit from giving third parties access to their real-time data. Third parties such as energy service providers, with consumers' consent, can use the data to provide CER optimisation and home energy management services to consumers. This benefits consumers, for instance by lowering their energy bills, without requiring their active engagement.

34 The existing data access framework in the Rules does not apply to real-time data. Currently, third parties can only access real-time data from the smart meter through commercial negotiation. Alternatively, third parties can install separate devices around the meter to capture real-time data.

35 We consider that extending the existing framework in the rules would not deliver the best outcomes for consumers. This is because it puts the onus on consumers to ensure third parties have access to real-time data.

36 Instead, we seek stakeholder feedback on two potential pathways to provide access to third parties:

1. **Retailer-centred pathway** — third parties would have to request access to real-time data from retailers. Retailers would verify whether the third party has received consumer consent.
2. **MSP-centred pathway** - third parties would have to request access to real-time data from MSPs. MSPs would verify whether the third party has received consumer consent.

37 We consider that, under either pathway, third parties should obtain a consumer's consent before accessing real-time data. This means that a third party must be an authorised representative of a consumer to access the data. We seek stakeholder feedback on whether there should be additional requirements over the form of consent.

38 We are also seeking feedback on whether further requirements should be placed on third parties, in addition to customer consent such as through an accreditation process to prevent the risk of data being misused.

39 We have considered whether it would be feasible to leverage the existing Consumer Data Right

(CDR) to enable access for third parties. We consider the CDR framework is not intended to enable third party access to real-time data and would need to be significantly amended to do so. These amendments sit outside of our rule-making power.

DNSPs would have access to real-time data with a customer's consent

40 We acknowledge that providing Distribution Network Service Providers (DNSP) access to real-time data could provide benefits to consumers. However, we consider extending the approach taken with basic power quality data (PQD) and providing DNSPs with free access to real-time data is not in the long term interest of consumers.

41 Real-time data is not necessary for DNSPs to provide services to consumers given DNSPs have access to basic PQD and other data for free. These data sets are sufficient and real-time data is only incrementally beneficial. The costs of providing DNSPs free access to real-time data outweighs these incremental benefits because a separate mechanism would need to be set up to provide real-time data to DNSPs.

42 Similar to advanced PQD, we consider that DNSPs should commercially negotiate with MSPs to access real-time data from all consumers, if they wish to receive it.

43 Under our proposed approach, DNSPs can access real-time data as a third party by obtaining consent from consumers.

Our proposed approach supports competition in the market for CER services

44 Some stakeholders consider that an MSP's exclusive control of a smart meter gives them a competitive advantage in providing CER services and that this competitive advantage may increase with innovation in smart meter technology that leads to greater functionality.

45 The Commission considers that MSPs do not have a material competitive advantage.

46 We consider that better access to real-time data, enabled by our proposed approach, would facilitate competition. This is because MSPs would not be able to leverage their access to the smart meter to obtain real-time data at lower cost than any other third party.

47 We consider that energy service providers can compete with MSPs on a level playing field using other devices. For example, CER service providers could use in-built meters in CER devices to provide the same services that the MSP would use the smart meter to provide.

48 We consider any further changes to address competition concerns would not lead to better outcomes for consumers:

- Restricting MSPs use of the smart meter would prevent consumers from realising the full value of smart meters.
- Enabling third parties to control the smart meter for CER services poses material cyber security, safety and consumer privacy risks. We consider that it is appropriate for control of the smart meter to remain exclusively with the MSP until further work can be done to investigate ways to limit these risks.
- Other ring-fencing arrangements would likely impose greater costs to consumers.

We seek your feedback on changes needed to improve our proposed approach

49 We encourage stakeholders to provide comprehensive views on our proposed approach and

propose changes which lead to better outcomes for consumers. The following questions, discussed throughout the paper, represent a non-exhaustive list of the feedback we are seeking from stakeholders. We encourage stakeholders to highlight issues that have not been captured by or would not be resolved under our proposed approach.

Question 1: Do you agree with a staged implementation approach for when consumers pay for access to real-time data?

a) Is 15 years the right time-frame for industry to achieve cost efficiencies in delivering real-time data access from smart meters? Are there ways to support industry to reduce this time-frame?

b) Would the marginal cost to each consumer be material in the long-term if costs were smeared across all consumers after 15 years?

c) Are there other ways to facilitate efficiency and equity and support industry to lower costs to consumers?

d) What incentives would our approach create for retailers, MSPs and third parties?

Question 2: Should the prices for real-time data access be published by the AER?

a) How and where should the AER publish prices to access real-time data?

b) What other measures would incentivise retailers to offer real-time data at competitive prices?

Question 3: Do you agree with our proposed definition of real-time data?

a) Does the proposed definition enable real-time data products and services to deliver the benefits of real-time data to consumers?

b) What other features of a real-time data definition should be described in AEMO procedures?

Question 4: Do you agree with the obligation on retailers to provide real-time data access?

a) Are the proposed timeframes of 10 business days and 20 business days sufficient to enable retailers to give customers access to real-time data?

b) Are there circumstances where the obligations on retailers to offer and give real-time data access upon customers' request, and the timeframes within which to give access should not apply?

c) Are additional obligations on retailers required to enable the provision of real-time data access to consumers?

Question 5: Do you agree that MSPs should ensure multi-party, interoperable and secure access to real-time data?

a) Are there requirements that we should impose on MSPs in addition to multi-party, interoperable and secure access obligations?

Question 6: Which consumer consent pathway do you consider to be the most practical and why?

a) Are there any barriers to implementing this pathway?

b) Are there any viable alternative pathways that better deliver outcomes for consumers?

Question 7: What should third party access consent look like?

a) Should the form of consent be left to third parties to determine?

b) Should there be specifications placed on the form of consent that third parties must obtain from consumers? If so, what could this look like?

c) Should the process for the withdrawal of consent also be specified?

Question 8: Should additional requirements be placed on third parties that request access to consumer data?

a) Should third parties be accredited by AEMO under the NER?

b) Are there any other safeguards required to ensure third parties do not misuse data?

Question 9: What features of the consumer data right (CDR) can we adopt?

a) What specific features of the CDR would be beneficial to apply to third parties who seek access to real-time data?

How to make a submission

Stakeholders can help shape the solutions by participating in the rule change process. Engaging with stakeholders helps us understand the potential impacts of our decisions and, in so doing, contributes to well-informed, high quality rule changes.

Due date: Written submissions responding to this directions paper must be lodged with Commission by 20 February 2025.

How to make a submission: Go to the Commission's website, www.aemc.gov.au, find the "lodge a submission" function under the "Contact Us" tab, and select the project reference code ERC0399.[1]

Tips for making submissions are available on our website.[2]

Publication: The Commission publishes submissions on its website. However, we will not publish parts of a submission that we agree are confidential, or that we consider inappropriate (for example offensive or defamatory content, or content that is likely to infringe intellectual property rights).[3]

For more information, you can contact us

There are other opportunities for you to engage with us, such as one-on-one discussions or industry briefing sessions. Please contact the project team with questions or feedback at any stage at submissions@aemc.gov.au.

1 If you are not able to lodge a submission online, please contact us and we will provide instructions for alternative methods to lodge the submission.
2 See: https://www.aemc.gov.au/our-work/changing-energy-rules-unique-process/making-rule-change-request/submission-tips.
3 Further information is available here: https://www.aemc.gov.au/contact-us/lodge-submission.

Contents

Tables

Figures

1 We seek feedback on our intended approach to enable access to real-time data from smart meters

About this paper

We have published this directions paper to test with stakeholders our proposed approach to improving access to real-time data.

This paper does not outline any specific changes to the Rules for stakeholders to consider and respond to; rather it details and seeks feedback on the outcomes we propose to achieve through changes to the Rules.

At this stage, we seek stakeholder feedback on whether:

- stakeholders agree that our proposed approach to improving access to real-time data best serves the long-term interests of all consumers
- the specific changes needed in the Rules and AEMO procedures to enable our proposed approach deliver the greatest net benefit to consumers. This will inform the development of the draft rule. We encourage stakeholders to provide detailed feedback on elements that need further specification and/or amendment.

If stakeholders do not consider that our proposed approach best supports positive consumer outcomes, we encourage stakeholders to comprehensively outline alternatives that would achieve the intended outcome of better access to real-time data.

Our Metering review recommended that consumers should have access to real-time data

In our *Review of the regulatory framework for metering services* (Review), we considered that providing access to real-time data would enable consumers to maximise the benefits smart meters offer by using data from the meter to inform better energy management practices. We recommended changes to the regulatory framework to provide clarity and certainty for accessing and sharing real-time data.[4]

The Review acknowledged that a subsequent rule change would need to develop a framework for consumers to access real-time data based on the costs and benefits of various approaches.

ECA submitted a rule change request to improve consumers' access to real-time data

On 24 June 2024, the Commission received a rule change request from Energy Consumers Australia (ECA). The rule change request from ECA responds to our Review's recommendation.

The rule change request considered that real-time data from smart meters is not widely accessible. It argued that constrained access to real-time data prevents consumers from realising the full benefit of smart meters.

The rule change request therefore recommended enabling consumers and their authorised representatives to access consumers' real-time data from smart meters. It also suggested further changes that should be considered to facilitate access.[5]

4 AEMC, Review, p. 129.

5 ECA, rule change request, p. 9. A consumer's authorised representative is a third party service provider that has obtained consumer's consent to access their data and provide energy services to consumers. For the purpose of this paper, mention of a third party accessing real-time data assumes that they have obtained consumer consent, and are acting as authorised representatives.

Our consultation paper sought stakeholder views on the costs and benefits of improving access to real-time data

On 10 October 2024, the Commission published a consultation paper which sought stakeholder views on the rule change request.

The consultation paper sought views on:

- whether there are any barriers to accessing real-time data from smart meters
- the benefits of real-time data to consumers and the benefits of receiving real-time data directly from smart meters
- the costs of enabling consumers to access real-time data directly from smart meters

We considered that it was important to retest whether the benefits of enabling consumer access to real-time data from smart meters outweigh the costs. This helped identify the approaches that would be in the long term interest of all consumers.

2 Access to real-time data would benefit consumers

This chapter discusses:

- the potential benefits of real-time data to consumers and how it aligns with our vision for the energy system
- why access to real-time data is currently costly

Section 4.3 discusses why it is beneficial to consumers to access real-time data from smart meters instead of alternatives.

2.1 Real-time data benefits customers who choose to adopt CER and energy management services

2.1.1 Australians are adopting CER at an exponential rate

Millions of Australian households and businesses are embracing consumer energy resources (CER) including solar panels, batteries, and electric vehicles (EVs).

People are also using CER in the form of 'smart devices', such as hot water systems, and controlling or programming CER to manage energy consumption through behaviours, timers, and dedicated applications (apps).

The increasing uptake of CER is paired with innovative energy services that use data to help lower consumers' energy bills. This includes home energy management and aggregation services such as virtual power plants (VPP).

These new services enable CER to support the electricity grid by harnessing and aggregating flexible demand when it is needed, thereby avoiding potentially more expensive investment in grid-based generation and poles and wires infrastructure.

2.1.2 Consumers with CER benefit from real-time data

Real-time data provides consumers with more granular information about their energy use. It enables consumers to view changes in their energy use more frequently.

Consumers with CER, and their CER service providers, can use real-time data to better coordinate and optimise their CER assets and devices. For example, as described in Box 1, knowing a household's energy consumption at any time (real-time data) would inform when to charge and discharge batteries.

Box 1: Using real-time data to optimise batteries

For a household with a wholesale pass-through tariff plan, a service provider can use the real-time meter data, along with live and forecast wholesale pricing information, historical consumption data and other information (e.g. weather forecasts) to determine an optimal charge and discharge schedule for a home battery. The real-time meter data can be used in conjunction with live wholesale pricing data to react to real-time price variations, for example, to export to the grid when prices spike and charge the battery when prices are low. The historical consumption data and forecast prices can be used to determine a target state of charge in the future that maximises the value from the battery.

In response to our consultation paper, stakeholders consider that real-time data is beneficial because real-time data:

- helps consumers make more informed choices about CER products and services. Consumers who have a better understanding of their household energy usage and who can use real-time data to coordinate their CER can make better choices over which CER products and services would benefit them most[6]
- supports aggregation services such a VPPs. As mentioned in Box 1, real-time data enables VPP service providers to coordinate batteries
- informs load limiting and shaping, and other demand response techniques. More information about behind the meter energy consumption helps identify the required demand response outcomes[7]
- encourages existing and new participants in the industry to use real-time data to innovate new product or service offerings.[8]

As shown by the examples above, in many cases, third parties support consumers to unlock the full benefit of real-time data. While some customers may want to engage with the data themselves through apps and other platforms, many of the benefits that flow from access to real-time data are expected to flow from products and services offered by third parties. Subject to customers consenting to third party access to the data, these products and services allow customers to optimise their energy uses and get better returns on their CER, without necessarily having to adjust their behaviour or monitor information in real-time. This outcome is particularly important in the context of customers consistently reporting that they want energy to be simple.

Real-time data also supports consumers who are happy to engage with a level of complexity. It provides these consumers with the tools to optimise their CER and respond to market price signals without the support of a third party. This outcome is consistent with our vision of a consumer-centric energy system.

2.1.3 The Commission has progressed other reforms to maximise the value of CER to consumers

The Energy and Climate Change Ministerial Council's National CER Roadmap (the Roadmap) provides a national approach to reforms to ensure Australians can harness the full potential of CER.[9]

As outlined by the Roadmap, a range of reforms are required to unlock the full value of CER to consumers. Figure 2.1 outlines our completed and ongoing work to support this goal.

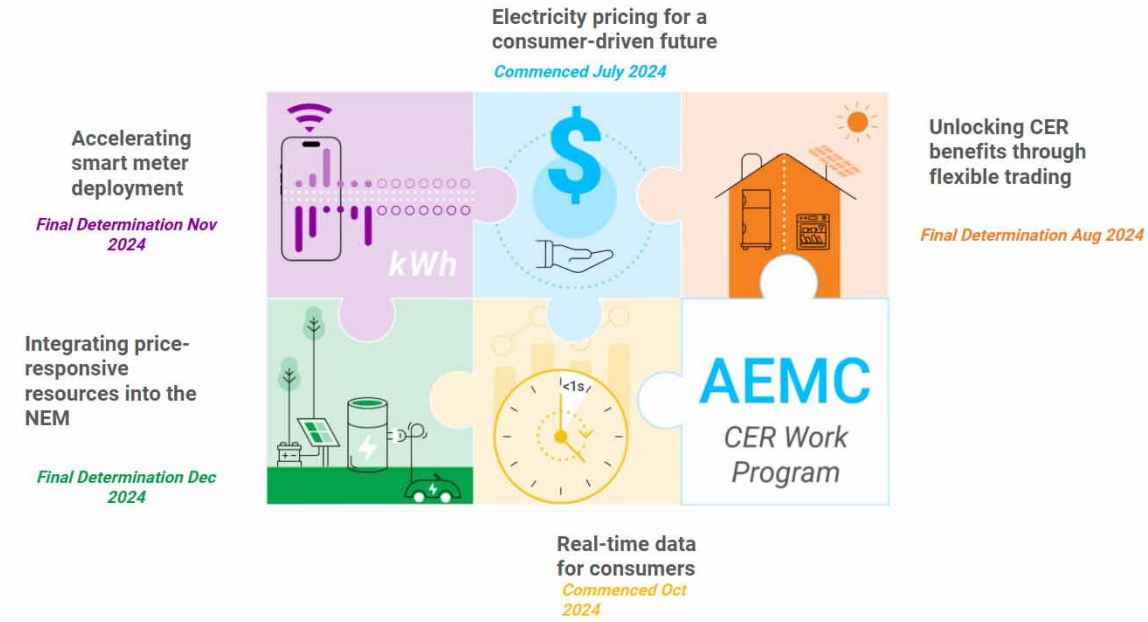
6 Submissions to the consultation paper: CEC, p. 3; Erne Energy, p. 1; Essential Energy, p. 5; EWOV p. 1; Ausgrid, pp. 1-2; Compliance Quarter, p. 2; Landis+Gyr, p. 2; SAPN, p. 1.

7 Submissions to the consultation paper: EDMI, p. 1; Essential Energy, p. 4; Compliance Quarter, p. 2.

8 The University of Queensland, submission to the consultation paper, p. 3.

9 See Roadmap here.

Figure 2.1: The AEMC's work program to maximise the value of CER for consumers



Source: AEMC

Elements of these reforms are interdependent which means they have greater benefit to consumers as a package rather than as standalone reforms. These reforms benefit from better access to real-time data:

Rule changes

- *The Accelerating smart meter deployment rule change* (metering rule change) enables the universal uptake of smart meters by 2030 by accelerating their deployment to consumers in a timely and cost-effective way, and with appropriate consumer safeguards in place. The case for accelerated deployment did not rely on the benefits of real-time data. Smart meter capability to deliver real-time data to consumers is an additional benefit of smart meters. Some smart meters that are currently installed or will be installed as part of the deployment can provide real-time data to consumers.
- *The Unlocking CER benefits through flexible trading rule change* enables energy service providers to separate and manage 'flexible' CER from 'passive' loads in the energy market - leading to innovative products and services for consumers. These service providers require real-time data to provide some service offerings to consumers. Better access to real-time data may reduce the cost of these services and/or increase the potential benefits of these services to consumers.
- *The Integrating price-responsive resources into the NEM rule change* allows aggregated CER, demand response and independent small generators/batteries to be scheduled and dispatchable in the NEM. Real-time data is beneficial to optimise when these resources should be scheduled and dispatched.

Reviews

- *The pricing review* addresses the important role that electricity pricing will play in delivering the CER necessary for the energy transition and meeting the needs of a diverse set of customers. The review will examine how markets and regulatory frameworks can provide the products

and services that best match consumer preferences, now and into the future. Better access to real-time data can facilitate more innovative and dynamic pricing models because consumers would have more information to respond to price signals.

We are working with other market bodies and government officials on reforms that sit outside the Commission's remit, such as the CER Taskforce work on interoperability, and work on providing consumers with information and tools to make decisions that suit their needs. The CER Roadmap outlines this ongoing work.

2.2 Real-time data also benefits consumers without CER

2.2.1 Consumers currently have access to data which can inform consumer energy use

Consumers can access energy consumption data at a lag

Under the NER and NERR, consumers and their authorised representatives have a right to access or receive metering data.[10] Retailers and DNSPs must provide metering data to a consumer upon a consumer's request.[11]

AEMO procedures outline how retailers and DNSPs should provide metering data, for example, the format in which data should be shared with consumers. This ensures that consumers receive data in a format that is useful and easily accessible.

The Rules and AEMO procedures do not specify when or how frequently data must be given to consumers once a consumer requests data. Due to data validation procedures and other administrative processes, in practice, consumers typically receive data from the meter at approximately one day's lag. Consumers can also request this data from retailers, through the Consumer Data Right (CDR). The metering data that consumers receive provides an overview of their energy consumption the previous day.

As part of their retail service, many energy retailers are already providing consumers with energy consumption data through mobile applications or the retailer's web portal. Consumers therefore do not need to request data from their retailers using the Rules or the CDR if a consumer chooses a retailer that already provides this data to consumers as part of their retail service.

We understand that some retailers are working on solutions to provide consumers with more granular data more frequently to better inform consumers energy choices.

Energy consumption data at a day's lag currently satisfies many consumers' needs

Stakeholders suggested that the data consumers can currently receive is sufficient to inform their energy usage patterns over time.[12]

A consumer who knows how they have used energy historically can predict how they are likely to use energy today and in the future, and can use those insights to use energy differently to respond to electricity price signals, should they wish to do so. For example, Box 2 outlines how consumers would use data at a days lag to inform their energy choices under a time of use (TOU) tariff.

10 Clause7.15.5 of the NER.

11 Rule 56A and 86A of the NERR. A civil penalty applies if retailers do not provided data to the consumer.

12 Submissions to the consultation paper: EnergyAustralia, pp. 2-3; ENGIE, p. 1; Energy Queensland Appendix, p. 1.

Box 2: How data at a day's lag can help consumers on a TOU tariff

Under a TOU tariff, electricity consumers are charged a different price for electricity at different times of the day. A consumer may be charged more for using electricity in the evening hours than in the morning.

A consumer with access to historical consumption data knows what their morning and evening consumption patterns are. This consumer may find that they are using a lot of energy in the evening hours in summer, when the air conditioner is turned on.

This consumer may then choose to run the air conditioner earlier in the day to pre-cool the home when, under their TOU tariff, energy is cheaper. This may allow them to ramp-down or switch off the air conditioner during the pricier evening period.

The next day, the consumer's data would indicate whether this change materially impacted their evening energy consumption and therefore if such a behaviour change would likely lower their bills in the future.

Consumers can also use this data to find the best retail offers for them. Not all TOU tariffs are the same, a consumer is better informed to choose the tariff that most suits them if a consumer knows how and when they use energy.

Some energy service providers offer services where the service provider uses a consumer's historical consumption data to help them find the best retail offer and/or provide energy savings tips based on their usage.

2.2.2 Real-time data may better inform a consumer's energy usage and help consumers respond to more dynamic price signals

Consumers without CER or who do not procure home energy management systems (HEMS) can use energy consumption data to inform their energy choices and, if they wish, to respond to price signals.

Real-time data may benefit these consumers as it would enable them to respond to price signals in real-time, should they wish to. In the example above, if a consumer had access to real-time data, the lag between observing consumption and changing behaviour would be smaller. Any behaviour changes may also be better optimised, as real-time data can allow customers to better observe the immediate impact of particular changes in energy use, such as switching an individual device on or off, relative to historical data.

Notwithstanding these potential benefits, the cost of two or three days of less efficient energy usage may be insignificant in the context of consumer bills in the long-term. There may nonetheless be a future where electricity prices could be more dynamic than they are today. In this context, the benefits of having access to data that would support faster behaviour change would be greater.

2.3 Real-time data supports equitable outcomes regardless of consumers' energy choices

In September 2024, the Commission published a strategic narrative which outlines the Australian Energy Market Commission (AEMC) vision for our shared energy future.

We envision a consumer-focused net zero energy system. Consumers of all kinds are pivotal to the transition – whether through their investment in CER or simply their decisions about when and

how to use energy. Their choices about energy contribute to the optimal functioning of the system.[13]

An essential social characteristic of our vision is that all types of households with varying levels of participation will benefit from the energy transition. This means that:[14]

- consumers can benefit without having to actively engage in the market
- consumers who want to participate in the system have easy options to do so and can opt out at any time
- clear information supports consumer choices
- interoperability and innovation in regulatory frameworks incentivises CER technology owners to share their resources in ways that promote reliability, security and low costs.

Our narrative identified improving access to data as a key opportunity to support our vision. We consider that the energy system can benefit from unlocking the value of existing and new data. We consider data to be a critical enabler to efficient markets and consumer choice.[15]

As discussed in section 2.1.2, the Commission considers that better access to real-time data would support a future where consumers benefit from more efficient energy choices informed by real-time data, regardless of whether they personally choose to actively engage with the real-time data.

13 AEMC, A Consumer-focused net zero energy system: The Australian Energy Market Commission's vision for our shared energy future, September 2024, p. 9.

14 Ibid, pp. 10-11.

15 Ibid, p. 23.

3 We propose changes to the Rules to enable access to real-time data from smart meters

3.1 It is difficult for consumers to access real-time data from smart meters

The Rules and AEMO procedures currently do not provide a clear and explicit framework that support consumer and third party access to real-time data from smart meters.

The current arrangements under the metering framework allow for third parties to commercially negotiate with MSPs to access real-time data or similar services, such as through the metering installation inquiry service.[16]

We understand from bilateral discussions with stakeholders that third party commercial negotiations to access real-time data can be difficult. Retailers may create barriers to commercial negotiations between MSPs and third parties to access real-time data, and MSPs may not offer fair and reasonable prices or terms and conditions for third party access.

Due to the barriers to access real-time data from smart meters, consumers and third parties often currently opt for alternative ways to access real-time data. Consumers presently have access to real-time or near real-time data through:

- Current transformers (CTs) that consumers can can purchase and install around the meter.
- Digital meter readers that consumers can purchase and install on or around the meter, for example Powerpal and SNAPI devices. These devices can read data from the meter and provide near-real-time data to customers with graphics and data summaries.
- CER service provider apps that give consumers, with CER, information about the electricity consumption and production of their CER devices in real-time, such as consumers with solar photovoltaic. Some providers may provide real-time data at the connection point but would have to install a CT or digital meter reader to capture this data.

While consumers can use these alternative methods to access real-time data and take advantage of the benefits that real-time data provide, opting for these alternatives is costly. Consumers pay for any additional metering infrastructure that records real-time data.[17]

3.2 We propose a framework that would enable consumers and third parties to access real-time data access from smart meters

We consider that enabling access to real-time data from smart meters would lead to better outcomes for consumers. This is consistent with ECA's rule change request.

The rule change request suggested that we should embed an access framework in the Rules to clarify :

- how real-time data should be defined
- who would pay for real-time data
- how interoperability could be achieved
- how privacy and cyber security would be maintained

16 Service (e) in Table S7.5.1.1 in Schedule 7.5 of the NER.

17 Submission to consultation paper: Rheem, pp. 6-7; SMA, p. 1.

- other considerations including data handling requirements and learning from other frameworks

However, the rule change request did not specify a detailed framework to enable this access. Following stakeholder feedback on the consultation paper, we have developed a more detailed approach that would deliver the desired outcomes for consumers and provide clarity on the aforementioned areas.

Our proposed framework departs from the approach outlined in the rule change request, in some respects. We propose

- a more specific definition of real-time data - as explored further in chapter 5, we define real-time data as voltage, current and phase angle recorded every second and delivered within a second.
- a staged implementation approach to when consumers pay for real-time data - as discussed in chapter 4, for equity reasons we propose that retailers can charge consumers a once-off fee for access to real-time data for 15 years from the commencement of any rule made.

The following chapters outline our proposed approach and explain why our more preferable changes would lead to better outcomes for consumers.

4 We propose a staged implementation approach to achieve universal access to real-time data

4.1 Stakeholders have mixed views on whether the benefits of accessing real-time data from smart meters outweigh the costs

Some stakeholders suggest that accessing real-time data from smart meters could lower the cost of real-time data to consumers.[18] This is because it avoids the need to install other devices to capture real-time data. This may lead to a more efficient outcome because consumers would not have to pay for additional devices that replicate the function of the smart meter, a device that is already paid for by consumers.

However, some stakeholders consider that:

- accessing real-time data from smart meters is presently costly to consumers and
- it is unclear whether the benefits of access would outweigh the costs, given a perceived low demand for real-time data and the existence of potentially cheaper alternatives.

4.1.1 There are costs associated with accessing real-time data from smart meters

There are upfront costs to retrofit meters with real-time data functionality, plus other implementation costs

According to MSPs, most of the current fleet of smart meters do not have the in-built functionality to provide real-time data to consumers.[19] Most of the smart meters that would be installed as part of the accelerated deployment of smart meters would also lack this functionality.[20]

This means that to enable access to real-time data from smart meters, most existing and soon-to-be-installed smart meters would need to be retrofitted with real-time data functionality. The next generation of smart meters could have this functionality in-built, and avoid the need to be retrofitted.[21]

This means there are upfront costs involved in achieving real-time data functionality across the smart meter fleet. According to MSPs, these upfront costs are the most significant costs of enabling access to real-time data from smart meters.[22]

MSPs note further upfront costs associated with developing and implementing the process to communicate real-time data from the smart meter to consumers and third parties.[23] This would include the costs of developing and testing access solutions targeted at meeting consumers' needs, such as the development of communications platforms, interfaces, devices and protocols.

There are ongoing costs to support real-time data access

Stakeholders note ongoing administrative costs to engage with customers and third parties to:[24]

- connect them to the stream of real-time data from smart meters

18 EDMI, submission to the consultation paper, p.3.

19 Submissions to consultation paper: Intellihub, p. 2; PLUS ES, p. 3.

20 Our metering rule change did not require smart meters installed as part of the accelerated deployment to have real-time data functionality. This is because the case for accelerated deployment did not rely on the benefits of real-time data. The rule change was supported by an assessment of tangible costs and benefits undertaken during the Metering Review which found that smart meters would have lower installation costs and avoid the need to physically read meters. The intangible benefits of real-time data were not quantified.

21 Submissions to consultation paper: Intellihub, p. 2; PLUS ES, p. 3.

22 Intellihub, submission to the consultation paper, p. 5.

23 Ibid, p. 6.

24 Bluecurrent, submission to the consultation paper, pp. 7-11.

- troubleshoot connection failures
- maintain the security and reliability of the real-time data stream.

From discussions with stakeholders, we consider that these costs are likely to be immaterial when spread across all consumers and, on balance the benefits of real-time data would outweigh these costs.

4.1.2 Demand for real-time data as a standalone product has so far been modest

Stakeholders have mixed views over whether consumers want or need real-time data.

ECA suggested that many consumers want more information about their energy use.[25] Aurora tested real-time data products with consumer focus groups but found that consumer interest dropped when faced with the costs.[26]

In Victoria, consumers can access real-time data or near real-time data at no cost. The Victorian Government Energy Upgrade scheme provided free Powerpal energy monitors to eligible Victorian homes.[27] However, in discussions with stakeholders we found that there had not been a material uptake of Powerpals.

Victorian smart meters are also ZigBee-enabled, meaning they can communicate real-time data to customers.[28] Despite this access being universal and free to Victorians, stakeholders note that, to date, there has also been little uptake of data using ZigBee. Citipower, Powercor & United Energy noted that 0.1% of their customers are using ZigBee across their network.[29]

A lack of demand for real-time data may be due to several reasons including a lack of consumer awareness of real-time data and its benefits, and availability of alternatives. It may also indicate that presently, not all consumers want or need real-time data.

For example, consumers who need real-time data are likely to have CER and access data through their CER provider. This may explain the perceived lack of demand for real-time data in Victoria through Powerpals and Zig-Bee. Consumers without CER may not presently see the need to access real-time data given the data that consumers currently have access to, outlined in section 2.2.1, may be sufficient.

4.1.3 For some consumers, alternative devices may presently deliver a better value real-time data service

Given the upfront costs of accessing real-time data from some smart meters, in some cases, it may be less costly for consumers to establish access using a digital meter reader. In Victoria, consumers can access these devices for free, in other jurisdictions consumers typically pay upwards of $100 per device.[30]

For consumers with CER, this cost is likely absorbed into the cost of the CER service. Consumers with multiple service providers may need multiple devices, which means some consumers are paying upwards of $200 to access real-time data.

25 ECA, rule change request, p. 15.
26 Aurora, submission to the consultation paper, p. 1.
27 See more information here.
28 ZigBee is a wireless protocol designed to support wireless communications, monitoring.
29 Citipower, Powercor & United Energy, submissions to the consultation paper, p. 2.
30 It is understood the Powerpal device is worth around $130 without installation, see Citipower, Powercor &United Energy, submission to the consultation paper, p. 2. A Powersensor monitor is $199, see here.

If the costs of access via the smart meter is greater than the costs of using alternative devices, then it may not be in consumers' best interests to access real-time data from smart meters.

4.2 Stakeholders have mixed views on who should pay for access to real-time data

Stakeholders have differing views on whether consumers and third parties should pay for access to real-time data.

Several stakeholders supported free access to real-time data or access at no additional cost. They consider data from a meter is consumers' data, because consumers pay for the meter.[31] If retailers were required to provide real-time data to customers free of charge, retailers would likely spread the cost of delivering the service across all consumer bills, regardless of whether individual customers use the data or not.

Other stakeholders supported a user-pays model for access to real-time data. They considered:

- it would be inequitable to spread the costs across all consumers to allow a proportion of consumers to benefit from real-time data free of charge.[32]
- spreading the costs across all consumers would hide the actual expense of providing real-time data access, and could lead to consumers requesting services beyond their needs.[33]
- free access to real-time data would reduce innovation because consumers would not seek alternative and more efficient real-time data access solutions.[34]

Some stakeholders consider vulnerable consumers should receive real-time data at a discounted rate or for free.[35]

4.3 We propose an approach where consumers pay only when it makes sense for them

4.3.1 When the upfront costs are high, the benefits of real-time data do not outweigh the cost for all consumers

We consider that providing universal access to real-time data from smart meters in the short term, at no charge, would impose costs on all consumers that would, in many cases, be greater than the benefits an individual consumer may derive from the service. Costs would arise by requiring:

- MSPs to retrofit most smart meters with real-time data functionality
- retailers and MSPs to deliver real-time data communications to all consumers, without having the time and opportunity to test and refine the specific communications solution to ensure it is the most efficient and low-cost option.

Currently, there are limited products and services that provide value to customers from real time data. This means that not all consumers are positioned to immediately benefit from access. Consumers who do not want or need real-time data from smart meters should not subsidise retrofitting meters for consumers who do want access.

As discussed in section 2.1, the value of real-time data to consumers with CER is potentially high, and the benefits for these customers may outweigh the costs. In conversations, MSPs indicated

31 Submissions to consultation paper: ECA, p. 2; EDMI, p. 3; Essential Energy, p. 1; JEC, p. 6; Rheem, p. 4.
32 Submissions to consultation paper: AEC, p. 2; Bluecurrent, p. 15; EnergyAustralia, p. 7; CitiPower, Powercor and United Energy, p. 4.
33 Bluecurrent, submission to consultation paper, p. 15.
34 Bluecurrent, submission to consultation paper, p. 15.
35 CitiPower, Powercor and United Energy, submission to consultation paper, p. 4.

to us that they may be able to provide access to real-time data from the smart meter at a lower cost than alternatives. In these circumstances, it would make sense for consumers to pay to access real-time data from the smart meter.

However, for consumers that do not have CER, the value of real-time data may be lower. This is because the range of use cases and therefore benefits of real-time data for these customers is potentially more limited. In many cases, the cost of accessing real-time data from smart meters is unlikely to outweigh the incremental benefit for these consumers, at least in the near term. However, the benefits of real-time data for these customers may increase in the future, as competition and innovation continue to deliver new products and services that use data to support customers with their energy decisions.

4.3.2 Consumers should have the choice to purchase real-time data when it benefits them

We propose that consumers who choose to access real-time data from their smart meter, can be charged a once-off payment by retailers per connection point. This can be included in their subsequent retail bill or broken up into multiple bills over time. The price charged by the retailer for access should be limited to the upfront costs to the retailer of enabling this access.[36] Retailers may not charge consumers any ongoing costs to provide real-time data. The MSP would incur these costs directly but would pass on these costs to retailers. Retailers should manage the cost to MSPs through their commercial contracts.

One they have paid for access, consumers should not face ongoing charges. Any subsequent access to real-time data from the smart meter by a third party or future household resident should be free even if the retailer for the premises changes. This is because the costs to extend access to these parties would be immaterial, given the meter would already be retrofitted and a data stream would be established. Box 3 explains this approach further.

Box 3: Ongoing and subsequent free access at a connection point

A consumer has paid to access real-time data from the smart meter installed at their premises. This would then mean:

- third parties with a consumers consent to access real-time data from the premises should be provided access for free
- if a consumer switches retailers but remains at the premises, the new retailer must provide access for free
- if the consumer moves house, the new occupant would receive real-time data for free
- the consumer would not receive free access to real-time data at their new premises unless the former occupant has paid for access already.

Under this approach, consumers would have the ability to choose if and how they access real-time data. Consumers could choose to pay for access to real-time data from the smart meter or pay for separate digital meter reader(s) - whichever makes most sense for them. Third parties may also develop products and services that bundle the cost of the one-off payment into the broader product or service cost.

36 We acknowledge that some costs such as administration costs would be smeared across all consumer bill but these costs are unlikely to be material per consumer.

Consumers could choose to switch retailers if they are unsatisfied with their current retailer's price for real-time data access, and another retailer offers access at a lower price.

Consumers could also choose not to use our proposed framework, and instead decide that the existing data they receive is sufficient for their needs. To support them in using this data, consumers may request that their retailer or other service providers deliver the data in a format that makes sense for how they wish to use it. We consider that the potential value of existing data (at a day's lag) to help consumers manage their energy use may not be fully realised. This is because the data is not always provided to customers in a format that they find simple and accessible, and is not always coupled with insights that help customers use the data in ways that may benefit them, for instance in lowering their bills.

Consumers may choose use the proposed framework and pay for real-time data access to take advantage of innovative retail offers, such as dynamic tariffs. Consumers who prefer simplicity and wish to avoid complicated tariff offers may of course choose a simpler product from their existing retailer, or to switch to another retailer whose offer is more compelling for them.

Our approach presents retailers with an opportunity to offer real-time data to consumers for free and package real-time data into innovative retail products, particularly where the data could help customers to better understand, respond to and benefit from their retail plan.

This approach would not require all smart meters to be retrofitted but would instead facilitate an incremental process whereby smart meters are retrofitted on an as needs basis and are paid for by those who directly benefit. In parallel, as smart meters approach end of life they may be progressively replaced with new smart meters with real-time data functionality.

4.3.3 Our approach would deliver a transition to universal access that is free of upfront costs

The upfront costs of real-time data from the smart meter would decrease over time

The upfront costs to enable access remain high where meters need to be retrofitted or replaced, and the market is still developing and testing real-time data solutions. If meters are replaced at end-of-life with meters that already have in-built real-time data functionality, this would significantly lower the cost of accessing real-time data from smart meters.

The average life of a smart meter is 15 years. This means, as described in Figure 4.1, all smart meters installed prior to the commencement of any rule made would be approaching end-of-life by 2040. These meters could be replaced from 2040 onward with meters that have real-time data functionality as part of the BAU replacement process with no material change in costs to consumers compared to replacing these meters with other smart meters.

We consider that the difference in cost between a meter that has in-built real-time data functionality and a meter that does not, would be immaterial to consumers in the long-term. Stakeholders have advised that the cost difference between the two, at a manufacturing level, is small in the context of the overall manufacturing cost. We consider any such cost difference is unlikely translate to material changes in consumer bills.

We propose consumers should not be directly charged to access real-time data 15 years from the commencement of any rule made

The Commission considers that industry participants should be incentivised to work together to reduce the costs of real-time data in the long term. This would mean that more consumers could access and benefit from real-time data over time, should they wish to do so.

We propose that in 15 years from the commencement of any rule made, all consumers and third parties should be able to access real-time data without being directly charged. We consider that 15 years is sufficient time for MSPs and retailers to reduce the costs of enabling access to real-time data from smart meters because:

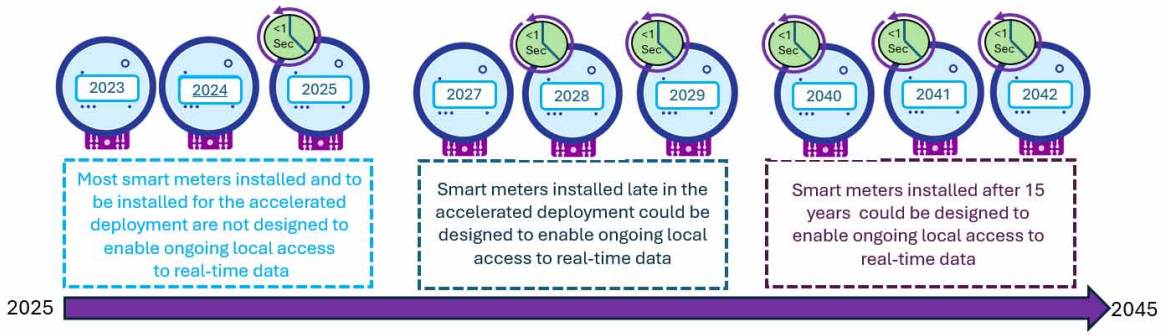
- this time frame aligns with the end-of-life of many smart meters in the NEM. Meters replaced in 15 years could be replaced as part of the BAU replacement process. This avoids consumers having to pay for the costs of retrofitting meters to access real-time data
- during this time market innovation may offer solutions that could improve the efficiency of accessing real-time data from the smart meter
- we expect the uptake of real-time data to be relatively incremental, so MSPs and retailers can test and improve their real-time data services to deliver efficient outcomes and a good customer experience.

When the upfront costs are significantly lower, the marginal cost to each consumer of improving access to real-time data from smart meters would be immaterial. It is then appropriate for all consumers to bear these costs because the benefits to most consumers to access real-time data from smart meters would outweigh these immaterial costs.

MSPs and retailers have the flexibility to manage how they would deliver real-time data services at no direct charge to consumers. They may decide to install meters with real-time data functionality as part of the accelerated deployment, and replace all meters at end-of-life with real-time data enabled meters, as shown in Figure 4.1. Alternatively, they could choose to continue supplying meters without real-time data functionality, and incur the costs of retrofitting certain meters if they consider that a limited proportion of their customers would not request access to their real-time data.

For example, Citipower, Powercor & United Energy noted that their next generation of smart meters will include Wi-Fi capabilities to enable real-time data access.[37]

Figure 4.1: Meter replacement outlook



Source: AEMC

Note: From bi-lateral discussions with MSPs, we acknowledge that a large portion of meters to be installed as part of the accelerated deployment have already been ordered which means that not all meters can be installed with new functionality as part of this process. However, not all meters have been ordered, so there could still be some meters that MSPs can install with real-time data functionality.

37 CitiPower, Powercor and United Energy, submission to consultation paper, p. 2.

Question 1: Do you agree with a staged implementation approach for when consumers pay for access to real-time data?

a) Is 15 years the right time-frame for industry to achieve cost efficiencies in delivering real-time data access from smart meters? Are there ways to support industry to reduce this time-frame?

b) Would the marginal cost to each consumer be material in the long-term if costs were smeared across all consumers after 15 years?

c) Are there other ways to facilitate efficiency and equity and support industry to lower costs to consumers?

d) What incentives would our approach create for retailers, MSPs and third parties?

4.4 The AER should publish retailer and MSP prices to support competition and price transparency for consumers

Whilst our approach would ensure all consumers have access to real-time data in the future, MSPs and retailers may not be sufficiently incentivised to charge customers low prices to access real-time data in the near-term.

MSPs and retailers may initially set a high price to access real-time data from smart meters. This would have the same effect as existing arrangements, where consumers and third parties may deploy alternative devices to capture the data. Retailers and MSPs would have limited incentive to lower prices for access to data for the next 15 years, until they are required to provide access without direct charge.

Ausgrid considered that additional provisions to improve cost recovery transparency would be beneficial to consumers.[38]

We propose for 15 years, from the commencement of any rule made, the AER should annually publish the price of accessing real-time data for each smart meter model, charged by each retailer to it customers and by each MSP to retailers.

Requiring MSPs to be transparent about the price, charged to retailers, of replacing or retrofitting smart meters to enable real-time data would create competitive pressures amongst MSPs to lower the cost of access.

Similarly, requiring retailers to be transparent about the price charged to consumers would create competitive pressure amongst retailers to offer lower prices to consumers.

Better access to the prices of real-time data services would help consumers identify retailers that offer access to real-time data at lower prices. Third parties could also help consumers identify the best retail offer considering the benefits of real-time data to consumers.

We consider that the AER should determine the form and process for publishing these prices that impose the least administrative costs on the AER.

Question 2: Should the prices for real-time data access be published by the AER?

a) How and where should the AER publish prices to access real-time data?

38 Ausgrid submission to the consultation paper, p. 3.

b) What other measures would incentivise retailers to offer real-time data at competitive prices?

5 Our proposed framework to enable direct access to real-time data from smart meters

Box 4: Our proposed direction to enable direct access to real-time data from smart meters

Features of the real-time data framework	
1 Clear definition of real-time data	• comprises voltage, current and phase angle recorded and delivered instantaneously • clarifies the data points, sampling frequency and delivery speed • ensures delivery of specific data in a timely manner to satisfy the real-time data use cases.
2 Consumers can request access at any time	• requires retailers to offer customers real-time data access and give access upon request, and inform customers of the benefits • clarifies responsibilities under the access framework • allows retailers to identify customers who want access • facilitates easier and increased uptake to real-time data access.
3 Consumers can securely grant access to different service providers	• requires MSPs to provide multi-party and secure access to real-time data from smart meters • facilitates low-cost real-time data access for multiple parties who use different devices to read the data securely from smart meters.
4 Interoperability means lower costs and more innovation	• requires MSPs to provide interoperable access to real-time data from smart meters • enables flexible, innovative and low-cost real-time data access from different devices that can read the data from smart meters.

Our proposed approach aims to deliver a simple, seamless, and cost-effective way for consumers to directly access real-time data from smart meters.

Our proposed framework to facilitate direct access is high-level and outcomes-based, thereby accommodating technological innovation and changing approaches to providing real-time data across time. It outlines clear and flexible responsibilities and requirements that leverage existing relationships and solutions. Relative to alternative approaches considered, it could deliver the benefits of real-time data access at lower costs to customers.

5.1 We propose defining real-time data as values recorded and delivered instantaneously

1 Clear definition of real-time data	• comprises voltage, current and phase angle recorded and delivered instantaneously • clarifies the data points, sampling frequency and delivery speed • ensures delivery of specific data in a timely manner to satisfy the real-time data use cases.

Real-time data is not currently defined in the Rules or described in AEMO procedures. Industry has not reached consensus over the meaning of real-time data.

Stakeholders consider that it is important to define 'real-time data'. This would give industry clarity and certainty over any related obligations. For example, it would confirm for industry specifically what data needs to be given to consumers. [39]

We propose defining real-time data in the NER along these lines:

> "voltage, current and phase angle recorded every second and delivered within a second"

Real-time data would not be validated data. Validation would prevent the delivery of real-time data within a second given validation can take up to two business days to complete.

This definition would ensure consumers have access to instantaneous real-time data and provide clarity to stakeholders on the following features of a real-time data:

- the data points: voltage, current, and phase angle. Box 5 describes each point in more detail.
- the data sampling frequency: recorded every second.
- data delivery latency: delivered within a second.

To implement this definition, we propose for the Rules to specify the data points, how often this data is recorded and how fast it is delivered, and for AEMO procedures to further describe real-time data relevant technical matters in its procedures.

Box 5: What are voltage, current and phase angle?

Voltage and current are the primary data points to calculate electricity consumption at a customer's premises.

Phase angle is the angle of the phase between voltage and current, which can be used to determine:

- the active power, i.e. the component of power that is used to do real work (such as light, heat or motion)
- the reactive power, i.e. the component of power that is not used to do real work, but is necessary to maintain the electromagnetic fields in the system
- the direction of active power flow, i.e. the import or export of electricity
- the direction of reactive power flow, i.e. whether voltage and current are leading, lagging, or in phase with each other.

5.1.1 The rule change request proposed a definition of real-time data

ECA proposed for real-time data to be defined as:

> data received instantaneously.

Alternatively, if this could not be achieved, ECA suggested:

> data should be received within no more than 300 seconds (5 minutes).

AEMO procedures could then subsequently define the provision of real-time data in its Metering Data Provision Procedures.

39 Submissions to consultation paper: Bluecurrent, pp. 2 and 14; EnergyAustralia, p. 7; Energy Queensland, p. 6; Intellihub, p. 15; Tesla, p. 3.

ECA also suggested that the NER should define 'customer power data' to clarify the types of data that would be shared from smart meters in real-time. It considered that specifying the types or categories of data in AEMO procedures would make these categories easier to update over time.[40]

5.1.2 We propose a more specific definition of real-time data

Our proposed definition of real-time data contains:

- **specific data points** — the definition of real-time data would comprise three data points from the meter, being voltage, current and phase angle. ECA proposed for real-time data to include many data points in comparison, such as basic power quality data (PQD) and any other data prescribed in AEMO procedures.
- **a more restricted delivery time frame** — real-time data delivery would be required to occur within a second. It does not include an alternative delivery time frame of within 300 seconds if one second delivery is not possible.

Our definition would help consumers optimise CER and support how they manage their energy use

We consider a more specific definition of real-time data would empower consumers to extract the most value from their CER and support their decisions on how they use energy at their home.

Instantaneous voltage, current and phase angle are necessary and sufficient values to deliver the benefits of real-time data for consumers. They would achieve positive outcomes for consumers by enabling consumers to take advantage of third party products and services. These products and services require the instantaneous data points for their control algorithms to provide services that can drive down consumer electricity bills. This includes HEMS that orchestrate home energy use, and real-time CER participation in aggregated CER services and compliance with dynamic import and export limits.[41] A requirement to deliver a broader range of data could impose significant and unnecessary costs on access to the data without a clear benefit to consumers.[42]

Our proposed definition delivers data faster than the definition suggested in the rule change request. Stakeholders highlighted that data recorded and delivered instantaneously is necessary to enable the benefits of real-time data for customers.[43]

We do not propose for the data to be validated, as this would be incompatible with instantaneous delivery. Stakeholders indicated that validation can take up to two business days to complete.[44] Data delivered at a slower rate but still within 300 seconds (as proposed in the rule change request) would not help consumers optimise their CER and support their decisions about their energy use.[45] For example, near real-time data would not enable CER compliance with some existing Dynamic Operating Envelope (DOE) instructions.[46] Where these DOE instructions are issued, compliance must occur within fifteen seconds and reporting on compliance must occur within one minute.[47]

40 ECA, rule change request, p. 11.
41 Submission to consultation paper: Rheem, pp. 12-13.
42 Submissions to consultation paper: Intellihub, p. 2; Origin, p. 2; PLUS ES, p. 11.
43 Submissions to consultation paper: Rheem, pp. 12-13; SMA, p. 6.
44 Submissions to consultation paper: Bluecurrent, pp. 14-16; EnergyAustralia, p. 7; Energy Queensland, p. 6; Intellihub, pp. 15-16; University of Queensland, p. 4.
45 Submissions to consultation paper: Flow Power, p. 7; PLUS ES, p. 7; Rheem, pp. 12-13; SMA, p. 6.
46 Submissions to consultation paper: Rheem, p. 12; SMA, p. 6.
47 SMA, submission to consultation paper, p. 6.

The Rules and AEMO procedures together would define real-time data

We propose for real-time data to be defined in the Rules and AEMO procedures.

Under this approach:

- the Rules would define real-time data as voltage, current and phase angle recorded every second and delivered within a second
- AEMO procedures would further describe any other required technical features of real-time data.

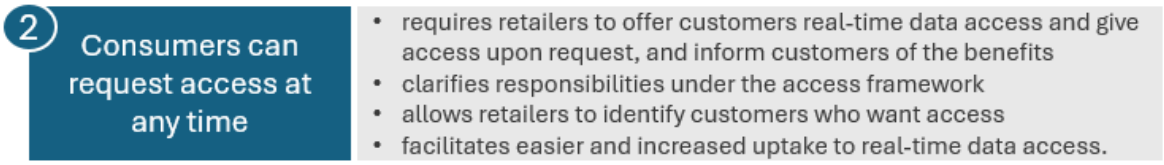
We consider this approach would maintain a high-level enabling framework in the Rules — the real-time data access framework in the Rules would contain the essential features of the enabling framework, while its technical features would be more appropriately placed in AEMO procedures.

Question 3: Do you agree with our proposed definition of real-time data?

a) Does the proposed definition enable real-time data products and services to deliver the benefits of real-time data to consumers?

b) What other features of a real-time data definition should be described in AEMO procedures?

5.2 Retailers would be required to provide customers access to real-time data



A real-time data access framework should impose clear responsibilities on relevant parties to ensure consumers' easy and seamless access. This section outlines our proposed approach where retailers would be required to:

- offer real-time data access to all customers with smart meters and explain to customers the benefits of real-time data specific to the customers' needs
- provide real-time data access to customers upon request:
  - within 20 business days if a meter needs to be replaced or retrofitted
  - within 10 business days if the meter does not need to be upgraded.

The proposed obligation intends for retailers to provide access to the real-time data proposed in section 5.1. It does not propose for retailers to provide calculated energy consumption data or individualised data from each appliance in a customer's household, though retailers may choose to offer these additional services.

5.2.1 The rule change request suggested obligations on retailers to provide real-time data

ECA considered that existing arrangements in the Rules have not facilitated easy access to real-time data for customers. For example, not all retailers currently offer a service that allows customers and authorised third parties to receive meter data within less than 24 hours, and 24

hour latency for the data is not sufficient to deliver some benefits to customers, such as better CER coordination that allows customers to get the most value from their CER.[48]

ECA suggested that new obligations on retailers would be required to facilitate easy access for customers to real-time data. It did not suggest specific requirements, but considered that a real-time framework should provide:

- an explicit right of access for customers and authorised third parties to real-time data
- obligations on retailers to provide the data.[49]

ECA also suggested that requiring real-time data access to be provided upon customer request would not necessarily improve existing arrangements in the Rules and would maintain complexities for consumers to access the data.[50]

Together, ECA considered these obligations on retailers would support the intent of the rule change to enable customers' to access real-time data from smart meters in a simple and meaningful way.[51]

5.2.2 Retailers would offer access to real-time data initially and provide it any time upon request

We propose several obligations on retailers under the real-time data framework, which includes requiring retailers to:

- offer real-time data access to all customers with smart meters,
- explain the costs (if applicable) of enabling that access and
- explain the benefits of access specific to customers' needs.

Retailers would also be required to provide real-time data access within 20 business days if a meter needs to be replaced or retrofitted, and within 10 business days if the meter does not need to be upgraded. We expect that retailers would progressively begin to offer real-time data access to all their customers with a smart meter once the obligations on retailers commence under the any rule made.

A customer could also request access to real-time data at any time.

We consider that an offer/request model bound by specific timeframes would:

- facilitate easier real-time data access for customers to deliver the benefits of real-time data and achieve better outcomes for consumers relative to existing arrangements. It would give customers clear access to real-time data to use alternative services to support management of their energy use, respond to price signals, and support CER integration. Retailers and MSPs may otherwise be disinclined to develop real-time data solutions based on current customer demand and where they consider existing real-time and near real-time products and services to be sufficient.[52]
- give real-time data to customers who want it and facilitate an easy process for retailers to identify these customers. We do not expect retailers would need to provide all customers with real-time data once our proposed framework commences, only those who request it. Customers may not see value in paying for the data. Likewise some customers may not see value in accessing the data even when it is free of charge.

48 ECA, rule change request, p. 9.
49 ECA, rule change request, p. 11.
50 ECA, rule change request, p. 11.
51 ECA, rule change request, p. 11.
52 Submission to consultation paper: AEC, pp. 1-2; AGL, pp. 1-2; EnergyAustralia, p. 3; ENGIE, p. 2; Intellihub, p. 2; Origin, pp. 2-4.

- clarify retailer responsibilities under real-time data framework,[53] particularly under an outcomes-based approach to the framework,[54] and leverage established relationships under the metering regulatory framework. Retailers have an existing and direct contractual relationship with customers for billing purposes, and with MSPs to deliver metering services such as data collection from customers. It would be difficult for customers to engage with parties other than their retailer to gain access to real-time data and, therefore, under our approach retailers would negotiate with MSPs to develop and provide real-time data solutions as part of their contractual relationship.
- increase the uptake of real-time data to achieve the benefits of real-time data, such as to support customer decisions on their energy use and CER coordination. We consider that an obligation on retailers to provide customer specific information about real-time data would increase customer awareness about the data's benefits. Without such an obligation, only more engaged customers would seek to take advantage of the opportunities and benefits that real-time data provides.[55]
- be consistent with the approach for the provision of other types of data to parties under the Rules.[56]

We currently consider the proposed timeframes could be sufficient because they provide MSPs time to process a request for access and, if necessary, upgrade the meters while ensuring customers' timely access to the data. We seek stakeholder feedback on whether these timeframes give retailers and MSPs sufficient time to enable real-time data access.

We recognise that there are legal and practical challenges with placing the obligation on the retailer to provide access. Retailers do not conduct activities to collect, process and deliver data directly from smart meters to other parties. Retailers must instead appoint MSPs to a customer's connection point to conduct these activities.[57] Therefore, section 5.3 proposes obligations on MSPs to enable and give access to real-time data to overcome these challenges.

5.2.3 Real-time data would be provided via direct access to the smart meter

Our proposed framework would result in direct or local access to smart meter to get real-time data. Direct or local access means that real-time data would be provided to a consumer's or third party's device or interface directly from the smart meter without first going through an intermediary data platform.

The proposed framework would not exclude other methods to access real-time data, such as remote access to smart meters. Remote access is where data from the meter is provided and accessed indirectly through an online platform or database and is not provided directly from the meter at the metering site.

However, we recognise that remote access capabilities may not currently be able to deliver real-time data and at low cost. This is because remote access relies on telecommunications which would need to deliver large volumes of data in real-time and may result is significant lags.[58]

Given existing technology, consumers would access real-time data directly from the smart meter under our approach presently. However, we expect that remote access technology could improve

53 Submissions to consultation paper: AER, p. 2; Bluecurrent, p. 4; Energy Queensland, p. 6; Rheem, p. 8; SMA, pp. 7-8.
54 Submissions to consultation paper: Bluecurrent, p. 4; SMA, pp. 7-8.
55 AER, submission to consultation paper, p. 2.
56 See, for example, clauses 7.3.1(a)(2) and (3), 7.10.1(a)(6) and 7.10.3(a) of the NER.
57 Clause 7.2.1(a)(1) of the NER.
58 Submissions to consultation paper: Bluecurrent, pp. 2, 13-14; Origin, p. 2.

over time and potentially allow for instantaneous delivery at low cost. Therefore, our proposed framework does not prescribe a specific form of access and gives industry the flexibility to decide the access method that best meets consumer needs in accordance with any real-time data requirements proposed under our approach.

Question 4: Do you agree with the obligation on retailers to provide real-time data access?

a) Are the proposed timeframes of 10 business days and 20 business days sufficient to enable retailers to give customers access to real-time data?

b) Are there circumstances where the obligations on retailers to offer and give real-time data access upon customers' request, and the timeframes within which to give access should not apply?

c) Are additional obligations on retailers required to enable the provision of real-time data access to consumers?

5.3 MSPs would be required to enable multi-party, interoperable and secure access upon request

3 Consumers can securely grant access to different service providers	• requires MSPs to provide multi-party and secure access to real-time data from smart meters • facilitates low-cost real-time data access for multiple parties who use different devices to read the data securely from smart meters.
4 Interoperability means lower costs and more innovation	• requires MSPs to provide interoperable access to real-time data from smart meters • enables flexible, innovative and low-cost real-time data access from different devices that can read the data from smart meters.

Our proposed real-time data framework would require MSPs to provide real-time data to customers upon retailers' request as outlined in section 5.2, and to authorised third parties in accordance with chapter 6.

The framework would also require MSPs to ensure that:

- multiple parties can access real-time data from smart meters[59]
- real-time data can be easily read by different devices[60]
- real-time data access is secure.[61]

We consider an unrestricted outcomes-based approach may not achieve the best outcomes for consumers. While it is important for retailers and MSPs to have flexibility to develop innovative real-time data access solutions that best enable the benefits of real-time data, they may have incentives to deliver solutions that are in their commercial interest — and these may not be fully aligned with consumers' interests. For example, where a consumer requests access, MSPs may provide real-time data in a way that is difficult for third parties to access, limiting its utility to some customers. Therefore, it is necessary to ensure MSPs give access to real-time data from smart meters in line with the intent of the real-time data framework.

59 Section 5.3.2.
60 Section 5.3.3.
61 Section 5.3.4.

5.3.1 MSPs would provide real-time data access upon retailers' request

We consider MSPs to be the appropriate parties to enable and give real-time data access upon request from retailers.

As outlined in section 5.2.2, retailers do not conduct activities to collect, process and deliver data directly from smart meters to other parties. Retailers must instead appoint MSPs to a customer's connection point to conduct these activities,[62] and MSPs have responsibilities under the existing metering regulatory framework in the Rules to provide access to different smart meter data to consumers.[63]

This approach builds on existing responsibilities and capabilities to ensure real-time data delivery, and we would expect that the obligation and its costs would be included in and determined competitively through contracts between retailers and MSPs.

5.3.2 MSPs must ensure that multiple parties can access real-time data upon request

MSPs would be required to provide real-time data in a way that facilitates multi-party access to the data upon retailers' request. This means that one or more authorised third parties would be able to obtain access to the data in addition to customers.

Multi-party access would promote positive outcomes for consumers. It would support consumer choice by enabling and driving innovation in a breadth of third party products and services that use the data, such as CER coordination, VPPs and HEMS. These products and services can help customers save money on their bills and achieve better returns on any investments in CER and other technologies. Stakeholders identified a range of parties who should have access to real-time data in order to provide benefits to consumers and the broader energy system.[64]

Multi-party access would also eliminate the need for consumers and third parties to pay for and install different devices that give them access to real-time data, such as CTS.[65] Current real-time data solutions, including CTs and smart meter communication ports, only facilitate single party access to data.

Chapter 6 and chapter 7 further outline the benefits and options for third parties and DNSPs to access real-time data from smart meters.

5.3.3 MSPs would ensure that multiple different devices can easily read real-time data

We propose that:

- MSPs be required to communicate real-time data from smart meters using a standard data format and communication protocol that can be easily read by multiple different devices
- AEMO develop open-standards based requirements which specify the format and other communications protocols that MSPs must use to share real-time data.

We consider these requirements would make it easier for other devices to read and share the data from smart meters. It would also promote technologically neutral competitive environment where different parties can offer products and services to consumers based on real time data from the meter and which can translate the data in a more accessible and meaningful way for consumers.

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62 Clause 7.2.1(a)(1) of the NER.

63 See, for example, Rule 7.15 of the NER and clauses 7.3.1(a)(2) and (3), 7.10.1(a)(6) and 7.10.3(a) of the NER.

64 Submissions to consultation paper: AER, p. 2; Bluecurrent, p. 13; CEC, p. 5; CitiPower, Powercor and United Energy, p. 3; ECA, p. 10; EDMI, p. 2; Electricity and Water Ombudsman Victoria, pp. 1 and 3; Erne Energy, p. 2; Endeavour Energy, p. 2; Essential Energy, pp. 1 and 6; JEC, p. 5; Joint EWOs, pp. 2, 4-5; Rheem, p. 8; SACOSS, p. 3, SA Power Networks, p. 1; SA Water, p. 3; UQ, pp. 3-4.

65 Submissions to consultation paper: Erne Energy, p. 2; Rheem, p. 6; SMA, pp. 1-3.

Existing provisions do not require real-time data from smart meters to be interoperable

Real-time data is interoperable if different systems and devices used by consumers and authorised third parties can seamlessly read and understand the data from smart meters.

There is no current requirement in the metering regulatory framework for real-time data from smart meters to be provided in an understandable and usable format to consumers and authorised third parties. MSPs could potentially choose to only provide real-time data in formats that could only be read by MSP or affiliate devices and, therefore, consumers' and authorised third parties' access to real-time data would be limited to a specific set of devices.

The ECA proposed in their rule change request for open standards-based protocols and communication interfaces to enable the interoperability of real-time data from smart meters.[66] An open standard is a format or protocol that is not owned by anyone and can be used by anyone without barriers.

To enable interoperability, ECA suggested:

- changes to the minimum services specification requirements in Schedule 7.5 of the NER to allow standards-based communication protocols and communications interfaces for read-only data, such as real-time data
- consideration of the interoperability provisions in the EU Data Act to support consumers and their authorised representatives' access to real-time data.

Many stakeholders support interoperable real-time data access

Stakeholders indicated their support for interoperable real-time data access in response to our consultation paper,[67] and for an open standards-based approach to interoperability.[68]

Stakeholders also provided a range of views on the:

- **location of the interoperability requirements and standards** — their inclusion in the Rules,[69] AEMO procedures,[70] Australian Standards,[71] or left to industry to decide whether to adopt the standards.[72]
- **changes needed to enable the interoperability** — changes to the minimum services specification in Schedule 7.5 of the NER, metering installation standards in clause 7.8.2 of the NER, metrology procedures and/or other changes would be required.[73]
- **time to develop and implement interoperability standards** — the development and adoption of interoperability standards could take several years to implement.[74]
- **need for a consistent approach across industry** — interoperability standards should be consistent either with the work completed through the CER Roadmap, or with national or international standards.[75]

66 ECA, rule change request, pp. 12-13.

67 Submissions to consultation paper: AGL, p. 6; Ausgrid, p. 2; CitiPower, Powercor and United Energy, p. 5; Compliance Quarter, p. 3; Endeavour Energy, p. 2; Erne Energy, p. 3; JEC, p. 7; Joint EWOs, p. 6; National Seniors Australia, p. 3; PLUS ES, pp. 4 and 14; Rheem, p. 3; SACOSS, p. 4; SA Power Networks, p. 2; SA Water, p. 4; SMA, p. 8.

68 Submissions to consultation paper: Endeavour Energy, p. 2; JEC, p. 7; PLUS ES, p. 14; Rheem, pp. 14 and 19; SA Power Networks, p. 2; SMA, p. 8.

69 Submissions to consultation paper: Bluecurrent, p. 16; CitiPower, Powercor and United Energy, p. 5; Intellihub, p. 18.

70 Submissions to consultation paper: Bluecurrent, p. 16; Intellihub, p. 18; Rheem, p. 13.

71 Intellihub, submission to consultation paper, p. 18.

72 AGL, submission to consultation paper, p. 6.

73 Submissions to consultation paper: Bluecurrent, p. 16; Endeavour Energy, p. 2; Landis & Gyr, p. 4; Paul Schulz, p. 10; PLUS ES, p. 14; Rheem, pp. 17-18; SMA, p. 9; Sense Labs, p. 30.

74 Submissions to consultation paper: Bluecurrent, p. 16; Intellihub, p. 6.

75 Submissions to consultation paper: CEC, p. 6; Energy Queensland, p. 8; Tesla, p. 4.

Interoperability requirements would facilitate seamless real-time data access from different devices

We consider that requirements on MSPs to ensure interoperable access to real-time data would mean that real-time data from smart meters can be easily read by different devices and facilitate a more interoperable system behind the meter. This would also enhance market efficiency through a technologically neutral competitive environment where all parties can read and use real-time data to offer products and services to consumers and consumers can access the data in a more accessible and meaningful way.

A requirement on AEMO to develop open standards-based interoperability requirements in their procedures would further promote innovation and flexibility through new products and services. It would achieve this by ensuring parties do not need proprietary protocol translations to read and understand real-time data from different meters. Also, the technical specifications for real-time data access in the procedures would not need to be regularly updated to accommodate developments in technology.

Additionally, AEMO should consider all different standards available in developing its procedures, such as Common Smart Inverter Profile — Australia (CSIP-Aus)[76] and JavaScript Object Notation (JSON). Whilst CSIP-Aus is currently widely used in the industry, JSON may have the potential to facilitate a more efficient and innovative system. AEMO should consider what standards are most suitable to achieve widespread interoperability.

5.3.4 MSPs would ensure secure access to real-time data

We propose that under our real-time data framework:

- MSPs provide real-time data access locally by a unidirectional or one-way signal at a minimum
- existing confidentiality and meter security provisions in the Rules apply to real-time data
- relies on existing protections contained within the *Privacy Act 1988* (Cth).

These obligations balance providing real-time data access to consumers from smart meters with maintaining and preventing any unauthorised access to the meters and their data.

The rule change request proposed additional real-time data privacy and cyber security protections

ECA considered that smart meters should communicate real-time data in a secure environment, and for additional changes to protect consumer privacy and address cyber security issues.[77] They proposed the following changes to achieve this outcome:

- real-time data should be classified as 'confidential information' under the NER. The classification would prohibit registered participants from disclosing confidential information to any persons except as permitted by the NER and would not permit unauthorised persons to access confidential information.
- changes to cover any gaps in the privacy and cyber security frameworks for real-time data, with regard to the *Privacy Act 1988* (Cth) and the European Union's Data Act.

Stakeholders agreed that privacy and cyber security risks should be minimised

Stakeholders supported ECA's concern regarding the need for adequate privacy and cyber security protections over real-time data access.[78] Some stakeholders considered that comprehensive

76 Common Smart Inverter Profile — Australia. See here for further information.

77 ECA, rule change request, pp. 11-13.

78 Submissions to consultation paper: AER, p. 4; AGL, p. 7; CitiPower, Powercor and United Energy, p. 5; Compliance Quarter, p. 3; Dr Farhad Shahnia and Dr Sara Deilami, p. 5; EnergyAustralia, p. 8; Energy and Water Ombudsman Victoria, p. 1; ENGIE, pp. 3-4; Joint EWOs, pp. 2 and 6-7; National Seniors Australia, p. 3; PLUS ES, p. 14; SACOSS, p. 5; SA Water, p. 1; Sense Labs, p. 31; SMA, p. 9; University of Queensland, p. 5.

protections, such as data encryption,[79] would be required to reduce risks to consumer privacy and cyber security,[80] and that any real-time data access should minimise or not increase cyber security risk to smart meters and their data.[81] This is important given the primary purpose of meters is to provide accurate data for energy settlement, retailer billing, and network billing,[82] and the personal nature of real-time data and other data collected by the meter.[83]

Local access via a one-way signal with existing privacy and cyber security protections would be appropriate

We consider an obligation on MSPs to provide access locally to real-time data from smart meters via a one-way signal at a minimum to be necessary and appropriate.[84] The obligation provides a positive outcome for consumers that balances the need for real-time data access with the need to maintain consumers' privacy and cyber security by:

- maintaining the physical security of the meter for the purposes of real-time data access, while still providing access to consumers and authorised third parties[85]
- preventing unauthorised third parties from interfering with the meter or obtaining the data via a physical connection point to the meter, a local signal back to the meter, or via remote access such as through a cloud.

The nature of the local access method would mean that extending existing privacy and cyber security protections in the Rules would be sufficient to protect the security of local access to real-time data from smart meters. At this stage, we do not consider that local access to real-time data poses any increased privacy or cyber security risks to consumers.

Question 5: Do you agree that MSPs should ensure multi-party, interoperable and secure access to real-time data?

a) Are there requirements that we should impose on MSPs in addition to multi-party, interoperable and secure access obligations?

5.3.5 Further work undertaken will improve interoperability

We recognise that further work is being developed in respect to smart meter interoperability.

The Australian Renewable Energy Agency leads the Distributed Energy Integration Program (DEIP) Interoperability Steering Committee, which supports the development and implementation of industry technical standards on interoperability capabilities. Interoperability technical standards would improve the integration of distributed energy resources (DER), including CER, across the energy network.[86]

The Committee comprises industry stakeholders and consumer groups, and its aim is to ensure DER devices can communicate effectively and respond to grid support functions, and establish cyber security controls required to reduce threats to DER integration.

79 AER, submission to consultation paper, p. 4.
80 Submissions to consultation paper: EnergyAustralia, p. 8; Intellihub, pp. 6-7; University of Queensland, p. 5.
81 AEMO, submission to consultation paper, p. 1.
82 Ibid.
83 Submissions to consultation paper: PLUS ES, p. 14; SA Water, p. 4; Sense Labs, p. 31; SMA, p. 9.
84 A one-way signal is a wireless signal from the smart meter to a consumer device, similar to radio signals. The signal would not require the unsealing of the communications port or for a consumer to bind or pair their device with the meter through a physical or remote connection.
85 See chapter 4 on our proposed approach to third party access.
86 See here for further information.

While we have not proposed for AEMO to prescribe specific interoperability requirements, we consider our approach for outcomes-based interoperability standards would allow AEMO to prepare participants for future standards while yielding near-term results. This would allow the use of established standards and methods to enhance interoperability without committing too soon. An outcomes-based approach allows for seamless integration once future technical standards are established.

6 We are seeking input on approaches to enable third parties to access real-time data from smart meters

6.1 Third parties should have access to real-time data from smart meters

Consumers would likely benefit if third parties, they appoint, can access consumers' real-time data directly from smart meters. A third party refers to any entity that is not a retailer or MSP wishing to provide a service to the customer that leverages access to the customer's real-time data, including CER and other energy service providers.

As discussed in section 1.2, we consider third party access would unlock benefits for consumers by way of reduced energy bills through better managed energy use. This places the burden of accessing data, and making decisions on the basis of this, will largely rest with the third parties as opposed to the consumers themselves.

Third parties should only access real-time data after obtaining consent to act on a consumer's behalf. We propose requiring:

1. third parties to obtain consumer consent
2. retailers or MSPs to verify that consumers have given consent.

We also propose enabling consumers to withdraw consent at any time.

Overall, the aim is to improve third party access to consumer energy data in a manner that best meets consumers' needs while at the same time protecting against privacy and cyber security risks. Stakeholder feedback to our consultation paper confirmed the importance of consumer consent before third parties access real-time data, but did not articulate a clear proposal for a simple and cost-effective mechanism for achieving this.

Therefore, we propose options to enable third party access in a way that meets the following objectives:

- outcomes for consumers — by providing for a positive customer experience that enables consumers to procure third party services to manage bills should they wish to do so, whilst simultaneously ensuring that consumer privacy and network security are safeguarded
- market efficiency — by ensuring that the proposed mechanism is cost-effective and not unnecessarily onerous on any one party
- implementation — by allowing for an efficient and timely mechanism that enables third parties to access data.

6.2 Third parties' access to real-time data is not currently regulated under the Rules

The NER and NERR presently regulate the management and provision of consumers' historical data. For example, customers can request access to their historical billing data and energy consumption and export data without charge.[87]

However, the Rules do not currently provide clear real-time data access for consumers, and there is no existing legislative framework to guide the process by which third-parties obtain consumer consent to access real-time data.

87 Clause 7.10.3(a) of the NER provides for metering data to be provided to persons specified in NER clause 7.15.5(c). Rules 28 and 56A of the NERR provide for historical billing data and consumption and export data to be promptly provided on request without charge to consumers for the previous 2 years. Rule 56A includes a requirement to provide consumption and export data to a customer's authorised representative.

As explored in section 3.1, third parties can alternatively seek access to real-time data through independent commercial negotiation and installing digital meter readers on or around the meter.

6.2.1 Extending existing arrangements would not deliver a good consumer experience

Should the status quo be extended to the provision of real-time data, the following steps would likely apply:

1. Third parties would have to approach consumers to request real-time data access from their smart meters.
2. Consumers would be required to designate a third party as a customer authorised representative.[88]
3. The consumer would request the retailer to provide data to the third party. In this case, the retailer holds the responsibility to ensure the data of the consumer is protected under the *Privacy Act 1988*, and this includes verifying the consumer's consent.
4. The retailer would request the MSP to provide the third party access and notify the consumer of this.
5. The MSP would provide the third party with access to the consumer's real-time data.

Extending the existing framework to real-time data would not deliver a good customer experience because it would place the onus on the consumer to facilitate third party access.

Further, third parties are not registered or accredited by AEMO under the NER, and do not provide services regulated under the NERL. This means that these parties are not currently subject to the energy regulatory framework.[89]

Therefore, we are considering alternate pathways to allow third parties to access consumer data in a manner that meets the objectives outlined above.

6.3 There are two feasible pathways to obtain consumer consent

As established in the first objective (*outcomes for consumers*), it is important that consumers have control over their data, and that access to and use of their data ultimately benefits them. Therefore, we consider consumer consent to be an integral consideration, and propose to require third parties to obtain consent through a framework prescribed in the NER. In practice, this would mean that third parties would only be able to access real-time data if consumers have provided their explicit consent to do so.

In detailing the specific mechanism through which third parties can obtain consumer consent to access real-time data, we propose two potential pathways.[90]

Ultimately, we would like to achieve a simple and cost-effective access pathway, with consideration to both the manner in which consent is given and verified, and also the flow of data that results in third party access. The proposed frameworks are outlined in Table 6.1 below, and each option is discussed further in the sections to follow.

88 NERR rules 56A and 86A, NER rule 7.14 and NER clause 7.15.5 refer to customer authorised representatives but do not specify how customers are to designate them. In practice, we understand that retailers and DNSPs typically require consumers to complete a Signed Letter of Authority (or similar) to designate a third party as a customer authorised representative.

89 However, they may be subject to the Australian Consumer Law and to privacy legislation.

90 A third party that has obtained consumer consent is referred to as an authorised representative. For the purpose of this paper, mention of a third party accessing real-time consumer data assumes that they have obtained consumer consent, and are acting as authorised representatives.

Table 6.1: Overview of pathways to obtain consumer consent

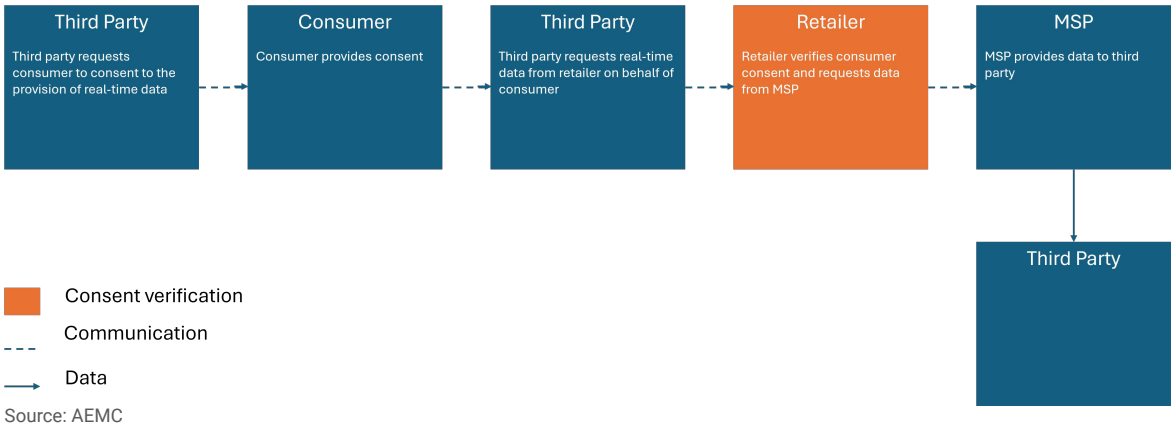
	Pathway 1 Retailer-centred	Pathway 2 MSP-centred
Description	Third party requests real-time data from retailers. Retailer verifies consumer consent, MSP provides third party access to real-time data	Third party requests real-time data from the MSP. MSP verifies consumer consent and details, MSP provides third party access to real-time data
Role of the consumer	Confirm consent for third party to access data	Confirm consent for third party to access data
Benefits	Consent verified through existing channels and established relationships	Reduces the number of parties involved by bypassing the need for retailer engagement*
Disadvantages/ risks	Retailers engaged in process without being direct beneficiaries	Difficult for MSPs to verify consumer consent as no established relationship exists, MSP may ultimately resort to contacting retailer to validate consumer details

Source: AEMC

6.3.1 Pathway 1 involves a regulatory framework that places the onus on retailers to verify consumer consent

This retailer-centred pathway places the burden of verifying consumer consent on the retailers. In practice, this option may look like the following:

Figure 6.1: Retailer-centred (Pathway 1)

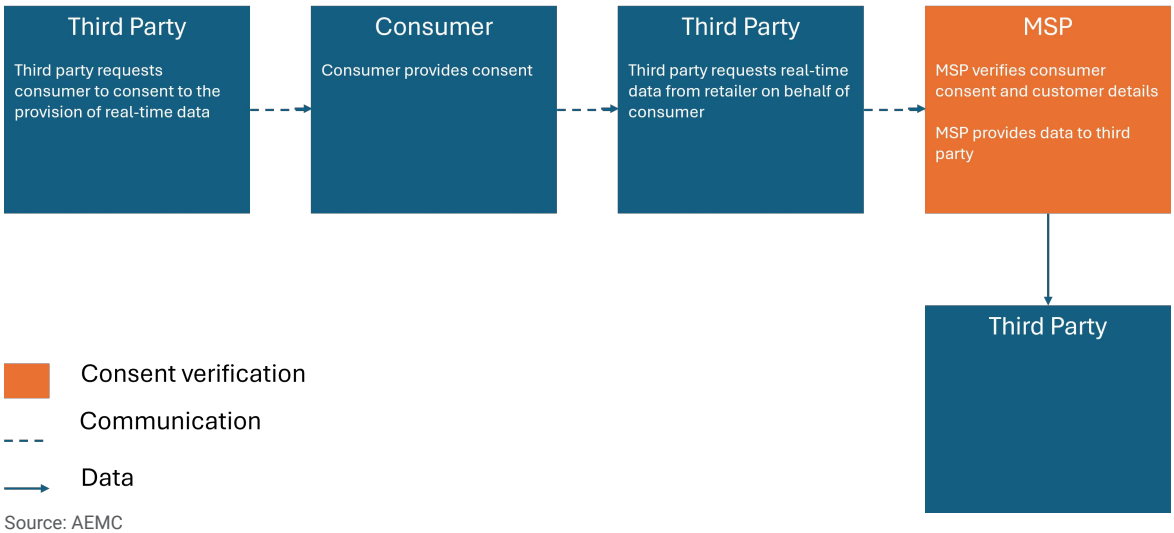


Source: AEMC

6.3.2 Pathway 2 involves a regulatory framework that places the onus on MSPs to verify consumer consent

The MSP-centred pathway places the burden of validating and verifying consumer consent on the MSPs. In practice, this option may look like the following:

Figure 6.2: MSP-centred (Pathway 2)



Source: AEMC

Note: This model assumes third parties will be able to reach out to MSPs directly, and that MSPs can verify consumer details and consent directly.

6.3.3 We propose to assess these pathways using three established objectives

Table 6.2 outlines our assessment of each option against the criteria outlined in section 6.1.

Table 6.2: Assessment matrix

	Extension of status quo	Retailer-centred pathway	MSP-centred pathway
Outcomes for consumers	Poor consumer experience because it places the burden on consumers to liaise between different parties. Consumer data, privacy, and network cyber security would be safeguarded	Consumer data, privacy, and network cyber security would be safeguarded	Consumer data, privacy, and network cyber security would be safeguarded
Market efficiency	Inefficient mechanism that requires duplicate touchpoints and is not cost-effective (section 6.2)	Requires retailers to be engaged in the process without being direct beneficiaries Not cost-effective	Cost-effective and not unnecessarily onerous on any one party
Implementation	Relatively quick and easy implementation as the legislative	Inefficient as it hampers timeliness of communication Relies on preexisting channels	Efficient and timely mechanism for verifying consumer

	Extension of status quo	Retailer-centred pathway	MSP-centred pathway
	framework already exists and only needs an extension into a real-time data context	to verify consent as the retailer has an established relationship with the consumer. It can can verify consumer details and consent before requesting the MSP to provide the third party access to real-time data.	consent

Source: AEMC

Our assessment suggests that the MSP-centred approach may be a more efficient pathway as it meets all three objectives of the assessment matrix. Ultimately this would provide a more preferable outcome for consumers on the basis that it is easier for consumers to provide their consent. However, this pathway assumes that the MSPs do not have to engage with the retailer to verify consent. If the MSP is unable to verify consent independent of the involvement of the retailer, this option may not be efficient.

Both these pathways have their inherent limitations including

1. the AEMC's power to regulate third parties is limited and
2. AEMO, and other market bodies, require time and resources to establish and maintain consent mechanisms.

Despite this, we consider that mandating a consent mechanism would afford consumer protection benefits that outweigh the challenges. To further bolster these consent pathways and strengthen the consumer protection benefits, section 6.5 details how additional requirements may be placed on third parties.

Question 6: Which consumer consent pathway do you consider to be the most practical and why?

a) Are there any barriers to implementing this pathway?

b) Are there any viable alternative pathways that better deliver outcomes for consumers?

6.4 Third parties would need to obtain consumer consent to access real-time data

We seek stakeholder feedback on whether further prescription in the Rules is required on form that consent. While earlier sections discussed the manner in which key parties would need to engage with each other to satisfactorily obtain consumer consent, this section discusses the form that the consent third parties are seeking from consumers should take.

We consider third parties should request consent in a flexible, low cost manner. We are also considering whether the consent-giving process should be subject to certain criteria specified by AEMO or the AER.[91] Standardising the process may involve requiring proforma consent, where relevant information such as what the form is and what it must contain including:

91 This specification would entail a process of consultation with the sector to understand which metrics are important to include, and would add greater assurance that these criteria will be met by third parties.

- how detailed the information must be
- whether a privacy notice is included
- what the form looks like
- how the consumers sign

While we consider consent should be flexible and not too onerous, there may be benefit in a standardised approach, including cost efficiencies arising through third parties not needing to individually create their consent forms and processes. This may involve AEMO or AER housing a centralised consent form that is completed online.

An overly prescriptive requirement for consent may place an unnecessary burden on third parties to bear, while lack of prescription may lead to an outcome where consent is not obtained robustly, and consumer protection is foregone. We therefore invite comment on what consent should look like and whether a specific form of consent should be prescribed.

Question 7: What should third party access consent look like?

a) Should the form of consent be left to third parties to determine?

b) Should there be specifications placed on the form of consent that third parties must obtain from consumers? If so, what could this look like?

c) Should the process for the withdrawal of consent also be specified?

6.5 We are considering placing additional requirements on third parties that request access to real-time data

Real-time data contains personal and sensitive information about consumer behaviour, which third parties could misuse. We are considering whether additional requirements should be placed on third parties that request access to consumer data, in addition to the requirement to obtain consent. We invite comments on whether some form of accreditation should be mandated for third parties seeking to gain access to consumer data.

We do not propose additional requirements on DNSPs when seeking access to real-time data from smart meters, other than seeking consent from consumers. We consider that the current requirements on DNSPs, when accessing and receiving meter data under the regulatory framework, is sufficient for real-time data because DNSPs are registered participants in the NEM and are already subject to the penalties for breaches of the provisions regulating meter data in the NER.[92]

The NER provides accreditation and registration requirements for various kinds of service providers. Box 6 summarises the difference between accreditation and registration under the NER.

Box 6: What is the difference between accreditation and registration under the NER?

Accreditation refers to a process through which AEMO and the market gain assurance that entities wishing to gain access to consumer data or provide metering-related services under NER chapter 7 have the ability to comply with their obligations. It is designed for roles where the interactions with the energy system are relatively narrow and technical. In order to be accredited, entities would

92 See Chapters 2 and 7 of the NER.

have to satisfy certain criteria mandated by AEMO.

Registration refers to the application and process required to become a registered participant in the NEM, under NER chapter 2, for the purpose of participating in the wholesale electricity system and markets under NER chapter 3. Applications require various supporting documentation to demonstrate the organisation meets all applicable obligations, requirements and standards, and AEMO may also conduct on-site investigations. This typically involves a more rigorous process of compliance and is designed for entities such as generators and networks who have key roles in the wholesale electricity markets and system.*

Note: *We do not propose to consider establishing registration requirements for third parties in this rule change. Under the NEL sections 11-12, registration is required for people who perform certain kinds of electricity market activities, including those who generate, buy or transport electricity in the wholesale market. Third parties of the kind described in this paper do not participate in or provide services to the wholesale energy markets and so registration is neither required nor appropriate. Additionally, registration costs could be at least $11,000 per entity, and AEMO would require additional resources to review applications and monitor a new category of registered participant.

The rule change request suggested that we consider the benefits of additional requirements in the form of an accreditation scheme.[93] For safety reasons, ECA suggested that third parties should be accredited prior to accessing the meter's communications port, but a critical consideration was that data access should remain simple and cost-efficient.[94]

In their responses to our consultation paper, most stakeholders placed importance on the protection of real-time data. Some stakeholder feedback indicated a preference for requirements in addition to consumer consent to be placed upon third parties. ENGIE expressed concern with a scenario in which third parties with access to real-time data were not subject to stringent controls[95], and several stakeholders, including the AER, suggested safeguards to prevent the misuse of real-time data to perpetrate family violence and financial abuse.[96]

There are limitations on the AEMC's abilities to regulate third parties. However, it may be possible to make rules requiring parties that provide services to retail customers to comply with the confidentiality provisions of the NER with respect to 'real-time data' specified as confidential information.[97] If no additional changes were to be made, the consumer and third party relationship would be governed by their agreement and the Australian Consumer Law.

Under the general model of access to real-time data, parties will only have access to a one-way flow of data from the individual consenting customer. We are looking to understand whether this reduces the risk of unaccredited third parties having access to the data, and how material this risk might be when compared to the cost of going through an accreditation process.

Therefore, we propose to consider additional requirements that may be placed on third parties. Accreditation may bolster the rigour in vetting legitimate third parties, and add an extra degree of assurance that consumer data will be handled properly. Table 6.3 below outlines three options for additional requirements on third parties seeking real-time data access.

93 ECA, rule change request, p. 12.
94 Ibid.
95 ENGIE, submission to the consultation paper, p.4.
96 AER, submission to the consultation paper, p.4.
97 See for example clause 7.15.1 of the NER.

Table 6.3: Potential additional third party requirements

	Option 1: Status Quo No accreditation	Option 2 With accreditation
Description	• Third parties do not have to be accredited to access real-time data	• Third parties would have to apply to AEMO to be accredited to access real-time data • A new category of accreditation would be created by AEMO under NER ch 7
Cost per third party*	Nil	Dependent on accreditation criteria
Benefits	• Third parties do not face financial or regulatory barriers to gain real-time data access, such as costs and review times for accreditation to access real-time data	• Requirements can be placed on the third parties for accreditation, such as to satisfy fit and proper person obligations and demonstrate understanding of privacy and cyber security requirements for real-time data
Disadvantages/ risk	• The AER and AEMO will not be able to take disciplinary action against third parties who use real-time data in contravention of the NER • Confidentiality provisions in the NER would not currently be applied	• Third parties may face a cost and time-intensive exercise in order to become accredited • AEMO may require additional resources to review applications from and monitor a new category of accreditation

Note: The cost refers to a one-time cost each third party would pay should they wish to be accredited/ registered.

Question 8: Should additional requirements be placed on third parties that request access to consumer data?

a) Should third parties be accredited by AEMO under the NER?

b) Are there any other safeguards required to ensure third parties do not misuse data?

6.6 Applying the CDR may not be a feasible solution

Under the consumer data right (CDR), designated data holders can share specified classes of information with accredited third parties that have a consumer's consent to access this information.[98] AEMO and retailers are designated data holders. The information which these parties can share is, in practice, historical metering data.

This means that under the CDR, a third party that is an accredited data recipient, can seek a consumers consent to access their historical metering data. If a consumer provides third parties with consent, AEMO and retailers can share the data from their databases with the third party. The CDR gives consumers more control over their data, and enables consumers to share data with accredited third parties using secure automated data technology.

The CDR did not contemplate real-time data when it was developed and so real-time data is not included as a specified class of information that can be shared with third parties.

Stakeholders have proposed extending the CDR to include real time data

Stakeholders suggest using the CDR as the guiding framework for third parties to obtain consumer consent.[99] They considered that extending the CDR to include real-time data would avoid duplication of data access frameworks, provide for robust data privacy and security protections, and may also be used as a consent management tool. Additionally, data holders and recipients could partly rely on systems already built for CDR data sharing, potentially avoiding additional build costs for CDR participants and ultimately consumers.

It is difficult to extend the CDR to include real-time data

Retailers and AEMO do not have access to real-time data. Only MSPs would be able to provide real-time data but MSPs are not designated data holders under the CDR.

In order to apply the CDR to real-time data, the CDR framework would need to be amended to include MSPs as designated data holders and expand the specified classes of information to include real-time data. These changes are significant because it would require the reopening of the CDR designation instrument for the energy sector for a sectoral assessment of regulatory impacts and costs. It would require significant consequential reforms to the CDR Rules and the Data Standards.

The Commonwealth is responsible for maintaining and expanding the CDR framework and would need to bring the provision of access to real-time metering data for third parties within scope.

It is beyond the AEMC's rule making power to independently make these changes, and the process to amend the CDR would be lengthy and would not align with the time frames of our

98 Section 12 of the Energy Designation Instrument sets out the 'specified data holders', which are the persons who hold the 'specified classes of information' in sections 7 to 10.

99 Submission to the consultation paper AEC p.2.; ENGIE p.2.

proposed approach. We therefore consider that amending the CDR is not a feasible option to achieve the intent of our proposed framework in a timely way.

The design of the CDR could highlight additional requirements that are beneficial to impose on third parties

While the AEMC is not considering using the CDR to enable third parties to obtain consumer consent, it may be beneficial to adopt elements of the CDR if stakeholders consider these aspects beneficial.

For example, a third party must become accredited to use the CDR. Box 7 outlines the accreditation criteria. Stakeholders should consider whether any of these criteria should apply to third parties as part of the additional requirements discussed in section 6.5.

Box 7: CDR accreditation criteria

To become accredited, third party applicants must demonstrate they:

- are a fit and proper person/organisation to manage CDR data
- have taken steps to adequately protect data from misuse, interference, loss, unauthorised access, modification or disclosure
- have internal dispute resolution processes meeting the requirements of the CDR Rules (for most applicants, this means their processes must comply with provisions of the Australian Securities and Investments Commission's Regulatory Guide 271: *Internal and dispute resolution*)
- belong to a relevant external dispute resolution scheme
- have adequate insurance to compensate CDR consumers for any loss that might occur from a breach of the accredited data recipient's obligations
- have an Australian address for service.

Source: See more information here.

Question 9: What features of the consumer data right (CDR) can we adopt?

a) What specific features of the CDR would be beneficial to apply to third parties who seek access to real-time data?

7 DNSPs would be able to access real-time data

7.1 Our proposed framework gives DNSPs the ability to access to real-time data to unlock incremental benefits for stakeholders

DNSPs can access to real-time data under our proposed real-time data framework. This would be in addition to their ability to access existing data from small customer smart meters, such as metering data,[100] basic PQD,[101] and advanced PQD.[102] Under our proposed approach, DNSPs are treated as third parties, and would gain access to real-time data under the methods outlined section 4.3 and chapter 6.

ECA's rule change request proposed for consumers and their authorised representatives to have access to real-time data. It noted we were considering DNSP access to basic PQD under the *metering rule change*, and also suggested we consider whether any other market participants or bodies require access to real-time data.

DNSPs and other stakeholders identified a range of use cases that real-time data access could achieve for consumers and the broader energy system:[103]

- energy theft and neutral fault detection
- dynamic export limits (dynamic operating envelopes)
- improved ability to connect DER via greater understanding of local hosting capacity
- improved visibility, DER hosting capacity, and investment planning
- improved identification and response times to supply outages, off-supply NMIs and customer complaints
- dynamic voltage and transformer load management
- improved network planning and demand forecasting.

They also identified incremental benefits that DNSP access to real-time data could unlock for consumers, networks and the energy system. The benefits include enhanced:[104]

- opportunities for consumers to use innovative products and services that promote voluntary demand response programs, use of cost-reflective tariffs, and dynamic access products such as flexible connections and DOEs
- efficiencies and energy saving achieved through better CER visibility and coordination
- safety for consumers by enabling DNSPs to more quickly identify and isolate infrastructure and asset defect
- visibility for essential services, such as continuous power supply for life support services
- monitoring and management of the distribution network, such as the use of fewer assumptions and estimates.

100 Chapter 10 of the NER defines metering data to be accumulated metering data, interval metering data, calculated metering data, substituted metering data, estimated metering data and check metering data.

101 Basic PQD is defined to be voltage, current and phase angle delivered in accordance with AEMO procedures. See Chapter 3.2 of the *Accelerating smart meter deployment* final determination for further information.

102 Advanced PQD would include measurements in addition to those identified for basic PQD.

103 Submissions to consultation paper: Ausgrid, p. 3; ECA, p. 9; Landis and Gyr, p. 2; Sense Labs, pp. 3 and 13; Endeavour Energy, pp. 3, 5-6; Energy Queensland, pp. 4-5; Essential Energy, p. 4; SA Power Networks, p. 2; University of Queensland, p. 3.

104 Submission to consultation paper: Ausgrid, pp. 3-4; ECA, p. 9; Endeavour Energy, pp.5-6; Energy Queensland, pp. 4-5; Essential Energy, p. 4; Landis and Gyr, p. 2; SA Power Networks, p. 2; Sense Labs, pp. 3 and 13; University of Queensland, p. 3.

7.2 Our proposed framework would give DNSPs initial access to real-time data on commercial terms

DNSPs would be able to access real-time data in line with our proposed approach in chapter 6 of this directions paper.

This approach means that DNSPs would not have a separate right to real-time data free of charge, but would be able to access real-time data:

- on commercially negotiated terms, conditions and prices agreed to with metering parties until the upfront costs of enabling real-time data access have been paid and consumers designate DNSPs as authorised third parties to access the data.
- free of charge in line with the proposed framework once the upfront costs have been paid and DNSPs become consumer-authorised third parties.

Under current arrangements, metering parties hold and control access to data from smart meters generally, and DNSPs can only receive real-time data through commercial negotiation with metering parties. DNSPs have identified a number of challenges with this approach, including:[105]

- **restrictive commercial arrangements** — retailers and MSPs have arrangements that prevent or deny DNSP access to smart meter data
- **limited bargaining power to commercially negotiate** – there are few MSPs in the competitive metering market from which DNSPs can procure real-time data. Given MSPs also have control over the data, DNSPs are unable to negotiate efficient prices and terms for access, and become pricetakers for the data
- **higher costs associated with non-standardised real-time data products and services** — commercially negotiated real-time data requires non-standard or bespoke application programming interfaces and causes cost inefficiencies due to multiple administrative contracts, IT systems and data formats between different MSPs and DNSPs
- **consumers would pay higher prices** — restrictive commercial arrangements, DNSPs' limited bargaining power, and higher costs for non-standardised real-time data products and services drive higher costs for meter data services that would be recovered from consumers.

DNSPs suggested mandated provision of real-time data, or free or regulated access solutions to overcome these challenges.[106]

We acknowledge that the energy system could benefit from DNSPs accessing real-time data for free. However, we consider that the approach to basic PQD, which would provide DNSPs with free access to real-time data, is not in the long term interests of consumers.

The DNSP use cases for real-time data identified in section 7.1 are the same as the basic and advanced PQD use cases and other use cases we explored during the Review and *Metering rule change*. We maintain our view from these reforms that:

- DNSPs only require basic PQD once per day free of charge for the basic PQD use cases
- there is sufficient competition in the metering market and DNSPs have enough bargaining power to commercially negotiate competitive access to advanced PQD for the advanced PQD and other use cases.[107]

We also consider that:

105 Ausgrid, p. 5; Endeavour Energy, pp. 4-5; Energy Queensland, p. 8; Essential Energy, p. 4; SA Power Networks, p. 2; TasNetworks, pp. 1-2.
106 Ausgrid, p. 5; Endeavour Energy, pp. 4-5; Essential Energy, p. 4; SA Power Networks, p. 2; TasNetworks, pp. 1-2.
107 AEMC, Review final report, Appendix E and Chapter 3.2 of the *Accelerating smart meter deployment* final determination.

- the incremental benefits that DNSPs can offer from access to real-time data for the identified use cases in section 7.1 are not significant enough to outweigh the costs to warrant free access to the data, particularly where DNSPs will receive basic PQD free of charge for the same use cases
- there would be substantial costs to give DNSPs free access to real-time data given DNSPs would require a specialised real-time data delivery mechanism that is separate to the access pathway for consumers. In addition there would be significant costs associated with the design, testing and building of such a specialised real-time data delivery system.

Our proposed framework does not prevent DNSPs from accessing real-time data as a third party. It would require, however, DNSPs to obtain the consent of consumers to access their real-time data as an authorised third party.[108]

Chapter 6 puts forward various solutions which would increase transparency and competitive pricing for data from smart meters. These solutions would address DNSPs' concerns on the challenges to commercial negotiation of meter data.

108 DNSPs would not be subject to additional requirements to access real-time data as third parties described in section 6.5.

8 Our proposed approach supports competition

We consider that our proposed approach to improve access to real-time data supports competition for CER services. This chapter outlines:

- stakeholder concerns over the potential for MSPs to have a competitive advantage in the provision of CER services
- why our proposed approach facilitates competition and, in our view, requires no further changes to market arrangements.

8.1 Some stakeholders consider that existing arrangements do not promote competition

Some stakeholders consider that an MSPs exclusive control of the smart meter gives them a competitive advantage in the market for CER services. Stakeholders suggested this is because MSPs may, by virtue of their role:

- have cheaper access to real-time data compared to other non-MSP parties
- be positioned to use the meter to provide CER services at lower cost relative to alternative technologies.

8.1.1 MSPs' exclusive access to real-time data from smart meters may give them a competitive advantage in the market for CER services

Energy services providers use real-time data to provide CER services.[109] This means that the cost of real-time data impacts the costs to businesses in providing these services to customers. To the extent that different service providers face different costs in obtaining these data, those with cheaper access may have a competitive advantage over those who must pay more.

Some stakeholders consider that under current arrangements, MSPs could have a competitive advantage in providing CER services.[110]MSPs currently have exclusive control of smart meters which means no other party can use the functions of a smart meter to provide services to consumers.

An MSP could, for example, install a smart meter with real-time data functionality at a customer's premises, and receive real-time data from the smart meter while passing the costs for installing the meter onto consumers. Consumers would not have choice over what meter is installed at their premises or know the difference in costs between each meter, although as discussed later in this chapter, the cost differential is likely to be minimal.

Because the costs of smart meters are absorbed by consumers over time, the cost of real-time data to MSPs is likely to be lower than the cost to competitors who must install separate devices to capture the data.[111]

8.1.2 MSPs' exclusive access to other smart meter functionality may also give them a competitive advantage in the market for CER services

With greater innovation in smart meter technology, smart meters could provide CER services beyond the core functions of MSPs.[112]

109 See section 2.1.2.
110 Rheem Australia Pty Ltd & Combined Energy Technologies Pty Ltd, submission to the consultation paper, pp. 10-11.
111 See section 3.1.
112 Submissions to the consultation paper: JEC p. 2; Rheem Australia Pty Ltd & Combined Energy Technologies Pty Ltd, pp. 10-11.

ECA noted that if MSPs leverage additional smart meter functionality to provide CER services, it could be difficult for third parties to compete on a level playing field, even with access to real-time data.[113] Using the smart meter for CER services could enable MSPs to provide CER services at lower cost. This because they would avoid the costs of additional kit that other service providers would need to install to provide the same service. Most of the smart meter costs are paid by consumers through their retail bills over time. We consider that the long term cost of additional smart meter functionality would likely be immaterial to consumers, this means that it is unlikely that MSPs have to incur material costs to access real-time data.

Stakeholders have mixed views over whether MSPs' exclusive control of smart meters leads to materially poorer competition outcomes. Some stakeholders consider that MSPs exclusive control of smart meters does create a material competitive advantage that will continue to grow with smart meter innovation for reasons outlined above.[114]

However, other stakeholders consider that any competitive advantage is immaterial because other services providers can compete using alternative devices.[115]

8.2 We consider that under our proposed approach MSPs would not have a material competitive advantage

We considered the issues raised by stakeholders in the broader context of our CER reform package and the likely direction of the energy system discussed in section 2.1.3.

We consider that the market supports the use of alternative devices to smart meters to provide CER services. These devices, coupled with better access to real-time data at the connection point (which could be delivered through this rule change process), would enable energy service providers to fairly compete with MSPs in the market for CER services. It is not clear that any alternative market arrangements would lead to better outcomes for consumers.

8.2.1 Our proposed approach would erode any competitive advantage MSPs may have through cheaper data access

The Commission considers that real-time data should be accessible to all consumers and third parties, including energy service providers. This ensures that access arrangements do not create a competitive advantage for any party. This is consistent with stakeholder views that better access to real-time data would lead to better competitive outcomes.[116]

Under our proposed approach, any existing competitive advantage MSPs may have through cheaper data access would be eroded. This is because under our approach, after 15 years from the commencement of the rule, third parties would access real-time data free of charge. Leading up to this, MSPs would have some incentive to provide access at least cost because prices to access real-time data would be transparent facilitating greater competition between real-time data providers.[117]

Our approach further facilitates competition through our proposed interoperability requirements.[118] These prevent MSPs from discriminating against service providers and restricting

113 ECA, submissions to the consultation paper, p. 9.
114 Rheem Australia Pty Ltd & Combined Energy Technologies Pty Ltd, submission to the consultation paper, pp. 10-11.
115 Submissions to the consultation paper: CEC, p. 4; EnergyAustralia, p. 5, Energy Queensland, p. 4
116 Submissions to the consultation paper: CEC, p. 4; EnergyAustralia, p. 5, Essential Energy, p. 5; ECA, p. 9.
117 See section 4.3.
118 See section 5.3.3.

access to real-time data based on differences in software or hardware used by other service providers.

8.2.2 Technological development should likewise erode any competitive advantage MSPs may have in the provision of CER services

CER devices increasingly have in-built meters with the functionality to provide CER services without the need for smart meters. The interoperability work program discussed in section 5.3.5 aims to ensure that these devices can easily communicate with each other.

Subject to the outcomes of this rule change process, CER providers could couple real-time data from the smart meter with the functionality in the CER device to provide CER services to customers. This service could compete on a level playing field with any service proposed by MSPs relying on the smart meter to provide the same service, given the costs of accessing real-time data would be the same regardless of the provider.

Energy service providers would not incur additional costs to install additional functionality as is the case with digital meter readers to capture real-time data. This is because CER devices already have in-built meters. Therefore, MSPs would not have an advantage over other service providers in using the smart meter because, all things being equal, CER services using the smart meter or other devices would have the same cost.

A competitive advantage may exist where CER devices have no remote control capabilities (e.g. many legacy hot water systems and pool pumps) but we think that this would diminish over time because many modern devices have remote connectivity.

We consider no further changes are required in relation to smart meters to improve competition in the market for CER services.

8.2.3 Alternative market arrangements would not deliver better outcomes for consumers

We consider that no further changes to the market, in addition to our proposed approach to improve access to real-time data, would lead to better outcomes for consumers.

The below sections outline our reasons for not pursuing the following potential alternative market arrangements suggested by stakeholders:

1. Restricting MSPs use of the smart meter
2. Opening control of the smart meter to third parties
3. Other forms of ring-fencing

Restricting the use of smart meters would reduce competition and innovation

Stakeholders considered that MSPs should not be permitted to use smart meters for services not related to their core services of settlement or billing.[119] They considered that limiting the functionality of smart meters would reduce the cost of smart meters to consumers and prevent consumers from being locked into CER services provided by the smart meter as part of their retail contracts.

As explained in section 4.3, the Commission considers that, in the long-term, the costs to improve the smart meters in-built functionality is immaterial. On this basis, the Commission considers that MSPs can provide real-time data free of charge.

119 Submissions to the consultation paper, JEC, p. 2; Rheem Australia Pty Ltd & Combined Energy Technologies Pty Ltd, pp. 10-11.

We also acknowledge the potential of smart meters to deliver additional services, and potential benefits to customers, beyond those considered as part of the Review. In our view, it would not be in consumers best interests to prevent the market from unlocking the full value customers might derive from smart meter technology. Restricting the use of the smart meter would limit customers' choices over the devices that could be used to provide CER services, and would also potentially reduce competition by making it more difficult for MSPs to compete with third parties.

We consider the market should be incentivised to improve the value of smart meters and equally innovate potentially better alternatives.

Opening control of the smart meter to third parties would increase cyber security and consumer privacy risk

This would enable any third party to use the smart meter for CER services which means an MSP would not have exclusive control of the smart meter and could use the smart meter to its advantage.

As discussed in section 5.3 stakeholders agreed that privacy and cyber security risks should be minimised. Stakeholders note that giving third parties access to the meter and therefore the ability to amend the metering configuration would introduce significant safety cyber security risks.[120]

We consider that:

- there would be material risks to safety and cyber security if any party could access and control the meter
- more work needs to be done to investigate options to minimise these risks, and this work is beyond the scope of this rule change.

Other forms of Ring-fencing would increase costs to consumers

Options 1 & 2 are potential forms of ring-fencing. A ring-fencing framework would prevent an MSP from using the smart meter to provide CER services and would instead enable third parties to use the smart meter for these services. For reasons described above, this is not feasible. A less extreme form of ring-fencing would be to ring-fence CER services from the rest of the MSP business and for MSP affiliates to use smart meters to provide CER services. An MSP affiliate would pose a lower risk to safety and cyber security.

Under the suggested ring-fencing arrangements, without an open access regime, which as discussed above is not beneficial to consumers, MSP affiliates would have monopoly control of smart meters to provide CER services. It would be similar to existing arrangements, only with a more costly ring-fencing framework in place. The cost of ring-fencing may drive up the cost of CER services provided for the MSP affiliate, which is not in consumer's best interest.

Our analysis of alternative arrangements is summarised in Table 8.1.

120 Intellihub, submission to the consultation paper, p. 6.

Table 8.1: Alternative arrangements considered

	Restricting the use of the smart meter	Open control of the smart meter	Other forms of ring-fencing
Advantages	• Ensures MSPs have no competitive advantage • Prevents retailers from locking consumers into contracts with MSPs	• Ensures MSPs have no competitive advantage • Retailers have greater choice over who could use the meter to provide CER services • Enables the smart meter to be used for CER services	• Ensures all CER service providers are on a level playing field • Prevents retailers from locking consumers into contracts with MSPs • Enables the use of smart meters for CER services
Disadvantages	• Prevents smart meter technology from driving down the costs of CER services	• Significant risks to cyber security, and safety • Difficult to implement	• The cost of using the smart meter for CER services would be more expensive • This could potentially price the use of smart meters for CER services out the market

Abbreviations and defined terms

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
App	Application
BAU	Business-as-usual
CDR	Consumer Data Right
CER	Consumer energy resources
Commission	See AEMC
CT	Current Transformer
DEIP	Distributed Energy Integration Program
DER	Distributed energy resources
DNSP	Distribution Network Service Provider
DOE	Dynamic Operating Envelope
ECA	Energy Consumers Australia
EU	European Union
EV	Electric vehicle
HEMS	Home energy management system
Metering rule change	*Accelerating smart meter deployment* rule change
MSP	Metering Service Provider
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NERL	National Energy Retail Law
NERO	National Energy Retail Objective
NERR	National Energy Retail Rules
NMI	National Meter Identifier
PQD	Power quality data
Proponent	The proponent of the rule change request
Review	Review of the regulatory framework for metering services
CER Roadmap	Energy and Climate Change Ministerial Council's National CER Roadmap
TOU	Time of use
VPP	Virtual Power Plant