

25 May 2017

Mr John Pierce
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Australian Energy Market Commission
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Dear Mr Pierce

Submission on the AEMC's Directions Paper – National Electricity Amendment (Five Minute Settlement) Rule

AEMO welcomes the opportunity to provide a submission on the AEMC's Directions Paper on the National Electricity Amendment (Five Minute Settlement) Rule. Please find our submission attached.

We would be pleased to provide further assistance to the AEMC regarding the matters highlighted. If you would like to discuss or have any questions regarding this submission, please do not hesitate to contact myself or Violette Mouchaileh, Group Manager Market Enhancement, on (03) 9609 8551.

Yours sincerely



Peter Geers
Executive General Manager, Markets

cc:

Attachments: National Electricity Amendment (Five Minute Settlement) Rule: AEMO Submission to the AEMC Directions Paper



NATIONAL ELECTRICITY AMENDMENT (FIVE MINUTE SETTLEMENT) RULE

SUBMISSION TO AEMC DIRECTIONS PAPER

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1. INTRODUCTION

AEMO welcomes the opportunity to provide a submission on the AEMC's directions paper on the Five Minute Settlement rule change proposal.

AEMO acknowledges the issues raised by the proponent and agrees that settlement and dispatch should be aligned. AEMO offers the following suggestions to expedite the introduction of the Five Minute Settlement rule, assure success and reduce costs.

AEMO looks forward to working with the AEMC and the industry to develop a high level operational design of five minute settlement in order to inform a more comprehensive assessment of the impact.

2. IMPLEMENTATION

2.1. Alternative Implementation

AEMO supports the position that the application of five minute settlement across the market is important. Five minute settlements will improve market efficiency by providing improved price signals and facilitating the participation of new technologies and participants, such as storage and demand based resources. In order to obtain the benefit from the improved price signal, participants from the demand side and supply side should have exposure to the alignment of settlement and dispatch intervals.

The transition to a five minute market is a substantial technical undertaking for AEMO, market participants and consumers. For that reason AEMO recommends a staged approach that introduces mandatory five minute settlement for the most price sensitive participants, but allows the market to test new business models and pilot implementations for smaller scale consumers.

The benefits of this approach are to:

- expedite the transition to a five minute market;
- target the deployment towards participants that have the highest degree of price sensitivity and capability to invest in resources that allow them to take advantage of price signals;
- provide AEMO and market participants with the opportunity to learn from the actions of our most sophisticated market participants; and
- minimise near term system changes and costs for industry.

The design of the staged approach involves a mandatory implementation across all Type 1-3 meters, optional implementation for Type 4-6 meters and the development by AEMO of a five minute Net System Load Profile ("NSLP") for each settlement region.

A five minute NSLP would be applied to accumulation metering data using the same principles applied today for 30 minute settlement. Interval metering within distribution networks would also have a five minute profile applied to the 30 minute data; the methodology for calculation could take various forms and can be determined through the development of the rule.

Importantly, this staged approach would not require the immediate investment disruption to customers caused by an imposed meter technology rollout and consequential changes to participants systems. It would also enable further demand side participation in a manner that is focused on the most price sensitive, responsive and engaged consumers.

A modification to the Power of Choice metering specification would ensure that any new meters installed are capable of five minute settlement and can meet storage and other requirements. AEMO considers that a five minute recording and storage capability requirement could be met by the current technologies being deployed by competitive metering providers in the NEM.

This approach allows market participants to test consumer response to five minute signals prior to broad based whole-of-business implementation. AEMO would work with retailers and networks to



develop pilot programs and trials that test demand side response and consumer economic outcomes under five minute settlement. Retailers could then look to pair metering upgrades with other product offers (such as time-of-use or other innovative structures) as part of an overall customer proposition. These trials would establish and inform the business case for change at the small to medium customer level, and drive a rollout that is based on commercial incentive.

Under this approach retailers would need to manage differentials between generation on five minute settlement, and any load that is on thirty minute settlement. Initially those basis differentials are likely to be small and manageable given that retail business models typically do not expose small and medium customers to a five minute signal. Those customers that do have material settlement differentials would logically be the most likely candidates for meter upgrades.

2.2. Metering installations, data and storage

The Directions Paper refers to the potential for changes to metering storage requirements. The requirements for interval metering installations are as follows:

Meter Type	Storage Requirement	Communication	Malfunction Rectification Timeframe	Reading Cycles
Type 1-3	35 days	Remote	2 business days	Weekly
Type 4	35 days	Remote	10 business days	Weekly
Type 4A Type 5	200 days	Manual	10 business days	Quarterly

The capability of existing metering installations in the National Electricity Market will fall into one of the following categories:

1. Able to have five minute granularity and adequate storage for existing NER requirements.
2. Able to have five minute granularity but inadequate storage for existing NER requirements.
3. Unable to have five minute granularity.

Of the metering installations that fall into the second category of those listed above, AEMO considers that any modification of the thirty five day Type 1-4 storage requirement would need to be considered jointly with data collection and delivery requirements and the metering rectification timeframe of two business days for Type 1-3 meters and ten business days for Type 4 meters. Reducing the storage day requirement below the required timeframe for rectification for metering installation malfunction rectification may result in situations where a malfunctioning meter is not rectified before the storage capacity on meter is exhausted, increasing the risk of data loss, adversely affecting settlements and customer and network billing.

The Type 5 storage requirement of 200 days allows for one quarterly reading cycle to be missed without exhausting the storage capacity of the meter. Any reduction in the required storage requirements of these metering installations may also lead to a loss of data, unless corresponding changes are made to data collection and delivery requirements to mitigate any increase in risk of this occurring.

AEMO considers that identifying the requirements for the management of existing installations where a reconfiguration to five minute interval recording is possible, but where storage capacity cannot meet the requirements of the current NER as a result, to be important in enabling the progression of the rule change without compromising the integrity of metering data in the market and for settlements.



2.3. Settlement residues and imbalances

The implementation will require inter-regional settlement residue to be settled on a five minute basis. Participants should note the potential impacts on cash flows, however the Rules are appropriate catered to manage such a transition. A three year transition period should allow for impacts on interregional settlement residue and settlement residue auctions to be appropriately managed.

Under the interim transition period between Stage A and Stage B, settlement-by-difference imbalances will be allocated to the local retailer under existing market settlement rules. Under the transition period, this may involve a mix of five and thirty minute data, leaving the local retailer exposed to a basis differential against those second-tier retailers within its local region that are still on thirty minute settlement. This could potentially be addressed through a modified NSLP to mitigate the exposure of the local retailer. A consideration of alternative approaches to energy allocations may also be warranted in order to allocate imbalances and losses more equitably between local and second tier retailers.

2.4. Prudential and reallocations

AEMO's prudential and settlement processes involve a number of overlapping timescales (settlement estimate, initial run, preliminary, final, revision). The metering and settlement systems and associated policies and procedures will need to reflect the transition from thirty minute to five minute settlement. The process of settlement estimation is primarily in place for prudential purposes, and involves using a mix of SCADA data and estimated meter data. This process would need to be updated to a five minute granularity.

Reallocations are a way in which participants can adjust spot market settlements to reflect their contractual arrangements. It would be appropriate for AEMO to provide re-allocations on a five minute basis, which would involve system changes.

2.5. Preliminary cost estimates

AEMO has provided an initial estimate of its costs under an implementation of five minute settlement. The implementation is based on the AEMC's proposed design within the directions paper. It should be noted that this estimate is preliminary and subject to change. The estimates are based on AEMO's experience with similar projects with the aim of providing an order-of-magnitude for the implementation. AEMO would look to develop a more detailed bottom-up cost estimate as part of the next phase of the rule change process.

Upfront costs are estimated at around \$10-15 million for an implementation of five minute settlement within AEMO's systems and operations. The estimate incorporates costs for IT and systems development, design, integration and testing; policy development and design; procedure consultation and amendment; program management; internal business readiness; transition planning, readiness and cutover; and stakeholder engagement.

Ongoing costs are estimated at around \$2-7 million and incorporate costs relating to licensing, databases, application software, hardware and storage, and modules. Ongoing costs are likely to scale with the number of meters managed by the system. As such, AEMO's alternative staged approach has the potential to reduce ongoing costs relative to the proposed design outlined in the Directions paper. AEMO will continue to review this issue and will provide the Commission with updated information as appropriate.

3. OPERATIONAL CONSIDERATIONS

New, responsive technologies are entering the market at an increasing rate. This is expected to have operational implications for power system security and for quality of supply at the local level. For example, a large instant coordinated response by batteries to a price spike would be expected to have an impact on frequency and local voltages. Remedies to mitigate these impacts such as limiting the rate of response to price spikes may also limit the revenue opportunities being assumed by some



stakeholders. There may also be a need to examine aspects of the physical market, such as the bidding process. These are not directly related to the rule change proposal and are mentioned here for information.