26 May 2017

Mr John Pierce
Chairman
Australian Energy Market Commission
PO Box A2499
Sydney South NSW 1235

Dear Mr Pierce

"ERC0201" Five Minute Settlement Directions Paper

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Commission (AEMC) regarding its Five Minute Settlement Directions Paper.

The attached submission is provided by Energy Queensland that operates a portfolio of businesses providing energy services across Queensland, including:

- Distribution network service providers (DNSPs), Energex and Ergon Energy; and
- A regional service delivery retailer, Ergon Energy Retail (EEQ), limited in its scope of operations by jurisdictional legislation.

Should you require additional information or wish to discuss any aspect of Energy Queensland's submission, please do not hesitate to contact either myself on (07) 3851 6416 or Trudy Fraser on (07) 3851 6787.

Yours sincerely

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Energy Queensland

Five Minute Settlement Directions Paper

Energy Queensland Limited

26 May 2017

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1 Introduction

Energy Queensland Limited (Energy Queensland) welcomes the opportunity to provide comment to the Australian Energy Market Commission (AEMC) regarding its Five Minute Settlement Directions Paper (Directions Paper).

This submission is provided by Energy Queensland, on behalf of its related entities Energex Limited (Energex), Ergon Energy Corporation Limited (Ergon Energy) and Ergon Energy Queensland Limited (EEQ). Energy Queensland is a recently established Queensland Government Owned Corporation that operates a portfolio of businesses providing energy services across Queensland, including:

- Distribution network service providers (DNSPs), Energex and Ergon Energy; and
- A regional service delivery retailer, EEQ, limited in its scope of operations by jurisdictional legislation.

Energy Queensland is committed to energising Queensland communities and it is focused on working across its portfolio of activities to safely deliver secure, affordable and sustainable energy solutions with our communities and customers.

Energy Queensland supports a framework that assesses rule changes from a holistic perspective and provides the best outcomes for consumers. Fundamental to any proposal for a rule change, is a demonstration that the expenditure to implement this rule change will provide a net benefit to all consumers and the market more generally. Energy Queensland supports the theory behind aligning the timeframes for dispatch and settlement. However, until quantifiable benefits are presented at a whole of industry level, which outweigh the associated costs, we cannot support the rule change proposal, and are in fact strongly opposed to the proposal. Fundamentally, at this point, we do not consider there is a material issue that needs addressing.

Furthermore, any amendments to the regulatory framework need to be carefully balanced to ensure they do not create any unintended outcomes and costs. Energy Queensland's comments in relation to specific issues discussed in the Consultation Paper, and our detailed responses to the questions raised therein are included in sections 2 and 3 of this submission.

As members of the Energy Networks Australia (ENA), the peak national body for Australia's energy networks, Ergon Energy and Energex have also contributed to and are supportive of the issues raised in the ENA's submission. Similarly, EEQ being a member of the Australian Energy Council (AEC) supports the positions raised by the AEC in their submission.

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

2 Key Messages

Regulatory disruption has the potential to endanger investment in any scale. There is currently a great deal of energy market disruption and we are seeing a range of developments, for example, Power of Choice and new and emerging distributed energy resources. Together these are collectively impacting the operation of the industry as a whole. The impact of adding more disruption to the market, such as this rule change, with no quantifiable cost-benefit analysis, needs to be clearly understood to ensure that the national market is capable of supporting this change.

We are strongly opposed to the rule change proposal submitted by Sun Metals Corporation Pty Ltd (Sun Metals). Of primary concern is the lack of a quantifiable, independent cost-benefit analysis. As Energy Queensland does not own significant generation assets, we are concerned that the proposed rule change has the potential to lead to significant disruptions in both the physical and financial markets and as such, should only be contemplated if the benefits can be clearly quantified with a high degree of confidence and significantly outweigh the implementation costs and result in a marked and observable benefit to the entire end-user base. In our view, this would require a comprehensive modelling exercise to understand the change in market behaviour by incumbent participants and the associated change in carbon emissions intensity as a result of the proposal. The analysis should also review the costs and benefits as it relates to the whole of industry.

The AEMC should be cognisant that there are potentially significant investments already sunk into existing assets and therefore any interference in the settlement market is likely to lead to immediate losses for existing shareholders and customers. We also consider that the change from 30 to five minute settlements in the short term is likely to have price impacts.

The cost impost on participants will be significant and broad. This is due to all participants having to invest in replacement trading, settlement and billing systems in order to maintain business operations in a five minute market. This is not limited to natural participants such as Generators, Retailers, Distributors and Market Customers, but also financial intermediaries, giving rise to further costs financial market transaction capture, risk measurement, settlement and reporting systems. The associated cost of these systems upgrades may be considered a barrier to entry for new participants and a cost that may prove excessive, resulting in the exit of some smaller existing participants, therefore lowering competition with the retail market.

Energy Queensland also considers that hedge contract liquidity would reduce if the rule change proposal is adopted. This is due to fast start generators not being able to respond at short notice to defend sold contract positions, particularly caps. Therefore, retailers and some large generators that are not vertically integrated would not be able to offer customers hedge contracts at

competitive prices. This will further reduce completion in the market. Energy Queensland notes that Energy Edge has estimated a reduction in Cap product liquidity by 650MW. We consider that this figure is grossly underestimated and as such, would support the AEMC further examining this reduction.

Energy Queensland notes that changes with respect to metering may undermine the Competition in Metering rule changes that take effect from December this year and the Victoria AMI roll out recently completed. The Competition in Metering rule change promises to lead to improved granularity of metering for customers as a result of investment in metering where it is cost effective to do so. The proposed five minute settlement rule change has the potential to add costs to metering therefore undermining the business case and slowing the roll out of this metering.

The Directions Paper recognises that, subsequent to the Bidding in Good Faith rule change the instances of bidding behaviour that lead to high prices in the 6th trading interval has declined. At the same time, there are a number of large scale storage projects, as well as buoyant forecasts for distributed energy resources that can participate in the market as providers of fast start generation.

3 Table of detailed comments

Consultation Paper Feedback Question	Energy Queensland Comment
Question 1	
a) How suitable is the proposed assessment framework for this rule change request?	Energy Queensland partially supports the assessment framework factors presented by the AEMC at section 2.2 of the Directions Paper. However, we are concerned that a comprehensive cost-benefit analysis is only included against a regulatory and administrative burden of the proposed assessment framework and that the assessment framework is biased towards a pure economic outcome rather than a pragmatic assessment of the costs and realisable benefits. We therefore consider that there are additional factors that warrant investigation and these are outlined in response to question 1(b) below.
b) Are there any additional factors that should be considered in assessing this rule change request?	Energy Queensland, strongly recommends that the AEMC undertake further analysis of the impact on the financial electricity market liquidity. We are firmly of the view that the impact is grossly understated and as a result the true impact to the end user through higher electricity contracts in not accurately reflected. In addition, noting that the AEMC in the Directions Paper have indicated a willingness to explore linkages between this rule change proposal and other current AEMC rule changes and reviews, we consider that greater emphasis should be placed on these other market reviews and rule changes. A fundamental change is being proposed by this rule change, and therefore broader market reviews are critical and should be relied upon and linked to safeguard the delivery of long term benefits to consumers in the National Electricity Market (NEM).
Question 2	
a) How material are the price signal inefficiencies under 30 minute settlement and are there other data or data sources that would enable this issue to be more comprehensively addressed?	EEQ is a significant purchaser of energy in the NEM and manages its exposure through a portfolio of hedge products to mitigate risk and minimise costs. Energy Queensland believes that 30 minute price signals are not inefficient as currently both fast start generation and demand side management are able to adequately respond to the 30 minute price signal. The 30 minute settlement market provides a stable and proven landscape for financial and physical risk management of market customer, retail and generation portfolios.

Consultation Paper Feedback Question	Energy Queensland Comment
b) What extent would a move to five minute settlement address inefficiency in price signals from 30 minute settlements?	Energy Queensland agrees that the closer real time pricing and dispatch becomes to being instantaneous, the more efficient the market would theoretically be. However, the costs of implementation would be significant. Energy Queensland's position is that any additional cost of transition will ultimately be borne by the end-user, therefore defeating the purpose of the rule change of lowering energy prices to consumers.
c) Are there any other inefficiencies that should be considered?	Energy Queensland has no comments.
Question 3	
How does an aging generation fleet together with rapidly evolving digital technologies and the increasing role of intermittent generation affect the prospects of five minute settlement as compared with 30 minute settlement?	Energy Queensland notes that the next substantial baseload is due to be withdrawn from the market in the next 3-5 years which roughly coincides with the proposed transition period of the five minute settlement rule change. As a result, we would caution against making fundamental changes to the market. As noted earlier, the projected growth in battery storage sales would indicate that the current market is not an impediment to the evolution of digital technologies. For example, a recent survey by the Australian Renewable Energy Agency (ARENA) forecast 20,000 systems would be sold in the next 12 months. We also note that there are a number of large combined renewable and storage projects around the NEM that are likely to be completed in the next few years, along with the grid scale battery storage tenders for the Victorian and South Australian governments. This would indicate that the current settlement arrangements are not acting as an impediment to the development of fast start capable assets to manage the issues of intermittency highlighted by the recent outages in South Australia. Further evidence of the current market providing positive signals for the installation of battery fleet is the growing portfolio of Reposit. Currently, as publicly stated, Reposit is installing approximately 1MW per month of battery storage capability. We therefore question the proposition in the rule change that the 30 minute settlement market is inefficient, as we believe that this organic growth would not be occurring; rather the opposite would occur, with emerging technology and demand side management being withdrawn from the market. Proof that the 30minute settlement market is providing clear and observable signals is further evidenced by AGL's plans to operate Sunverge batteries and control systems as a virtual power plant in South Australia, and Tesla's aggressive market expansion in Australia.

Consultation Paper Feedback Question	Energy Queensland Comment
Question 4	
What kinds of generator bidding behaviours would emerge under five minute settlement as compared with 30 minute settlement?	Energy Queensland has no comments.
Question 5	
a) What other issues are likely to be material in considering the introduction of five minute settlement?	While we acknowledge that the National Electricity Objective does not require the consideration of greenhouse gas emissions when making a rule, this proposed rule is likely to result in a less efficient environmental outcome.
b) Is there other data or data sources that can better inform the analysis of the materiality of the problem with 30 minute settlement or the move to five minute settlement?	Energy Queensland has no comments.
Question 6	
a) How material are the issues identified around demand-side optionality? Are there any material issues or benefits that have not been identified?	Energy Queensland does not support demand side optionality proposed by Sun Metals. Energy Queensland considers that in practice there would be no ability for retailers to choose either settlement due to the inter-relationships between retailers and a diverse set of customers and counterparties. Effectively, retailers would need to build systems and processes to manage both five and 30 minute settlement processes. If the rule change is to be implemented, Energy Queensland's strong preference is for consistent settlements. Further, this has the ability to split the financial market into 5 minute settlement and 30 minute settlement markets, effectively splitting liquidity between the two markets and as a result reducing liquidity and the ability to source effective hedge cover. This would then result in higher prices to customers as retailers price in the market risk to the end user pricing.
b) If demand-side optionality is adopted as a temporary measure, should the settlement residue be incorporated in intra-regional residue settlements? If not, how should it be treated?	We see no value in this interim measure. As noted in the Directions Paper, this would require market participants to make significant investment in IT systems irrespective of the optionality due to the diversity of our business and the customer base.

Consultation Paper Feedback Question	Energy Queensland Comment
c) How might the contract market react if demand-side optionality is adopted on a temporary basis?	It is likely that the contract market would be substantially disrupted. Additionally, the ability to obtain financial products required to manage risk would be extremely difficult if not impossible. Even if adopted on temporary basis, market participants would be required to invest in both five and 30 minute systems.
Question 7	
a) Are there any suitable alternatives to collecting five minute data from the transmission network metering installations used to compile the NSLP other than reconfiguring or replacing the existing meters?	Energy Queensland has no comments.
b) What percentage of meters can be remotely reconfigured? What would this process look like and what would costs be? Conversely, what percentage would be need to be manually reconfigured or replaced?	**Ergon Energy** Ergon Energy has a fleet consisting of 1.24 million meters across multiple site types (1-6) , including: • Approximately 313,000 electronic meters (~2500 are remotely read); and • Approximately 922,000 electromechanical meters (type 6); and • Approximately 5000 Card Operated Meters (type 6). Only approximately 2500 of our electronic meters are remotely read for market settlement purposes and as a result the remaining 310,000 meters would require a site visit to be reprogrammed or replaced dependant on both model and storage capacity enabling compliance with clause 7 7.3.1a(10) of the National Electricity Rules (NER). Furthermore, all of Ergon Energy's electromechanical meters (922,000) would require replacement. Ergon Energy considers that the cost to have meters replaced / reprogrammed would vary depending on the number of metering points per NMI and site type (component requirements). As such meter replacement / reprogramming costs alone may vary from $500-$1500 per meter with Types 1-4 being at the higher end of this bracket dependant on hardware, site location and the appointed meter provider's testing and validation procedures. This range estimate does not take into account any additional costs associated with co-ordination, site inductions, drawing updates etc. Each metering provider may carry risk differently and as such may have different cost structures, hardware decisions and validation processes implemented.

Consultation Paper Feedback Question	Energy Queensland Comment
	Energex Energex, has a fleet consisting of 2.13 million meters across type 6 installations, including: • Approximately. 765,247 electronic meters (~4,000 meters with modems connected and can be remotely configured); and • Approximately. 1.368 million electromechanical meters The approximately 4,000 communications enabled electronic meters are purely for engineering data. However, none of these are being used for market purposes and as a result, 729,127 meters out of total electronic meters, including the 4,000 comms connected meters, will require site visits for any possible reconfiguration/reprogramming or replacement depending on meter software version. Post commencement of metering contestability in December this year, any new or replacement small customer meter must be Minimum Service Specification (MSS) compliant. Similar to Ergon Energy, all Energex's electromechanical meters will require replacement. Energex considers that the cost to have meters replaced / reprogrammed would vary depending on the number of metering points per NMI and site Type (component requirements). As such meter replacement / reprogramming costs alone may vary from $100-$1500 per meter with Types 1-4 being at the higher end of this bracket dependant on hardware, site location and the appointed meter provider's testing and validation procedures. This is exclusive of any additional costs associated with co-ordination, site inductions, drawing updates etc. Each metering provider may carry risk differently and as such may have different cost structures and hardware decisions and validation processes implemented.
c) The Commission has proposed aligning the transition with the timeframes for the NER test and inspection regime. Would this provide an appropriate amount of time for changes to occur?	As Energy Queensland does not support this rule change in principle, it is difficult to comment on an appropriate timeframe. However, if the rule change takes effect, we would not support a specific programme to address this issue in isolation. Rather, we consider that any approach taken should align with a testing and inspection regime or with a new and replacement programme. Energy Queensland also notes that not all participants will have the same testing and inspection regime as defined in the NER and this may create inconsistencies. For example: • Only metering installations that contain CTs only or CT/ VTs fall into a time based testing regime based on the Responsible Person (RP) approved asset management strategy and is aligned with S7.3.2 and S7.3.3 of the NER unless an alternative test strategy has been approved by the Australian Energy Market Operator (AEMO). As such, only the sites (typically 1-3) would be part of a regular time based program and types 4-6

Consultation Paper Feedback Question	Energy Queensland Comment
	will be dependent on approved Meter Asset Management Plan (MAMP). • Similarly, dependent on the RP's approved MAMP, most direct connected (whole current) metering installations are usually tested as part of a random sample testing regime based on AS1284.13 and as such, many meters may not be visited as part of a regular testing program for many years, if ever.
d) For which categories and situations should an exemption from providing five minute data be considered? Why?	As noted above, exemptions create the potential for the settlements process to derive incorrect settlements allocations for market customers as a result of the NSLP being incorrectly calculated. Additionally, we believe that this will depend on the need and use of the data. For example, if it is required for generation cost allocation then transmission node identifier/ generation level data may be sufficient. However, if five minute data is extended to customers at lower levels, the cost of data collection and storage, ability to collect data on a daily basis (due to extended data communications time), storage costs and data editing becomes more onerous.
e) Are there any other metering implementation issues relevant to collecting five minute data that should be considered?	The increased data volumes as a result of the increase in data being transmitted from meters may mean more expensive data plans with telecommunications providers. Energy Queensland anticipates that we will need to use a more expensive data plan for each meter. This alone will result in an increase of approximately $10/meter per year. An initial assessment of our meter stock indicates that our old meters will not be able to store the data for 35 days. However, our newer meters can store this data for five minute intervals. Energy Queensland encourages the AEMC to recognise that meters are required to store information for 35 days in order to reduce the need for estimates to be used. The 35 day period is to allow for a communications failure (not meter failure). This is especially necessary in Queensland where there can be severe weather events, such as cyclones. From a systems aspect, the issues become a mixture of performance and functionality limitations and we do not consider that these limitations should be viewed lightly. Storage capacity is of significant concern particularly if functionality is required to hold, both five minute and 30 minute data. Software changes will be required and our preliminary investigations reveal that we may have some limitations in existing systems being able to process the volumes of end of month billing data if it is changed to five minute data. Other metering issues to consider if this rule change was adopted include: • Training and process developments; • IT development business cases will be impacted as they are generally based on cost recovery over a period of several years; • An increased impact on field testing to ensure times and readings are recorded accurately for data substitution, and the possibility for a temporary meter needing to be installed; and • An increase in load on the telecommunications network will result in slower reading and increased costs. .

Consultation Paper Feedback Question	Energy Queensland Comment
Question 8	
a) To what extent would a transition period mitigate the one-off contract negotiation costs of a move to five minute settlement?	Notwithstanding Energy Queensland's strong opposition to the rule change proposal, we recognise that if the rule change were to proceed, a period of transition would likely result in a more orderly transition and potentially smooth costs over the period. Energy Queensland proposes at least a 5 year transition period if the rule change is adopted.
b) What length of time would be appropriate to enable contracts to either expire or be adapted to take into account the future implementation of five minute settlement?	Energy Queensland considers this to be specific to market participants and the individual contracts they have negotiated. Currently, our longest market based contracts are 10 year Power Purchase Agreements. This has the potential to disrupt these contracts with opposite binary outcomes for participants.
Question 9	
a) To what extent would contract market liquidity be affected by a move to five minute settlement, as distinct from other pressures on liquidity?	It is difficult to assess with any certainty. As noted above, Energy Queensland recommends a comprehensive modelling exercise be undertaken to understand the potential changes in the physical and contract markets to understand the potential implications of the proposed rule change.
b) How would the contract markets adapt to a move to five minute settlement?	Again, notwithstanding Energy Queensland's strong opposition to the rule change proposal, we note that in the medium to long term the market will likely adapt. However, in the short term, we anticipate reduced liquidity will likely increase hedge costs.
c) To what extent would new types of hedge cover emerge?	Energy Queensland believes that the availability of hedge cover will reduce. The price signals that may drive future investment in power stations particularly in peaking plant may be dampened due to the inability to respond quickly enough in a five minute market. Given that battery technology in the short to medium term is seen to be relatively small scale, and typically is offered non–firm as a demand response, the ability to source replacement hedge cover is seen as minimal. This will result in market risk being passed through to customers resulting in higher energy costs, at least in the short to medium term.
d) To what extent would existing generators develop new operating strategies to underpin hedge contracts?	Energy Queensland expects that larger generators, in particular coal fired plant, will operate spinning reserve capacity to take advantage of price spikes in trading intervals that previously would have been taken up by gas generators. We are therefore concerned that in the short term, the reduction in caps previously provided by gas generators will be greater than that offered by spinning reserve coal plants, increasing the price of caps in the market. Given this, we believe that the most likely outcome will see an up-lift in flat energy pricing.

Consultation Paper Feedback Question	Energy Queensland Comment
e) To what extent would new generation plant be able to provide hedge contracts?	It is difficult to assess the ability of new entrants to provide and support hedge contracts in the future. Some of the technology (and mixes of technologies) is untested in Australia so it is difficult to make this assessment with confidence. We must also make an assessment of the counterparty's ability to support the hedging arrangements. A cornerstone of the ongoing viability of the NEM is the ability of participants to manage the counterparty risk to ensure confidence of the financial system that supports the market. Like all market participants, EEQ will only contract with counterparties that meet the appropriate financial criteria.
Question 10	
a) What are the costs, synergies and risks involved in upgrading IT systems to accommodate five minute settlement?	Due to time constraints for responding to this consultation, Energy Queensland has not undertaken a full costing assessment, but we reasonably anticipate it may be likely to costs tens of millions of dollars to upgrade our IT systems to accommodate a move to five minute settlement. Specifically, in order to support this rule change, we would need to implement a new risk management and trading system, meter data management, settlements and data warehousing facilities and billing systems.
b) What timeframes are required to upgrade IT systems?	The lead time required to implement a rule change such as this is most likely to be in the order of 5 years at a minimum. Additionally, the AEMC should be cognisant of broader market reforms currently underway, such as the metering contestability framework brought about as part of the Power of Choice reforms that are exhausting resources of market participants. Any transition to five minute settlements should not commence until Power of Choice has been stabilised. Also, both Ergon Energy and Energex are preparing to dedicate resources to the regulatory reset process under Chapter 6 of the NER.
Question 11	
a) Are there any further categories of costs that would be incurred if five minute settlement was adopted?	Energy Queensland has no comments.
b) How suitable is the proposed two-stage transition period to implement five minute settlement? Do you consider there to be a more preferable approach to a transition period such as alternative timeframes?	Energy Queensland does not support any change to the settlement rules as this introduces uncertainty and regulatory risk in the market.

Consultation Paper Feedback Question	Energy Queensland Comment
c) What are the detailed benefits, costs and risks of the proposed two-stage transition to five minute settlement on: i. existing contract arrangements? ii. metering requirements? iii. IT system requirements?	A two staged approach is not likely to impact any of the above outlined concerns that Energy Queensland holds with regard to moving to a five minute settlement market.
d) Are there any other practical aspects of implementing five minute settlement that should be considered?	Energy Queensland believes that implementing five minute settlement does not achieve what is purported by the original rule change request for all of the reasons outlined above. Rather, we consider that the operation of the physical and financial market is efficient and provides adequate signals to new entrants as well as incumbent participants. The hedging availability is adequate for management of financial risk, particularly when viewed in context of mitigating price risk through demand management activities.