7 June 2019

Mr Charles Millsteed
Chief Executive Officer
Queensland Competition Authority
GPO Box 2257
Brisbane QLD 4001

Dear Mr Millsteed

Energy Queensland response to questions on the benefits of digital meters

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to respond to the Queensland Competition Authority's (QCA) questions to inform its report on the benefits associated with the deployment of advanced digital meters in south east Queensland. Our response is provided on behalf of our retail business Ergon Energy Queensland Pty Ltd (Ergon Energy Retail), and network businesses Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy Network).

Remotely-read interval meters (digital meters) have been used in the National Electricity Market (NEM) for over 20 years, mainly for large customers. With advancement in network systems combined with the uptake of alternative energy technologies by customers, and declining per unit costs, digital meters have been identified as a key technology, capable of delivering potential benefits to customers and retailers.

In its consultations on the Power of Choice metering reforms, the Australian Energy Market Commission took a long term view of the positive changes expected to flow from these reforms once their market penetration had reached a critical mass. This critical mass, although difficult to identify accurately, is yet to be reached and customer-led adoption of digital meters is low.

The primary objective for the deployment of digital meters in the NEM was to improve competition in the electricity market by enabling customers to use the data captured by the digital meters to optimise their consumption and their retail tariff to make their electricity supply more affordable. While there are other potential benefits from digital meters that may be available to other parties, the realisation of these benefits remains difficult to accurately estimate and determine, particularly for our customers.

In order to manage the complex challenges presented by changing customer demand and modern technologies, network businesses require engineering data in near real-time to monitor the network. Reliable and timely access to data to improve safety and also to improve visibility within the low voltage (LV) distribution network is one of the

main challenges faced by networks. However, a range of barriers prevent networks from realising the benefits of digital meter deployment, including:

- lack of a secure process and guaranteed data access to the engineering data from digital meters
- lack of standardisation in data exchange format from various metering providers
- cybersecurity issues related to multiple third-party access
- considerable digital infrastructure costs associated with back-end integration
- incapability of the current minimum services specification to enable detection of advanced faults and power quality monitoring
- uneven deployment as customers can refuse a digital meter deployment in areas of risk as identified by the network
- even if the capability is provided in the meters deployed, the data required to monitor LV safety (e.g. voltage) would not be one which a network automatically has access to under the National Electricity Rules.

The situation described above currently makes the procurement of power quality data from network managed monitoring devices the most feasible option for initially establishing LV network safety monitoring capability in priority areas of the network. This approach can be augmented with data from other sources as the issues above are resolved.

One of the more immediately realisable indirect benefits of digital meters to retailers is the capability to remotely de-energise and/or re-energise a connection. Although the minimum services specification for digital meters supports this function, Queensland legislation currently prohibits the effective use of this functionality.

Energy Queensland's responses to the QCA's questions are provided below. Energy Queensland welcomes the opportunity to discuss these matters further with the QCA.

Should the QCA require additional information in relation to the above comments, or wish to discuss any aspect of this submission, please contact me on (07) 3851 6787 or Peter Wall on (07) 3664 4968.

Yours sincerely

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Enc: Energy Queensland response to QCA's questions

Energy Queensland response to questions on the benefits of advanced digital meters

Energy Queensland Limited

7 June 2019

About Energy Queensland

Energy Queensland Limited (Energy Queensland) is a Queensland Government Owned Corporation that operates a group of businesses providing energy services across Queensland, including:

- Distribution Network Service Providers, Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy);
- a regional service delivery retailer, Ergon Energy Queensland Pty Ltd (Ergon Energy Retail); and
- affiliated contestable business, Yurika Pty Ltd (Yurika), which includes Metering Dynamics Pty Ltd (Metering Dynamics).

Energy Queensland's purpose is to "safely deliver secure, affordable and sustainable energy solutions with our communities and customers" and is focussed on working across its portfolio of activities to deliver customers lower, more predictable power bills while maintaining a safe and reliable supply and a great customer service experience.

Our distribution businesses, Energex and Ergon Energy, cover 1.7 million km^2 and supply 37,208 GWh of energy to 2.1 million homes and businesses. Ergon Energy Retail sells electricity to 740,000 customers.

The Energy Queensland Group also includes Yurika, an energy services business creating innovative solutions to deliver customers greater choice and control over their energy needs and access to new solutions and technologies. Metering Dynamics, which is a part of Yurika, is a registered Metering Coordinator, Metering Provider, Metering Data Provider and Embedded Network Manager. Yurika is a key pillar to ensuring that Energy Queensland is able to meet and adapt to changes and developments in the rapidly evolving energy market.

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1 Introduction

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to respond to the Queensland Competition Authority's (QCA) questions to inform its report on the benefits associated with the deployment of advanced digital meters in south east Queensland. Our response is provided on behalf of our retail business Ergon Energy Queensland Pty Ltd (Ergon Energy Retail), and network businesses Energex Limited (Energex) and Ergon Energy Corporation Limited (Ergon Energy Network).

In our response to the QCA's questions, Energy Queensland has acknowledged the range of potential benefits that the deployment of digital meters offer, while noting the challenges that various stakeholders face in realising the value of these benefits.

Energy Queensland is available to discuss this submission or provide further detail regarding the issues raised, should the QCA require.

2 Specific comments

#	Terms of reference	Consultation question	Energy Queensland response
1	1(a)	What issues should the QCA consider when requesting, and interpreting, retailer data on advanced digital metering deployment strategies?	Energy Queensland suggests that the following issues should be considered by the QCA in requesting data from retailers: • Specific details of digital meter deployment: - total number and proportion of digital meter deployments - proportion deployed as: - new connections - meter upgrades due to DER - meter upgrades due to faulty accumulation metering - customer request for digital meter. - deployment approach – new and replacement (i.e. compliance)/new meter deployment - extent of customer opt-out (including Type 4A). Energy Queensland suggests that the following issues should be considered by the QCA in interpreting retailer data: • The impact of customer churn and geographic factors on the deployment of digital meters: - Size/scale of a retailer's customer base - Demography of a retailer's customer base - Geographic distribution of customer base - The impact of geography on deployment strategy and scale of deployment to date - Specific regulatory requirements within jurisdictions, e.g. tariff offerings,

			billing frequency, paper bills required by Government • Specific details of each digital meter deployment: - total number and proportion of digital meters deployed - deployment approach – new and replacement/new meter deployment - extent of customer opt-out (including Type 4A) - costs on parties and cost-recovery approach: - up-front charge (e.g. Victoria DNSP over 5 years) - bundled or extra retail charge - extent of costs recovered • The degree to which each retailer believes the cost recovery mechanisms available to it truly cover their costs of installing the digital meter and collecting and securely managing digital meter data. • The extent of each retailer's advocacy for the Power of Choice metering reforms, their subsequent positions and actual deployment activity • The extent of each retailer's promotion of digital metering to their customers, including new tariff and non-tariff products and services • The extent to which retailers have worked cooperatively with governments, networks and each other to overcome barriers and enable the realisation of benefits (e.g. remote de-/re-energisation) • Extent of market activity within and between metering service providers, especially corporate mergers and acquisitions activity since 2015. Energy Queensland also considers the QCA should take into account the dis-benefits (additional costs) the Power of Choice metering reforms have imposed on the market, including • Additional metering costs • Additional systems investment • Additional operating costs (support staff) • Additional billing costs (print and post), regulatory (informed consent) and other collateral • Additional data costs.

2	1(b)	Are there any electricity supply participants in addition to electricity retailers, electricity distribution and transmission network entities, electricity generators, and market administrators that the QCA should consider?	Energy Queensland recommends that the QCA may consider the following stakeholders as part of this consultation: • Embedded network owners/managers • Energy project developers • Aggregators – demand and generation (e.g. VPP administrators) • Market bodies and other regulators - AEMC, AER, AEMO, IPART, ESCV etc. • Customers and customer representative bodies.
3		What benefits do stakeholders consider could potentially be available to each electricity supply participant, including residential and small business retail customers?	Energy Queensland notes that the QCA's questions address the concept of benefits in 'actual' and 'potential' but also as 'direct' benefits. However, we note the QCA has not defined what it means by the term 'direct' benefit. In this context we consider a direct benefit to be a benefit that arises by the mere existence of a digital meter instead of an accumulation meter. That is, a benefit that arises because the meter is there, without any supply participant or customer needing to take any further action to create an allied benefit. In this context, Energy Queensland considers that there are very few direct benefits that arise from digital meters. However, those that do exist include: • For the customer: - monthly billing to assist customers manage payment of their bills - remote access to meters avoids requirement for physical access • For the Retailer: - ability to bill monthly instead of quarterly • For the Distributor: - avoided maintenance of meters - avoided physical meter reading and the associated benefits that arise from not performing physical meter reads, such as reduced premises visits (which over time will lead to cost reductions) and reduced safety risks. As direct benefits occur naturally, there are likely no impediments to their realisation – they just arise as a consequence of the digital meter being installed. Some direct benefits can be realised immediately, others will be realised over time. For example, the

			safety risk reduction arising from not needing to enter a premises is immediate, while the few minutes of time saved by not entering a premises to physically read a meter, cannot be immediately turned into a cost saving. However, it is expected that over time, the cumulative effects of these few minutes can be realised as a cost saving as the volume of avoided meter reads increases. Although this also needs to be considered against other compliance costs for the Power of Choice metering reforms. There are far more 'indirect' benefits that may be possible with the deployment of digital meters. We consider indirect benefits to be benefits that do not occur naturally (only occurring as a consequence of the deployment of the digital meter), and which must be pursued in order to be realised. Some indirect benefits will be able to be measured, quantified and 'banked' as financial benefits, while many others will not. Energy Queensland considers that all of the potential benefits of digital meters are indirect benefits which require effort from the relevant stakeholder to recover the value of the benefit to them. We note the following potential indirect benefits: • For the Distributor: - Improved operational efficiency (e.g. more efficient management of field crews) - Improved outage management via 'meter ping', 'last gasp' or 'black spot' analysis - Ability to remotely disconnect and reconnect premises would reduce field costs and improve performance of service orders within prescribed timeframes (if available) - Avoidance of large numbers of service orders that are no longer required due to reduced need for field visits for meter investigations, de-/re-energisations, special reads etc. (if available) - Improved safety through detection of broken neutrals, faults etc. with appropriate granularity of data integrated with network data platforms, combined with effective cyber security arrangements and protections - Improved ability to plan the network and enable decision-making for network tariffs, consumption patterns and usage (i.e. network demand)

			- Greater visibility of the network, improving quality of supply and outage management (notification) - Improved visibility of demand could assist in demand management, forecasting, modelling, and interaction with differing technologies (i.e. solar PV, batteries, electric vehicles (EVs) etc.). However, as is explored in the discussion below on barriers, there are considerable challenges and issues that prevent networks from safely and adequately procuring network related data from digital meters under the current framework: • For the customer: - Greater understanding of energy use to enable decision making in order to reduce bills and enable analysis of energy use to inform alternative tariff options (dependent on the information provided) - Greater convenience for move-in/move-out through use of remote de-/re-energisation (if available) • For the Retailer: - May allow for the introduction of alternative electricity contracts and billing arrangements - Ability to provide data and information to customers to inform decision making regarding electricity costs.
4		What do stakeholders consider to be the best methods to value these benefits?	Energy Queensland considers that there are likely to be many methods to value both the Direct and Indirect benefits of digital meters, and that these will vary depending on the type of benefit being assessed. Energy Queensland would welcome the opportunity to consult further with the QCA on possible valuation methods for direct and indirect (potential) benefits.
5		How do stakeholders expect these benefits could be realised over time?	Energy Queensland considers that a number of different regulatory reforms could enable the realisation of potential benefits. These include: • Re-assessing current safety requirements and procedures, and removing the regulatory barrier in Queensland to enable an efficient remote re-energisation service

			• Rigorous assessment of benefits and costs of regulatory proposals including credible consultation with stakeholders • Closer oversight of outcomes of reforms could avoid occurrence of unintended consequences as stakeholders make decisions which limit the realisation of benefits • Further consideration and exploration of capability of metering providers to deploy capability and supporting data acquisition platforms for digital meters to derive network-related benefits, with appropriate cyber security and data granularity. This would require an assessment of the penetration of meters in locations and appropriate number to address network requirements such as neutral integrity.
6	1(c)	Are there any issues, beyond using costs in the Energex Distribution area, the QCA should consider to ensure the potential benefits identified are consistent with the Government's Uniform Tariff Policy (UTP)?	We note that the circumstances in regional Queensland are different to those faced by Energex in southeast Queensland, and these differences should be factored into any consideration of benefit realisation in regional Queensland. The primary issue relates to geography - the vast scale of the service area, the spread of customers and distances between them combined with low customer density provide opportunities for efficiency of service delivery but depend greatly on technology (network type and communications). Also refer to our response above to 1(a).
7	1(d)	What other matters, in addition to those identified above, do stakeholders consider the QCA needs to take into account in preparing this advice?	**Availability, quality and relevance of digital meter data to each stakeholder** Energy Queensland considers that a key element to be considered is the availability, quality and relevance of digital meter data to each stakeholder. The minimum service specification for digital meters (which is the specification of most digital meters being installed in Queensland) excludes the advanced meter reconfiguration service and the meter installation enquiry service that are needed to obtain access to power quality information (voltage, average voltage, frequency, events in meter log and alarms), supply status and current information (current and average current). Even if digital meters were to support the above services, customers would still need to

			provide consent for the network data to be provided to network businesses, and the meters would need to be in the right locations with the right penetration for the data to be put to effective use. In seeking to access digital meter data, a Distributor would face a number of regulatory, contractual, commercial and structuring challenges and risks. We note that electricity data useful to network businesses can be obtained from a number of sources/locations/devices including: • a digital meter installed at customers' premises, • a network monitoring device installed at customers' premises, • a network monitoring device on network assets, or • internet-connected devices inside customers' premises (customer side of the meter). These different devices present opportunities as well as challenges for electricity market participants, regulators and governments to find the optimal, most convenient and most cost-effective approach to realise various types of benefits. For example, for digital meters, we note that there has been an assumption that the market would deliver the most effective solution to meet the needs of all parties with minimal regulatory guidance. However, tens of thousands of new meters have been deployed which do not enable advanced data capture suitable for networks, and in many cases the capability and platforms currently supporting digital meter rollout are insufficient to provide data for network purposes. **Assumption of inherent benefit of digital metering** The QCA may need to consider that the faith demonstrated by regulators in the inherent benefit of digital meters and associated regulations has required investment with little realisable benefit for customers and little benefit to retailers and distributors to offset the cost. The business case for digital meters may not have adequately considered the predominance of indirect benefits and costs /barriers, which require further action and investment if they are ever to be realised.

			Other technologies We also recommend that the QCA consider the influence of recent trends in the development and uptake of other energy technologies which disrupt the basic paradigm for digital meters – e.g. solar PV and batteries, customer self-sufficiency, more advanced energy monitors, and the emergence of microgrids. Notwithstanding, digital meters are still a critical enabler to advance network tariff reform and provide customers with the opportunity to select a network tariff that best suits their use of electricity in the expectation of reducing their overall electricity costs. **Consideration of costs** Energy Queensland also recommends the QCA consider in its review of digital meters, the dis-benefits (additional costs) the Power of Choice metering reforms have imposed on the market, such as: • Additional metering costs • Additional systems investment • Additional operating costs (support staff) • Additional billing costs (print and post), regulatory (informed consent) and other collateral.
8	2(a)	What potential, and realised, direct benefits do stakeholders consider advanced digital meters have over accumulation meters?	The direct and indirect (i.e. potential) benefits of digital meters are outlined above in response 3, and are stated as benefits over accumulation meters.
9		How should the value of these benefits be estimated?	As discussed at response 4, Energy Queensland considers that there are likely to be many methods to value both the direct and indirect benefits of digital meters, and that these will vary depending on the type of benefit being assessed. For example, cost savings arising from the reduced need for physical meter reads can only be observed once a critical mass of remotely-read digital meters are deployed in an area. For example, if a meter reader previously read 100 accumulation meters in a street, the need to only read 90 still requires the reader to attend and walk the street. The only time saved is the time it takes to enter a premises, read the meter, and exit.

			This is unlikely to make a significant difference to the overall cost of meter reading in the short term. Similarly, it will be difficult to attach a net value to many of the potential network benefits of digital meters, as there will be significant process and system costs associated with the realisation of those benefits, and the result will be a mere improvement in some process that is already performed.
10	2(b)	Which groups identified in 1(b) receive benefits from advanced digital meters?	Energy Queensland considers that some customers will benefit from the additional data, facilitated by retailer portals or other analysis tools, to better understand their consumption and make better decisions on usage or investment (e.g. tariffs, solar PV, batteries). However, we note that there is limited evidence of actual financial benefit to retailers and customers. This is mainly due to the existence of split incentives in the market structure, the cost of implementation of and compliance with the Power of Choice metering reforms, and the limited scale of the deployment to date because of these costs.
11		How should the QCA identify the proportion of the total benefit received by each participant group?	Energy Queensland offers no comment.
12	2(c)	How should the QCA estimate the potential for each direct benefit to be realised now and in the future?	As noted above, direct benefits occur naturally through the presence of the meter. Some direct benefits can be realised immediately, while others will be realised over time. However, of far greater complexity, is the ability to estimate the potential for each indirect/potential benefit. Factors which would need to be taken into account include: • Planned and actual deployment • Extent to which stakeholders are informed • Extent to which stakeholders are able to realise benefits – this is a critical factor • Impact of barriers and extent to which these barriers can be overcome.

13		What factors do stakeholders consider would affect the realisation of direct benefits now and in the future?	As noted above, direct benefits occur naturally with some direct benefits able to be realised immediately, while other direct benefits will be realised over time. This question is far more relevant to the factors that would affect the realisation of indirect/potential benefits. In this regard, Energy Queensland notes the following factors: • Willingness from government for more reform to enable benefits to be realised • Consideration of synergistic opportunities with other stakeholders • Short-term compliance focus has missed the bigger opportunities for costs and benefits to be shared • Lack of rigorous assessment of the different types and nature of benefits and the costs of regulatory proposals including substantial consultation with stakeholders.
14	2(d)	What barriers exist for realising potential benefits now and in the future?	Additional barriers to those noted above that may limit the realisation of potential benefits arising from digital meters include: • Lack of availability of useful data for network businesses due to meter configuration or specification • Limited scale of deployment • Uneven distribution of deployment • Split incentives from market structure and regulation • Policy and regulatory barriers to other services related to meter functionality (e.g. Supply Capacity Control) • Cyber security issues related to data provision from third party data platforms • Customer uptake of alternative energy technologies and the impact on the business case for digital meters. In order to manage the complex challenges presented by changing customer demand and modern technologies, networks require engineering data in near real-time to monitor the network. Network data to improve safety and also to improve visibility within the low voltage (LV) distribution network is one of the main challenges faced by networks. Real-time data from remote devices embedded throughout the LV network can improve network safety and performance through proactive fault detection

			(detecting broken neutrals, high resistance neutral connections and locate fallen power lines). Key barriers for networks in deriving benefits from digital meters are: • Lack of a secure process and guaranteed access to the engineering data from digital meters • Lack of standardisation in data exchange format from various meter providers • Cybersecurity issues related to multiple third-party access • Considerable digital infrastructure costs associated with back-end integration • Incapability of the minimum smart meter services specification in advanced faults and power quality monitoring. Seeking network access to digital meter data also presents a number of regulatory, contractual, commercial and structuring challenges and risks. These stem from the rules around the ownership of, and access to, extra services and data from digital meters; and rights and restrictions in relation to digital meters. In addition to the points above, other barriers to digital meters for network safety benefits include: • A customer can refuse a smart meter deployment (ultimately a customer must choose to have a meter installed which does not ensure appropriate high-risk coverage). This means that even if such programs are successfully delivered by retailers and metering providers, they cannot be relied upon to provide sufficient coverage in identified network areas. • Even if the capability is provided in the meters deployed, the data required to monitor LV safety (e.g. voltage) would not be data which a network automatically has access to under the National Electricity Rules. The situation described above currently makes the procurement of power quality data from network-managed monitoring devices the most feasible option for initially establishing LV network safety monitoring capability in priority areas of the network. This approach can be augmented with data from other sources as the issues above are resolved.

15		How should the impact of these barriers be estimated for each group identified in 1(b)?	Energy Queensland notes that estimating the impact of barriers is likely to be difficult. However, some barriers may be less difficult to estimate than others. For example, the impact of the restriction on an efficient remote re-energisation service could be estimated by assuming a proportion of all de-energisation and re-energisations would be actioned remotely rather than physically. In relation to the barrier to networks arising from the limited functionality of digital meters in improving safety, the networks are proposing to deploy network monitoring devices to monitor neutral connections and detect neutral related faults including broken neutrals. This proposal is aimed to improve safety in high risk areas to create a step change in reducing the number of public shocks across Queensland.
16		How could these barriers be removed?	The approach to address these barriers appears to be a mix of regulatory reforms, at Queensland jurisdictional level and throughout the National Electricity Market (NEM), as well as customer education. Market development is required to further develop the capability and penetration of metering necessary to provide further network benefits as outlined in this response. For example, overcoming the barrier to remote re-energisation is a relatively straight-forward amendment to section 220 of the *Electrical Safety Regulation 2006* (Qld) (to enable re-energisation of premises where a digital meter is installed if the customer consents to its use). However, some barriers will require more significant efforts. For example, NEM-wide reforms may be necessary to address limitations in meter functionality and may require formal processes to change market rules or procedures. Realisation of network benefits from improved data would require modification (additional functions to be activated or added) to the digital meter. This would require collaboration with the manufacturers and technology providers to enable development of additional functions, as well as retailers, metering providers and investors to expand functionality/specification of smart meters to provide data for use by other parties, such as networks. There needs to be a standard minimum technical requirement for the advanced meters to collect the data in a cyber secure way for multiple purposes including network benefits.

			Customer education requires a broad and sustained effort to appeal to different types of customers who possess varying levels of energy literacy and sophistication.
17	2(e)	What factors should the QCA consider when estimating annual benefits to each group identified in 1(b)?	As noted above, estimates of benefits are difficult to identify and quantify and this will be even more difficult to do on an annual basis. Energy Queensland notes the following issues: • Impact of direct and indirect regulatory barriers which limit realisation of benefits • Deployment strategies may vary in practice from each retailer's plans • Stakeholders are unlikely to realise potential benefits immediately as they will have to adapt systems and processes to capture any benefits • The impact of split incentives • Differences between the stated and realised financial benefit in like jurisdictions/entities • The lack of awareness of the difference between direct and indirect benefits • The need to consider both gross and net benefits, given existence and impact of significant costs (dis-benefits) for various stakeholders.