17 October 2017

Ms. Anne Pearson
Chief Executive
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Dear Ms Pearson

Five-Minute Settlement (ERC0201) Draft Determination

Energy Networks Australia welcomes the opportunity to make a submission to the Australian Energy Market Commission's (AEMC) Five Minute Settlement Draft Determination, released on 5 September 2017. Energy Networks Australia is also aware that a number of member businesses will be lodging individual submissions.

We understand that the proposed changes have significant implications for wholesale markets. Energy Networks Australia supports moves to facilitate dynamic price signals which may assist the uptake of storage and other flexible load mechanisms that can deliver a secure, and reliable energy system that consumers value.

It is not clear at this stage whether the implications for wholesale markets will have flow on effects to the future operation of networks. Energy Networks Australia members look forward to working with the AEMC and other stakeholders as some of these issues are progressed.

At this stage, our submission focusses on direct implications for distribution and transmission networks, informed by useful discussions with the AEMC on 4 October 2017 which helped clarify the AEMC's policy intent against the draft Rule as well as the AEMC's reasoning on other key matters. We have included as an appendix to our submission a table summarising what we understand from our meeting, is the AEMC's policy intent for different metering types.

Metering Implications

The AEMC's draft determination will have implications for the amount of data to be recorded by various categories of meters. Our attachment details options to avoid the risk of significant cost implications of altering or replacing meters in order to facilitate 5-minute settlement requirements. This includes anticipated requirements, Information Technology (IT) system impacts (especially costs), timing, transitional arrangements and efficient implementation.

Networks see benefit in the AEMC consulting with metering data providers and network businesses on this further to ensure a smooth transition and lowest cost outcomes for customers.

Energy Networks Australia www.energynetworks.com.au
Unit 4, 110 Giles St, Kingston ACT 2604
P: +61 2 6272 1555 E: info@energynetworks.com.au
Energy Networks Association T/A Energy Networks Australia
ABN: 75 106 735 406

Interplay with jurisdictional legislation and arrangements

The proposed changes will be influenced by interaction with existing legislative arrangements in NEM jurisdictions. Our attachment notes our preference for the application of the Rule in Victoria in the context of existing and planned legal arrangements and Government Orders.

Avoiding inadvertent impacts and unintended consequences on transmission pricing practices.

We raised in our previous submission the potential impacts this rule may have on network pricing. These concerns do not appear to have been addressed in the Draft Rule. We understand that the AEMC is keen to avoid unintended consequences on transmission and distribution pricing, unnecessary price volatility and to confuse current regulatory intent. Our attachment elaborates on a number of important issues with network pricing approaches and requirements in the current drafting that may assist the AEMC in this regard.

Our members look forward to further engagement with the AEMC on some of the issues raised in our submission. Should you have any additional queries, please contact Norman Jip, Energy Network Australia's Senior Program Manager – Transmission on (02) 6272 1521 or njip@energynetworks.com.au

Yours sincerely

Andrew Dillon
Interim Chief Executive Officer

Attachment – further explanation of key issues

Understanding potential metering implications

Comments on Policy Intent for meter types

Treatment of Type 4, 4A and 5 Meters

Energy Networks Australia currently understands that manually read interval meters, type 4A or type 5 meters need to have 200 days memory capacity with a 30-minute trading interval, whilst the storage requirement for remotely interval read meters in National Electricity Rules (NER) 7.8.2 (a) (9) is 35 days.

In interpreting the AEMC's updated policy intent included in Appendix # 1, the AEMC has made it clear that all new and replacement Type 4, 4A and 5 meters need to deliver 5-minute data after 1 July 2021 for all these categories of meters, installed post 1 December 2018.

This represents nearly a sixfold increase in the meters' storage, which would increase meter costs. Type 4A and 5 meters are required to store 200 days of 5-minute energy data, which may include multiple data streams (e.g. dedicated circuits for controlled load) and the requirements of minimum services specification (e.g. storing average voltage). There are also circumstances where type 4 meters would need memory capacity to store 200 days of 5-minute energy data.

A complicating factor is that metering providers, when installing type 4 meters, often do not know prior to installing a meter whether:

- there is adequate telecommunications service availability; or
- a small customer refuses to have a type 4 meter with remote access.

In the latter case, the metering installation would need to be altered to a type 4A metering installation, generally by disabling or physically removing the communications module. To mitigate the risk of retrospective meter replacements, metering providers may need to deploy the same physical meter for Type 4 and 4A situations.

This issue can be addressed as part of the final 5-minute settlement rule. The AEMC has the opportunity to alter the energy data minimum storage requirement for any meter type or to propose additional exemptions proposed in clause 7.8.2(a1) of the draft rule. As noted in earlier submissions, the meter configuration for various network tariffs can impact data storage capacity. It is recommended that the AEMC discuss with Metering Coordinators and industry stakeholders to determine whether all meter variants currently being provided for small customer metering can store 200 days of 5-minute energy data. It is clear that where small customer metering is remotely read or read on a monthly basis, that 200 days of storage is not required.

The AEMC may consider it prudent to alter:

- the requirement for 200 days of storage if a meter is read monthly or remotely read on a daily basis;
- exemptions specified in the draft rule, new clause 7.8.2 (a1), to include type 4A and type 5 meters; and

- the 5-minute settlement rule to allow manually read 4A and type 5 meters continue with 200 days memory capacity and manual reads collecting 30-minute meter data

We recommend the AEMC consult on options to address meter storage capacity with meter service providers and network service providers in order to avoid significant cost implications of restricting meter variants to high storage capacity meters and circumstances where the replacement of existing meters is required.

We also recommend that the drafting in NER 11.100.5 be amended to ensure that the exemption procedure will be by meter models and will allow a meter model that is exempt to be refurbished and re-used. It is important that exemption processes are not burdensome and do not result in additional cost increases ultimately borne by customers. An exemption process with individual NMI level assessment and paperwork would be inefficient.

Treatment of Victorian Type 5 AMI meters

Victorian Distribution Businesses intend to work with their State Government to develop the most efficient policy outcomes for customers. Subject to the government determination and implementation timeframe, there may be more than 2 million meters providing 5-minute data on a daily basis to AEMO for settlement in Victoria alone.

In order to efficiently deliver this outcome, it is important that the data storage requirement in clause 7.8.2(a)(9) of the Draft Rule be extended to meters that are registered in the market as type 5 meters, but have remote data acquisition.

Currently, clause 7.8.2(a)(9) of the NER states:

> "7.8.2 (a)(9) includes facilities for storing *interval energy data* for a period of at least 35 *days* if the *metering installation* is registered as a type 1, 2, 3 or 4 *metering installation*;"

If the Draft Rule were not amended to recognise Victorian type 5 AMI meters, AEMO may consider it is beyond their power to exempt type 5 AMI meters from complying with the 200 days data storage requirement. This could have material cost implications for Victorian electricity consumers. Accordingly, the AEMC should amend clause 7.8.2(a)(9) to include Victorian type 5 AMI meters as they have remote data acquisition, but registered in the market as type 5. Amending 7.8.2 (a)(9) on this basis would not impact retailers and networks in other jurisdictions.

Type 7 Meters

The Draft Rule and the AEMO high level design paper indicate that type 7 meters will need to deliver 5-minute data rather than 30-minute data from 1 July 2021. Services such as public lighting, are usually assigned to type 7 meters because they have a flat line, predictable load profile. It is difficult to understand the benefit in converting a 30-minute flat load to 5-minute increments for these type of services. The on/off times, which will occur within the 30-minute increment, are expected to have a limited settlement benefit with the increased accuracy/granularity of 5-minute data. AEMO will already be profiling 30-minute data to 5 minute data for some years to come as old type 5/6 meters are replaced with national minimum specification meters with 5-minute data capability.

Members continue to challenge whether long term customer interests are served by moving services which attract Type 7 meters to 5-minute settlement arrangements. Initial investigations indicate a cost of between $3 and $5 million will be required to upgrade, for example, TasNetworks' systems to manage the change.

Sample Meters

Currently NSW, Queensland and South Australia are obligated to provide 30-minute metering data to support AEMO's calculation of the network system load profile. This is achieved by Local Network Service Providers installing at least 200 interval meters (called sample meters) at sites that have controlled load. With 5-minute settlement, AEMO has acknowledged that they will have to re-design and make changes to their system. This is an opportunity to move away from these sample meters and instead use the interval meters installed under Power of Choice.

Energy Networks Australia supports solutions which allow for the calculation of controlled load profiles without sample meters. With more metering data available for sampling the controlled load profile this will result in a more accurate network system load profile which becomes more important under 5 minute settlements. In addition, there will be a significant reduction in the costs of identifying and installing new sample meters when an existing sample meters are replaced by an advanced meter under Power of Choice.

Transitional Requirements for metering arrangements

Energy Networks Australia noted in discussions with the AEMC on 4 October 2017, the benefits in converging the existing dates for the IEC (December 2018) and for AEMO to finalise their relevant procedures (currently December 2020) and tasks to 1 December 2019. Given the current two-year divergence and the need for testing and bedding down systems, it would appear sensible to agree to 1 December 2019 as a new common target date.

Energy Networks Australia also recommends that the AEMC alter 11.100.2 (a) and (b) to enable B2B and NEM procedures to be finalised by 1 December 2019 allowing participants more than the proposed seven months to finalise system design, business requirements, change of Metering Coordinator contracts, build and test etc.

Energy Networks Australia further recommends that the AEMC alter 11.100.5 to require the exemption procedure to be established by 1 December 2019 rather than 1 December 2020.

The AEMC is aware of some stakeholder issues with the Power of Choice reforms delivering on 1 December 2017 and the concerns about delaying the commencement date or the need for 'soft starts'. A Post Implementation Review of Power of Choice is necessary to examine the governance and the late release of final procedures. Learning from recent implementation issues would minimise risks on customers and stakeholders of the (at the very earliest) 1 July 2021 date.

The AEMC may also wish to consider the early establishment of a cross stakeholder governance group to be deployed early in the program for the delivery of the reform and development of the more detailed procedures.

Energy Networks Australia suggests that no specific software changes need to be in place or mandated by 1 December 2018, only the relevant meter hardware. In addition, we propose that no 5-minute data should need to be provided/required pre 1 July 2021 (or 6 months prior), this in effect means all participants systems need to be ready by 1 July 2021 to receive 5-minute data and provide such 5-minute data.

The AEMC also needs to consider and address the pent up volume of meters installed in late 2018, and during 2019 to 2021 of mass market meters. These should convert to 5-minute data provision in an orderly manner over a six to 12 month period and not on a 'big bang' basis on 1 July 2021. A new provisional rule should be added to provide some flexibility for such a staged approach.

Implementation

Some issues for consideration by the AEMC and AEMO include:

- Need to address any concerns/risks of a major IT commencement on a Thursday, meaning there will be a settlement week that will have two data files per meter, one on a 30-minute basis and one on 5-minutes. However, Energy Networks Australia acknowledges that there are benefits of starting a new regime at the beginning of a financial year/start of the month.
- New file formats, and the administration and management of the change from settlement-week data delivery to settlement-day data delivery or within day delivery. This is a significant change to core IT and metering systems.
- A consolidated table outlining key dates for metering requirements would also help Transmission Network Service Provider (TNSP) members who are performing the Metering Coordinator Role to fulfil its required functions.
- AEMO's high-level design is suggesting a new meter data file format, called NEM22, be introduced and that the Meter Data Provision Procedure be updated to provide an option to allow the proposed NEM22 to be supplied to customers. It is not clear what benefit will be achieved by the introduction of NEM22. As such, Energy Networks Australia reserves its opinion on the value or otherwise of this until more information regarding the purpose and benefits are provided to stakeholders.

Interplay with jurisdictional legislation and arrangements

7.8.3. Victorian Government Orders

The Victorian DNSPs have installed more than 2.8 million type 5 AMI meters under a mass AMI rollout program.

The Victorian Government has gazetted Ministerial Orders[1] (Orders) to not implement competition in metering services in Victoria as required under the NER. These Orders, effectively appoint Victorian distribution network service providers (**DNSP**) as the Metering Coordinator for small retail customers with an annual volume consumption of

[1] Ministerial Orders made under section 16BA(1) of the National Electricity Victoria Act 2005 and sections 15A and 46D of the Electricity Industry Act 2000.

electricity of less than 160MWh. The Order also require these DNSPs to install type 5 AMI meter[2] but for it being capable of remote acquisition.

The AEMC's draft rule does ***not*** require all 5 and 6 meters that are already installed to provide 5-minute data at the commencement date. The data from these meters will be profiled to 5-minute trading intervals by AEMO using net system load profiles. More than 2.8 million type 5 AMI meters have been installed in Victoria under previous metering initiatives. Our Victorian DNSP members consider the profiling approach will reduce the cost of hardening the communications network (e.g. access points and relays, and backhaul) and data storage costs associated with the rule change. We appreciate that the AEMC is mindful of the costs necessary to upgrade the installed type 5 meters to enable 5-minute interval data capability and related communication systems, IT systems and data storage.

Energy Networks Australia notes that there are further considerations for the Victorian Government that have the necessary powers under the National Electricity (Victoria) Act to extend the five-minute settlements rule to more Victorian customers. In respect to these options, Victorian DNSPs intend to liaise with the Victorian Government with an aim to develop the most efficient policy outcomes for all Victorian customers. It may also be appropriate for the AMI Service Levels Specification and Minimum AMI Functionality Specification to be adjusted, to allow more time to collect, process, and deliver 5-minute metering data.

Avoiding inadvertent impacts and unintended consequences on transmission pricing

Energy Networks Australia noted concerns with the potential impact of this rule on transmission pricing in our submission to the AEMC's Direction Paper[3]. We take this opportunity to provide further detail on these concerns, as they do not appear to be addressed in the AEMC's Draft Determination.

Current drafting concerns

Energy Networks Australia interpretation is that the 'draft Rule' makes no changes to the definition of the Modified Load Export Charge (MLEC) Cost Reflective Network Pricing (CRNP) Methodology. The definition as it stands in Chapter 10 of the National Electricity Rules, references the defined term of 'trading interval' which at the time of the inter-regional transmission charging rule change (2013) was made, was intended to reflect the 30-minute demand periods used for pricing and charging in all regions.

If not addressed this would result in the Modified Load Export Charge being calculated on 5-minute flows and would potentially draw intra-regional pricing and charging into a 5-minute framework with potential material impacts on customers through higher charges and augmentation triggers under jurisdictional planning frameworks.

Similarly, while a move to 5-minute periods for the calculation of actual versus agreed maximum demand is not specifically canvassed in the draft determination it is important

[2] Advanced Metering Infrastructure Meters that comply with the Minimum Functional Specification (Victoria)
[3] Refer to pages 4, 8 and 9.

to ensure that this does not inadvertently occur via the use of the term trading interval in Transmission Connection Agreements, which would also move from 30 to 5 minutes.

Reasons to retain current transmission pricing arrangements

It is our understanding, that to date, in neither AEMC discussions with us or our members nor AEMC documentation on this rule change proposal, has it presented a case or undertaken a quantification of the impact on customers of the potential impacts on existing transmission pricing arrangements. While we have not undertaken specific analysis of the precise impacts, pricing managers are confident that the proposed changes would impact end user prices, whilst not necessarily delivering more efficient outcomes in terms of better signalling of future network costs.

The intent of cost reflective network pricing is to identify the peak utilisation of network elements, which are likely to lead to augmentation and allocate the associated cost of those elements to the connection points driving the utilisation of those elements.

Currently the conditions for determining the utilisation of the transmission network and hence intra-regional transmission prices and charges are based on 30-minute demand, which is broadly consistent with the thermal characteristics of transmission lines and transformers. That is 30-minute demand is an appropriate measure of the drivers of augmentation.

Energy Networks Australia considers there are a number of robust reasons to leave transmission pricing arrangements as they fundamentally are. These include:

- A 5-minute measure of demand will drive up apparent system demand at connection points. This is likely to drive up non coincident system demand as it is the sum of individual connection point demands
- 5-minute demands will potentially require customers to specify higher demands as they do not have the benefit of averaging out minor spikes. This in turn may (inappropriately) trigger augmentations at connection points, particularly for transformers, for example under the South Australian electricity transmission code (ETC). Similarly, a material issue is the use of 30-minute demand data in the reliability framework under the SA ETC and in the transmission pricing and charging framework. Currently, 30-minute periods are used for demand calculation, which is broadly consistent with the basis on which lines and transformers are rated
- 5-minute demand is inherently more volatile and would potentially trigger demand exceedances that should not drive augmentation requirements. This is just as pertinent to distribution demand pricing
- Direct connect customers do not typically have the benefit of diversity in the underlying load that a Distributor has, so will more than likely be disproportionately impacted
- A 5-minute MLEC may or may not drive price volatility but a 30-minute period provides a reasonable proxy given the broader 15 minute and half hour ratings used for operating interconnector assets
- For the most part, the wider transmission pricing/AEMC Rules framework is not tied to any time definition/dimension and the Australian Energy Regulator (AER) is the NEM institution mostly driving this issue. Energy Networks Australia also considers

that one of the original drivers for choosing 30-minutes at NEM commencement was to minimise any additional unnecessary price volatility.

This was reinforced as part of the re-write of the National Electricity Code to the National Electricity Rules where we would refer the AEMC to a 2006 requirement in its own 2006 Final Determination for prescribed transmission services. In effect, the AEMC delegated to the AER responsibility to address this issue when drafting its pricing guidelines. The AER then summarised the price structures used by all TNSPs, with one common factor being that price structures reflected the National Electricity Code's wording for demand prices to be $ per kW measured over a metered half hour. The following came from the certified Code at the time:

6.5.4(c)(1) Customer TUOS usage prices and charges (CERTIFIED INITIAL RULES)

Demand based prices (eg. $ per maximum kW measured as the average kW over a metered half hour or $ per maximum KVA measured as the average kVA over a metered half hour;

It is also likely that the TNSP industry approved software (TPRICE) used for the calculation of transmission prices will not likely be capable of handling and managing the potential six-fold increase in data.

Amendments required to retain current transmission pricing arrangements

We propose that this definition be changed to *30-minute period* (or to the applicable defined term in the final Rule).

We also note the draft rule requires distribution demand pricing to change to 5 minutes where the metering is changed to recording 5-minute interval energy data. These demand pricing changes are effected by the draft rule in the following ways.

- The draft rule removes the reference to DNSPs charging demand charges on a half hourly basis in clause 6.20.1(a)(2)(i). This subsequently requires distribution demand pricing to change to 5 minutes;
- By not changing 6.20.1(e) to allow distribution network billing to use 30-minute data, despite settlements ready data or metering data being available.

Energy Networks Australia recommends that the AEMC amend the rules to ensure changes to enable 5 minute settlement do not impact current transmission pricing arrangements. We believe this can be achieved by clarifying the definition for Modified Load Export Charge Cost Reflective Network Pricing.

If the AEMC is still minded to examine whether 5 minute settlement should be more broadly applied to transmission and relevant distribution pricing arrangements, it should be considered outside the scope of the current rule change consultation and subject to separate consultation and analysis of customer impacts and benefits.

Appendix Table 1: (Updated) AEMC Policy intent for different metering types as provided 4 October 2017

Meter type	Treatment under 30 minute settlement	Proposed treatment under 5 minute settlement of meters installed before 1 Dec 2018	Proposed treatment under 5 minute settlement of new and replacement meters (installed after 1 Dec 2018)	Comment	Clause in draft rule
Type 1-3	30 minute data collected and used for settlement	From 1 July 2021, 5 minute data collected and used for settlement for all meters.	From 1 December 2018, all new and replacement meters must be capable of providing 5-minute data. From 1 July 2021, 5-minute data from these meters will be used for settlement.	Obligation on Metering Data Provider to provide 5-minute data from these meter types.	7.10.5(a) 11.100.4
Type 4 meters at transmission and wholesale boundaries	30 minute data collected and used for settlement	From 1 July 2021, 5 minute data collected and used for settlement.	From 1 December 2018, all new and replacement meters must be capable of providing 5-minute data. From 1 July 2021, 5 minute data from these meters used for settlement.		7.8.2 (b1) 11.100.4
Type 4 (all not included above); and Type 4A	30 minute data collected and used for settlement	30-minute data collected and profiled to 5-minute resolution using NSLP methodology.	From 1 December 2018, all new and replacement meters must be capable of providing 5- minute data. From 1 July 2021, 5 minute data from these meters used for settlement.		7.10.5(b) 11.100.4
Type 5	30 minute data collected and used for settlement	30-minute data collected and profiled to 5- minute resolution using NSLP methodology.	From 1 December 2018, all new and replacement meters must be capable of providing 5- minute data. From 1 July 2021, 5 minute data from these meters used for settlement.	The proposed rule does not specifically state type 5 meters must be replaced by a type 4 meter, rather requires that the new meters must provide 5-minute data.	7.10.5(b) 11.100.4

Energy Networks Australia www.energynetworks.com.au
Unit 4, 110 Giles St, Kingston ACT 2604
P: +61 2 6272 1555 E: info@energynetworks.com.au
Energy Networks Association T/A Energy Networks Australia
ABN: 75 106 735 406

Type 6	Data collected quarterly and profiled to a 30 minute basis for settlement	Accumulated data is profiled to 5 meters using 5-minute resolution NSLP.	The NER currently states accumulation meter must be replaced by an interval meter. The proposed rule states from 1 December 2018, all new and replacement meters must be capable of providing 5-minute data. Additionally, from 1 July 2021, 5-minute data from these meters used for settlement.		7.10.5(b) 11.100.4
Type 7	Unmetered loads calculated on 30 minute basis	Unmetered loads calculated on a 5-minute basis	Not applicable	AEMC is seeking feedback on costs and benefits of calculating Type 7 loads on a 5- minute basis.	Current clause 7.10.5(c)
Controlled load	Not in NER. Under AEMO Metrology Procedure, sample meters used to profile load to 30 minutes, in some jurisdictions.	To be confirmed during AEMO detailed design process.	Not applicable	AEMO is looking at options of calculating controlled load without sample meters.	AEMO High Level Design (3.2.2)

Storage Exemptions: Meter types 1-4 installed before 1 July 2021 may apply for an exemption on data storage requirements. AEMO will assess on a case-by-case basis. The intention is for meters that fall just short of the data storage requirements in the rules to potentially be eligible for an exemption to avoid replacement. (Relevant) **Clauses in draft rule:** 7.8.2 (a1) and 11.100.5.