FIVE MINUTE SETTLEMENT – METERING PROCEDURE CHANGES (PACKAGE 1)

FINAL REPORT AND DETERMINATION

Published: **22 March 2019**

EXECUTIVE SUMMARY

The publication of this Final Report and Determination (Final Report) concludes the Rules consultation process conducted by the Australian Energy Market Operator (AEMO) to consider amendments to various Metering Procedures under the National Electricity Rules (NER) for the implementation of the *National Electricity Amendment (Five-minute settlement) Rule 2017 No.15* (5MS Rule), referred to as 'Package 1'.

Note that two further packages relating to metering procedure changes will be consulted on in 2019. Both packages will consider the implications associated with:

- The implementation of the 5MS Rule
- The implementation of the Global Settlement (GS) Rule
- The implementation of various changes to the delivery of metering data to AEMO

On 31 October 2018, AEMO published the Notice of First Stage Consultation and the Consultation Paper for the Package 1 Procedures.

This Consultation Paper detailed key proposals involving:

- Changes to various Metering procedures to implement the 5MS Rule.
- Changes to the current profiling arrangements to allow for the profiling of 15 and 30-minute metering data to five-minute intervals.
- Changes to the delivery, format and content contained in the metering data files sent to AEMO.

AEMO received 15 submissions (including two late submissions) to its first stage consultation from Retailers, Local Network Service Providers (LNSPs), Meter Providers (MPs), Metering Data Providers (MDPs) and intending participants.

From these submissions and its own analysis, AEMO identified three material issues. These were all addressed in the Draft Report, and included:

- The proposed profiling approach for 15 and 30-minute interval meters.
- Changes to the delivery of metering data to AEMO.
- Industry standard optical port performance and the volume of metering data stored in a metering installation.

AEMO received 12 submissions (including one late submission) to its second stage consultation (on the Draft Report). No additional material issues were identified from these submissions.

After considering the submissions and evaluating comments against the requirements of the NER and the Amending Rules, AEMO's final determination is the following:

- Editorial and consequential changes to the various procedures due to the implementation of the 5MS Rule.
- Profiling of 15 and 30-minute meter reads to 5-minute resolution consistent with what was proposed in the initial consultation paper.
- Changing the performance requirements for downloading interval metering data from manually-read metering installations due to optical port limitations.

During the Package 1 consultation, AEMO also consulted on potential changes associated with the delivery of meter data to AEMO. AEMO considers that the delivery of interval metering data should be in the form of Meter Data File Format (MDFF), superseding the current Meter Data Management File (MDMF) format.

This change is expected to result in both system and operational efficiencies for MDPs. This position has underpinned the Package 1 determination and will be implemented as part of the metering procedure changes consulted on in Package 2 and Package 3.

The consultation process also incorporated jurisdictional amendments to the Metrology Procedures submitted to AEMO by the COAG Energy Council. As required by the NER, AEMO will report to the COAG Energy Council on the consultation outcomes for that material before including it in the Metrology Procedures.

CONTENTS

1. STAKEHOLDER CONSULTATION PROCESS

As required by the NER, AEMO has consulted on a package of amendments to various metering procedures in accordance with clause 7.16.7 of the NER and the Rules consultation process in rule 8.9. These amendments relate to the implementation of five-minute settlement (5MS) and are referred to as 'Package 1' of the AEMO metering procedure changes required for 5MS.

AEMO's timeline for this consultation is outlined below.

Deliverable	Indicative date
Notice of first stage consultation [and Issues Paper] published	31 October 2018
First stage submissions closed	28 December 2018
Draft Report & Notice of second stage consultation published	30 January 2019
Submissions due on Draft Report	15 February 2019
Final Report published	22 March 2019

The publication of this Final Report marks the conclusion of this consultation.

In addition to public consultation, AEMO undertook targeted consultation on Package 1 through some 5MS program engagement channels[1], namely:

- Procedures Working Group (PWG)
- Systems Working Group (SWG)
- Metering Focus Group (MFG)

Note that there is a glossary of terms used in this Final Report at Appendix A.

2. BACKGROUND

2.1. NER Requirements

AEMO is responsible for the establishment and maintenance of the procedures specified in Chapter 7 of the NER except for the B2B procedures established and maintained under rule 7.17.

The procedures authorised by AEMO under Chapter 7 must be established and maintained by AEMO in accordance with the Rules consultation procedures.[2]

2.2. Context for this Consultation

2.2.1. Five Minute Settlement

On 28 November 2017 the Australian Energy Market Commission (AEMC) made a final rule to align operational dispatch and financial settlement at five minutes, starting 1 July 2021. This will reduce the time interval for financial settlement in the national electricity market from 30 minutes to five minutes.

Price signals that align with physical operations lead to more efficient bidding, operational decisions and investment. Over time, this flows through to lower wholesale costs, which should lead to lower electricity prices than in a market with 30-minute settlement. Wholesale costs make up around one third of a typical electricity bill.

[1] See : http://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement for details on forums and groups specific to the 5MS program.
[2] NER, Rule 8.9.

2.2.2. Implementing Five Minute Settlement

The 5MS Rule requires the collection, storage and delivery of revenue metering data based on five-minute intervals for use in energy settlement, network and retail billing.

From a meter capability perspective, the rule requires:

- Types 1, 2 and 3 meters to record and store five-minute data from the commencement date of the rule.
- Type 4 meters at a transmission network connection point or distribution network connection point where the relevant financially responsible Market Participant is a Market Generator or Small Generation Aggregator to record and store five-minute data from the commencement date of the rule.
- All other types 4, 4A, 5 and 6 meters that are already installed do not need to provide five-minute data at the commencement date. The data from these meters will be profiled to five-minute trading intervals by AEMO using load profiles.
- All new and replacement metering installations, other than type 4A, installed from 1 December 2018 must provide five-minute data from 1 December 2022 at the latest.
- All type 4A new and replacement metering installations installed from 1 December 2019 must provide five-minute data from 1 December 2022 at the latest.

There are several matters determined in AEMO metering procedures that require review because of the 5MS Rule prior to the commencement date, including:

- Metering data management
- Profiling
- Settlements load data aggregations
- Reconciliation reporting
- Service level agreements
- Meter installation provisioning.

AEMO believes that the introduction of five-minute settlements also provides an opportunity to consider the benefits of aligning the delivery of metering data by MDPs to AEMO and other market participants.

2.2.3. Global Settlement

In December 2018 the AEMC made a final rule to introduce a 'global settlement' framework for settlement of the demand side of the wholesale electricity market. The final rule (GS Rule) makes provision for a global settlement 'soft start', requiring AEMO to start publishing Unaccounted for Energy (UFE) information, to commence on 1 July 2021 to coincide with the start date of five-minute settlement.[3] It also requires AEMO to have updated its relevant procedures by 1 December 2019 and publish the UFE reporting guidelines required under new clause 3.15.5B(d) by 1 December 2022.[4]

AEMO will consult on additional changes to the metering procedures required by the GS Rule as part of its 'Metering Procedure Changes - Package 2' and 'Metering Procedure Changes - Package 3', which are scheduled for release in early to mid-2019.

[3] *National Electricity Amendment (Global settlement and market reconciliation) Rule 2018 No.14*, Clause 11.112.5
[4] *National Electricity Amendment (Global settlement and market reconciliation) Rule 2018 No.14*, Clause 11.112.6

2.3. First Stage Consultation

On 31 October 2018, AEMO issued a Notice of First Stage Consultation, and published an Issues Paper and initial draft procedures for Package 1. This information is available on AEMO's website.[5]

The Issues Paper included details on AEMO's stakeholder engagement in the course of developing the initial draft procedures, including various proposals that were discussed at workshops with industry representatives. It also included a summary of the specific amendments proposed in the initial consultation pack.

AEMO received 15 submissions in the first stage of consultation, two of which were late submissions.

Copies of all written submissions[6] and minutes of working group and focus group meetings[7] have been published on AEMO's website.

2.4. Second Stage Consultation

On 30 January 2019, AEMO issued a Notice of Second Stage Consultation, and published a Draft Report and Determination (Draft Report) and Draft Procedures for Package 1. This information is available on AEMO's website.[8]

The Draft Report included details on AEMO's stakeholder engagement in the course of developing the draft procedures, including various proposals that were discussed at workshops with industry representatives. The Draft Report included a summary of the specific amendments proposed in the draft consultation pack.

AEMO received 12 submissions to the second stage of consultation, one of which was a late submission.

Copies of all written submissions[9] and minutes of working group and focus group meetings[10] have been published on AEMO's website.

3. SUMMARY OF MATERIAL ISSUES

The key material issues arising from the proposal and raised by Consulted Persons in the course of the consultation are summarised in the following table:

[5] See: AEMO, http://aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---Metering-Procedure-Changes-Package-1

[6] See: AEMO website - http://aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---Metering-Procedure-Changes-Package-1

[7] See: AEMO website - http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Procedures-Workstream/Procedures-Working-Group

[8] See: AEMO, http://aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---Metering-Procedure-Changes-Package-1

[9] See: AEMO website - http://aemo.com.au/Stakeholder-Consultation/Consultations/Five-Minute-Settlement---Metering-Procedure-Changes-Package-1

[10] See: AEMO website - http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Procedures-Workstream/Procedures-Working-Group

No.	Issue	Raised by
1.	Profiling of 15 and 30-minute interval meters	Multiple Respondents
2.	Changes to the delivery of metering data to AEMO	Multiple Respondents
3.	Optical port and the volume of metering data storage	Multiple Respondents

Section 4 discusses each of these material issues, including a summary of the views expressed in submissions at each consultation stage, AEMO's draft and final assessment of the issues and AEMO's final determination on each of them.

A detailed summary of issues raised by Consulted Persons in submissions to AEMO's Draft Report, together with AEMO's responses, is contained in Appendix B.

For the detailed summary of first stage consultation submissions and responses, please refer to the Draft Report.

4. DISCUSSION OF MATERIAL ISSUES

4.1. Profiling of 15 and 30-minute Interval Meters

4.1.1. Issue Summary

To support the introduction of 5MS, the profiling arrangements will need to be amended to provide for:

- Preparation of a load profile with five-minute granularity for the profiling of non-controlled load accumulation meters
- Preparation of a load profile with five-minute granularity for profiling of controlled load accumulation meters
- Preparation of a load profile with five-minute granularity for profiling of 15 and 30-minute interval meters.

AEMO proposed a process of profiling 15 and 30-minute meters by applying the following steps:

1. For each profile area, the energy for the wholesale boundary (each TNI) is determined based on five-minute metering data.
2. The energy associated with all non-wholesale boundary meters that have five-minute metering data is summed, both for first-tier and second-tier connection points. This includes metering data associated with contestable unmetered loads with Type 7 metering.
3. The '15 and 30-minute load profile' is determined by subtracting the sum of all five-minute metering data (calculated in Step 2) from the profile area's wholesale boundary five-minute energy volume (calculated in Step 1).
4. The energy associated with all meters that have 15 or 30-minute metering data is summated, both for first-tier and second-tier connection points.
5. The total 15 and 30-minute energy is profiled using the '15 and 30-minute load profile' shape, which provides a five-minute representation of 15 and 30-minute metering data.
6. The five-minute representation of 15 and 30-minute metering data is subtracted off the 5-minute load profile (calculated in Step 1), to derive an accumulation load profile.

4.1.2. First Stage Submissions Summary

There was broad support for AEMO's proposed profiling approaches, however, AGL questioned how 30-minute small customer generation (e.g. solar) should be profiled to five-minute levels and how this profiling would ultimately impact the net system load profile (NSLP).[11] AGL had undertaken some initial analysis of five-minute and 30-minute solar data and determined that there could be at least a 10% error rate. Its analysis also suggested that the error rate would be greater during the dusk and dawn periods, coinciding with increased consumer usage.

Momentum Energy noted that the profiling of 15 and 30-minute metering data to five-minute trading intervals (TI) was an interim and partial solution that introduced operational risks for every registered or accredited participant.[12] They stated that the industry was expected to adopt the proposed solution to manage numerous 'business critical' processes until such time all existing meters across the NEM are either replaced or reconfigured to provide five-minute data.

Red Energy and Lumo Energy noted the efforts undertaken by AEMO in determining a proposed profiling solution for five-minute settlement that in theory, what had been proposed seemed to be the most viable solution. However, they believed that AEMO, alongside industry participants, required further analysis and consideration into whether in practice it was fit for purpose.[13]

4.1.3. AEMO's Draft Assessment

Stakeholder feedback strongly supported the proposed profiling approach for controlled load sample meters. The proposed approach was deemed appropriate as the associated loads were very predictable and were typically in an 'on' or 'off' position.

Broad support was also received for AEMO's proposed profiling approach for 15 and 30-mintute meter reads. No alternative profiling approach was suggested by stakeholders.

AEMO noted that AGL intended to perform and share additional analysis in early 2019 on the NSLP impact of profiling small customer generation (e.g. solar) to five-minute levels. AEMO would consider any additional data and insights provided.

The process of profiling is a calculation to estimate energy volumes suitable for settlement where the metering data does not support the required level of granularity. An existing process of profiling has been in place since full retail contestability arrangements commenced in 2002 to facilitate the settlement of accumulation metering. AEMO's proposed NSLP approach is to extend the existing profiling arrangements to also cater for 15 and 30-minute meter reads, and is expected to have some impact to the imbalances that result from profiling. However the magnitude of imbalance that occurs within a 15 or 30-minute period is likely to be small in comparison to imbalances that occur across a 3-month accumulation read, and so any increase in imbalance is not expected to be significant. AEMO also noted that under global settlement any imbalance arising from profiling will be included as part of the calculation of Unaccounted-for Energy, and so AEMO would be able to report on the impact of the imbalance.

4.1.4. AEMO's Draft Determination

Stakeholders broadly supported AEMO's proposed profiling approach and had not identified a preferred alternative. Therefore, AEMO maintained its proposed profiling approach, for converting 15 and 30-minute meter reads to 5-minute resolution. This was reflected in the draft Metrology Procedure Part B, published with the Draft Report.

[11] AGL, Submission to first stage consultation, p.15
[12] Momentum Energy, Submission to first stage consultation, p.11
[13] Red Energy and Lumo Energy, Submission to first stage consultation, p.9

4.1.5. Second Stage Submissions Summary

Broad support was received for AEMO's proposed profiling approach for 15 and 30-mintute meter reads from 1 July 2021. No alternative profiling approach was suggested by stakeholders.

AEMO notes that AGL stated that they had undertaken some analysis of 5-minute data compared to 30-minute data and had determined that there are measurable variations between the actual 5-minute data and the equivalent 30-minute data profiled back five-minute data.

AusNet Services agreed with AEMO's 'day one' approach but suggested that by December 2022 they expected that there would be a statically significant proportion of five-minute capable Type 4 and Type 5 AMI meters, either newly installed or replaced since December 2018. In their network, they expected that about 13% of their AMI meters would be providing five-minute data by December 2022.[14]

Should this be the case, AusNet stated that a new profiling approach may then be justified and that the 'sample shape' from the five-minute meters could also be used to shape the 30-minute metering data and then allocating any residual distortions to the accumulation load profile.

4.1.6. AEMO's Final Assessment

Stakeholders broadly supported AEMO's proposed profiling approach and have not identified a preferred alternative from 1 July 2021. While AGL's preliminary analysis did indicate that there may be measurable variations between actual five-minute data and profiled five-minute data, an alternative approach which addresses this issue has not been identified at this stage.[15] AEMO agrees with AusNet that as more five-minute capable meters are installed, alternative profiling arrangements may become more viable, leading to more granular load profiles being applied.[16] However, until there are sufficient five-minute meters providing five-minute metering data, AEMO maintains its proposed profiling approach, for converting 15 and 30-minute meter reads to 5-minute resolution. This is reflected in the Final Metrology Procedure Part B, published with this Final Report.

4.1.7. AEMO's Final Determination

After considering all submissions, AEMO has determined that its profiling approaches described in section 4.1.1, for controlled load sample meters and 15 and 30-min interval meters, are the most appropriate methodologies for the commencement of 5MS.

As previously mentioned, AEMO agrees with respondents that as sufficient volumes of five-minute metering data become available, alternative profiling methodologies may be able to be considered.

4.2. Changes to the delivery of metering data to AEMO

4.2.1. Issue Summary

In the consultation paper, AEMO proposed an arrangement that sought to align the delivery of metering data for market settlement with existing formats used for B2B, specifically:

- Register level data, if provided by Metering Data Providers (MDPs)
    - The objective of this change was to eliminate the need for MDPs to net metering data values for settlement purposes. This would reduce, or if universally adopted avoid, different metering data being sent for retail/network billing and market settlement.
- Non-energy data, if provided by MDPs

[14] AusNet, Submission to first stage consultation, p.6
[15] AGL, Submission to the second stage consultation, p.18
[16] AusNet, Submission to the second stage consultation, p.7

- The objective of this change was to allow MDPs the option of sending the same metering data to AEMO as they would other market participants.

AEMO believed that these changes would result in both system and operational efficiencies for MDPs by creating more uniformity between AEMO and other market participants.

4.2.2. First Stage Submissions Summary

File Format for Metering Data

There was broad support for AEMO to transition to MDFF for interval metering data.

Endeavour Energy stated that this would reduce the number of metering data formats required to be supported and could help to simplify business processes for the delivery and management of exceptions.[17]

Jemena stated that transitioning to MDFF would reduce complexity and would standardise the file format across B2B and B2M. They also stated that the decommissioning of MDMF should result in operational efficiencies.[18]

Intellihub noted that they would experience minimal system changes to accommodate AEMO as a recipient of standard MDFF files instead of the current MDMF files.[19]

Energy Queensland supported the transition to register level MDFF for NEM12/Interval metering data. However, they stated that the five-minute settlement rule did not justify any change to the current method of delivery for BASIC (Type 6) metering data (MDM format).[20]

PLUS ES was fully supportive of the transition to MDFF for the delivery of interval metering data to AEMO in support of the settlement process. They saw significant benefits in consolidating the metering data format for this increasing segment of the market. However, PLUS ES strongly opposed any proposal to transition to MDFF for non-interval/Basic metering data. PLUS ES questioned what benefit such a change would deliver considering the diminishing volume of Basic meters.[21]

Register level Data Streams

AGL was supportive of AEMO transitioning to register level metering data so that the same data sets could be sent to all market participants, including AEMO.[22]

AusNet Services noted that the richness of this data would be helpful in wholesale forecasting but were concerned by the potential impact and cost on participants should the existing Net data streams in the CNDS table need to be replaced by register level data streams for every NMI in MSATS. AusNet Services suggested that AEMO could potentially receive both net and register level metering data to avoid this issue.[23]

Jemena had no objection to AEMO supporting the receipt of register level metering data. They stated that access to granular register level data would allow AEMO to better perform analytics to identify patterns and predict market trends.[24]

[17] Endeavour Energy, Submission to first stage consultation, p.7
[18] Jemena, Submission to first stage consultation, p.9
[19] Intellihub, Submission to first stage consultation, p.9
[20] Energy Queensland, Submission to first stage consultation, p.12
[21] PLUS ES, Submission to first stage consultation, p.12
[22] AGL, Submission to first stage consultation, p.15
[23] AusNet Services, Submission to first stage consultation, p.7
[24] Jemena, Submission to first stage consultation, p.9

PLUS ES opposed any requirement for MDPs to update the CATS NMI Datastream Table with register level data[25], this view was shared by Intellihub.

Red and Lumo Energy did not support AEMO receiving register level metering data and firmly believed that this would be very expensive to implement and that it would be outside the scope of the 5MS Rule.[26]

Same MDFFs to AEMO

There was broad support for AEMO to receive the same files as other market participants.

AGL noted that more consistent data being provided and used by all parties would result in fewer errors and variances in the settlement and reconciliation processes.[27]

Energy Queensland supported AEMO receiving the same MDFFs, including non-energy interval data to support the transition of customer data provision.[28]

PLUS ES noted, that in practice, the delivery of the same MDFF files to AEMO would not work as delivery requirements vary significantly between recipients of metering data. They stated that there were many scenarios where the file being sent to a client may not be compatible with AEMO's requirements to support the settlement process.[29]

PLUS ES also noted that MDPs can have a metering service agreement directly with a customer to supply volts, harmonics or similar measures for the customer to analyse. The customer pays for this service and uses this data to improve their efficiency. This data is a service between our two parties and is not necessary for settlement and should not need to be distributed to a wider audience than the party paying for the contestable service.

4.2.3. AEMO's Draft Assessment

Stakeholder feedback strongly supported AEMO's objective to more closely align the MDP's metering data delivery processes to AEMO and market participants respectively. AEMO considered this alignment would result in material reductions in settlement errors and create operational efficiencies for both AEMO and market participants.

AEMO noted that the final GS Rule contains specific requirements for AEMO to analyse and report on trends in unaccounted for energy (UFE). As a consequence, AEMO needed access to register level active and reactive energy data to carry out this function, recognising also that the type and granularity of metering data AEMO receives is becoming more important in supporting its core functions, as well as emerging initiatives such as those associated with Distributed Energy Resources or the Consumer Data Right.

Whilst the benefits of unifying the processes for delivery of interval metering data was consistently supported by stakeholder feedback, AEMO recognised the potential challenges for certain stakeholders in fully aligning metering data delivery processes for basic meter reads. While some respondents supported uniformity across both forms of metering data, AEMO considered that certain alignments may be best implemented progressively over an appropriate period of time.

With that in mind, AEMO identified several metering data delivery elements which are currently misaligned between AEMO and other market participants, including:

- Meter data format
    - AEMO - Meter Data Management Format (MDMF)

[25] PLUS ES, Submission to first stage consultation, p.9.
[26] Red and Lumo Energy, Submission to first stage consultation, p.10,
[27] AGL, Submission to first stage consultation, p.15
[28] Energy Queensland, Submission to first stage consultation, p.12
[29] PLUS ES, Submission to first stage consultation, p.13

    - Market Participants - Meter Data File Format (MDFF)
- Metering data delivery frequency
    - AEMO – As per the AEMO Data Delivery calendar
    - Market participants – Daily
- Metering data resolution
    - AEMO – 30-minute
    - Market participants – As per the meter's configuration e.g. 15 or 30-minute
- Metering data granularity
    - AEMO – Net metering data
    - Market participants – Register level metering data

4.2.4. AEMO's Draft Determination and Recommendation

As stated in the First Stage consultation paper, AEMO supports the alignment and uniformity of metering data delivery by MDPs to AEMO and other market participants.

AEMO's draft determination was to make the following changes.

- Meter data file format –
    - MDFF NEM12 files to be the required file format for all interval metering data being delivered to AEMO from 1 July 2021
    - MDFF NEM13 files to be supported by AEMO from 1 July 2021 however AEMO to continue to support and accept MDMF files for basic meters
- Metering data Resolution
    - NEM12 metering data to be delivered as per the meter's configuration i.e. 5, 15 or 30-minute intervals from 1 July 2021
- Metering data frequency –
    - Metering data to be delivered consistently by MDPs to both AEMO and market participants i.e. MDPs must put in place processes to ensure metering data version alignment between AEMO and other market participants
- Metering data granularity –
    - Transition to kWh and kVarh register-level metering data
        - AEMO will support the receipt of active and reactive energy register level metering data from 1 July 2021, even where the CATS NMI Data Stream records are at the net level
        - Net data stream records to be progressively replaced by Register level data stream records in the CATS NMI Data Stream (CNDS) table, with the aim of having a sunset period for this transition to occur.
- Metering data Exception Handling –
    - AEMO to retain the existing MDM validation/response process (MDMR notification and RM11 reports), however, where any party identifies a metering data issue, that requires a new version or resend of metering data to be delivered, all recipients are to receive this information.

4.2.5. Second Stage Submissions Summary

Item	Response Summary
Meter data file format	No issues were raised regarding AEMO's draft determination.
Metering data resolution	No issues were raised regarding AEMO's draft determination.
Metering data frequency	No issues were raised however CitiPower/Powercor did seek clarification as to what was meant by the statement of "MDPs must put in place processes to ensure metering data version alignment between AEMO and other market participants".[30]
Metering data granularity	Transition to Register Level Datastreams - The progressive approach of transitioning from net level datastreams to register level datastreams was well received. Endeavour Energy stated that "AEMO's approach strikes an appropriate balance between achieving efficiencies in the delivery and reconciliation of metering data in the market and providing the right richness of metering data for AEMO to comply with their responsibilities while supporting participants in transitioning to this new data delivery framework.".[31] Energy Queensland also supported the gradual transition of net data stream records to register level data streams but wanted to see a more structured time-line in relation to this proposal.[32] CATS Table Maintenance - Some concerns were raised in relation to the current requirement for MDPs and Meter Providers (MPs) to work in partnership to ensure alignment between the CATS NMI Datastream (CNDS) table, CATS Register Identifier (CRI) table and the contents delivered within the MDFF files.[33] Metering Data to be delivered to AEMO - A few respondents did seek additional clarification regarding what metering data was required to be sent to AEMO and for what purpose or function was it to be used by AEMO.
Metering data Exception Handling	No issues were raised regarding AEMO's draft determination.

4.2.6. AEMO's Final Assessment

Alignment of meter data delivery

As stated in the first stage and second stage consultation papers, AEMO supports the alignment and uniformity of metering data delivery by MDPs to AEMO and other market participants. This goal has been well received and supported by respondents throughout this consultation process.

Alignment and uniformity of metering data delivery is expected to result in operational efficiencies for MDPs as well as contribute to the reduction of settlement related queries and disputes, which represents a significant cost to the industry.

To realise these operational efficiencies, non-energy forms of metering data (such as volts and amps) may be delivered to AEMO on a voluntary basis. AEMO will support receiving this data.

[30] Citipower/Powercor, response to second stage consultation, p.10
[31] Endeavour Energy, response to second stage consultation, p.5
[32] Energy Queensland, response to second stage consultation, p.10
[33] Energy Queensland and Plus ES, response to second stage consultation, p.11 and p.11 respectively

AEMO has sought to strike an appropriate balance between realising the benefits of this endeavour with potential operational implications for market participants.

Access to Active and Reactive Energy

The NER allows for AEMO to access and receive all types of data recorded for a metering installation. Clause 7.10.1(a)(7) states that MDPs must provide metering data services in accordance with the Rules and procedures authorised under the Rules, including the delivery of metering data and relevant NMI Standing Data to AEMO for settlements.

Clause 7.15.5(c)(5) of the NER allows for AEMO and its authorised agents to access or receive metering data, settlements ready data, NMI Standing Data, and data from the metering register for a metering installation.

Clause 10 – Glossary- of the NER defines 'energy' as being both active and/or reactive energy.

How active and reactive energy metering data supports AEMO's obligations

In order for AEMO to fulfil its obligations under the GS Rule, AEMO needs to understand the potential causes of UFE. Specifically, new clause 3.15.5B relating to the analysis and reporting of UFE trends.

It is likely that a key contributor to UFE will be technical losses which arise due to the loss of electricity through transformers and electrical conductors.

Technical losses are influenced in power factor and in the flows of energy within the distribution network as a consequence of distributed energy resources e.g. solar PV. AEMO considers that access to active and reactive register level metering data as necessary to understand the changes in technical losses when preparing the UFE reports that are mandated by the NER.

Current coordination requirements to ensure alignment of MSATS and MDFF data

MDPs and MPs are currently required to work in partnership to ensure alignment between the CATS NMI Datastream (CNDS) table, CATS Register Identifier (CRI) table and the contents within the MDFF files, AEMO is not proposing to change any of these arrangements.

AEMO believes that changes to these arrangements would result in fundamental changes to MSATS CATS tables, well beyond the scope of this consultation.

4.2.7. AEMO's Final Determination and Recommendation

During the Package 1 consultation, AEMO also consulted on potential changes associated with the delivery of meter data to AEMO. AEMO considers that the delivery of interval metering data should be in the form of Meter Data File Format (MDFF), superseding the current Meter Data Management File (MDMF) format.

This change is expected to result in both system and operational efficiencies for MDPs. This position has underpinned the Package 1 determination and will be implemented as part of the metering procedure changes consulted on in Package 2 and Package 3.

Having considered all submissions, the following table summarises AEMO's position regarding changes to the delivery of metering data to AEMO.

Item	AEMO's position on changes to the delivery of metering data
Meter data file format	From 1 July 2021: • MDFF NEM12 files to be the required file format for all interval metering data being delivered to AEMO • MDFF NEM13 files to be supported by AEMO o AEMO to continue to support and accept MDMF files for Basic meter reads

Metering data Resolution	From 1 July 2021:
	• NEM12 Interval metering data to be:
	  o Delivered at the register level
	  o As per the meter's configuration i.e. 5, 15 or 30-minute intervals

Meter data frequency	From 1 July 2021: • Metering data to be delivered to AEMO on a daily basis o AEMO is not seeking to amend any obligations regarding the current B2B Provide Meter Data or Verify Meter Data processes

Metering data granularity	From 1 July 2021:
	• Import and Export Active energy (kWh) and Import and Export Reactive energy (kVarh) will be required to be sent to AEMO
	  o All other forms of measurement (such as volts and amps) are not required to be delivered to AEMO but will be processed if they are provided.
	• All new records created in the CNDS table are to be created at the register level e.g. E and B.
	  o Existing net datastream records can remain active post 1 July 2021, until an update to the datastream record is required e.g. meter replacement. Where an update is required to a CNDS record, the net datastream record is to be inactivated and any new active datastreams records are to be created at the register level.
	  o Datatsreams associated to import and export reactive energy e.g. Q and K do not need to be created in the CNDS table.

Metering data Exception Handling	AEMO to retain the existing MDM validation/response process (MDMR notification and RM11 reports), however, where any party identifies a metering data issue, that requires a new version or resend of metering data to be delivered, all recipients are to receive this information.

4.3. Optical port and the volume of metering data storage

4.3.1. Issue Summary

The requirements outlined in Metrology Procedure Part A clause 3.2, section C, are incompatible with the industry standard optical port performance and the volume of metering data stored in a metering installation.

4.3.2. First Stage Submissions Summary

Landis+Gyr noted that the requirements outlined in Metrology Procedure Part A clause 3.2, section C, were incompatible with the industry standard optical port and the volume of metering data stored in a metering installation. They stated that the optical speed is determined by the ANSI / IEC Optical Port Standard design which is currently used by all manufacturers. The software used to download the data via the optical port can be configured to communicate at variety of Baud rates, ranging from 9600 to 38400 (Bits per second).[34]

Landis+Gyr also stated that it would not be feasible to change the industry standard optical port performance.

Intellihub noted that the current standard of 35 seconds does not take into account five-minute intervals or multi-element four quadrant metering.[35]

Vector Advanced Meter Services noted that the volume of data under 5MS, downloaded via the optical port, would increase by a factor of 6. Physical constraints (baud rate) of this interface limits the speed at which this data can be downloaded.[36]

Vector recommended that this performance requirement is removed for type 4A metering as commercial incentives will drive an appropriate performance outcome.

4.3.3. AEMO's Draft Assessment

AEMO agrees that the timeframe to download 90 days of interval metering data, currently stated in Metrology Procedure: Part A clause 3.2(c), may not be achievable for 5-minute metering data.

4.3.4. AEMO's Draft Determination

AEMO proposed to change the download to 90 seconds or less per datastream.

4.3.5. Second Stage Submissions Summary

Broad support was received regarding AEMO's proposal to change the download to 90 seconds or less per datastream.

Meridian/Powershop did however raise the concern that the procedure as drafted has the potential to require a significant reconfiguration of a large number of existing Type 4A and Type 5 meters.

4.3.6. AEMO's Final Assessment

In response to the concern raised by Meridian/Powershop, AEMO does not consider that this amendment will require meters to be reconfigured. The change will allow more time for metering data to be collected from type 4A and type 5 meters, in recognition that larger data volumes will be collected from manually-read meters that produce 5-minute metering data.

[34] Landis+Gyr, Submission to first stage consultation, p.1
[35] Intellihub, Submission to first stage consultation, p.8
[36] Vector Advanced Meter Services, Submission to first stage consultation, p.3

4.3.7. AEMO's Final Determination

After considering all submissions, AEMO has determined that a type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 standard, or a computer serial port to facilitate downloading of 90 days of interval energy data for each meter associated with the metering installation in 90 seconds or less per datastream.

5. FINAL DETERMINATION

5.1. Amendments other than jurisdictional metrology material

Having considered the matters raised in submissions, AEMO's Final Determination is to amend the following metering procedures in the form published with this Final Report.

The key changes associated to each procedure are:

- MDFF Specification NEM12 NEM13
    - Accommodating the inclusion, definition and field specifications relating to a five-minute trading interval
    - Making provisions for 4 decimal places for the unit of measure 'kilo (Thousand)' in Appendix B and Appendix H
- Meter Data Provision Procedures
    - Accommodating the implications of a five-minute interval length in the definition of 'Maximum Demand', where the maximum demand is being billed on a five-minute interval basis
    - Allowing for multiple metering data files being supplied, where file size limitations exists
    - Updating the 'Related Documents' section to include the 'Retail Electricity Market Procedures – Glossary and Framework' and 'National Metering Identifier Procedure' documents
- Metrology Procedure Part A
    - Accommodating the inclusion of a five-minute interval length
    - Accommodating an optical port or computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less
- Metrology Procedure Part B
    - Accommodating the inclusion of a five-minute interval length in various formulas
    - Accommodating the profiling and application of 15 and 30-minute interval metering data
        - Including its subsequent impact on the calculation of net system load profiles (NSLPs)
- Retail Electricity Market Procedures - Glossary and Framework
    - Minor edits

For ease of reference each is published in change-marked and final (clean) versions:

- MDFF Specification NEM12 NEM13

    - Attachment 1 - MDFF Specification NEM12 NEM13 v2.0 Final Determination Change Marked
    - Attachment 2 - MDFF Specification NEM12 NEM13 v2.0 Final Determination Clean
- Meter Data Provision Procedures
    - Attachment 3 - MDPP v2.0 Final Determination Change Marked
    - Attachment 4 - MDPP v2.0 Final Determination Clean
- Metrology Procedure Part A
    - Attachment 5 - Metrology Procedure Part A v7.0 Final Determination Change Marked
    - Attachment 6 - Metrology Procedure Part A v7.0 Final Determination Clean
- Metrology Procedure Part B
    - Attachment 7 - Metrology Procedure Part B v7.0 Final Determination Change Marked
    - Attachment 8 - Metrology Procedure Part B v7.0 Final Determination Clean
- Retail Electricity Market Procedures - Glossary and Framework
    - Attachment 9 - Retail Electricity Market Procedures - Glossary and Framework v3.0 Final Determination Change Marked
    - Attachment 10 - Retail Electricity Market Procedures - Glossary and Framework v3.0 Final Determination Clean

5.2. Jurisdictional metrology material

AEMO will report to the COAG Energy Council on the outcomes of this consultation as required by clause 7.16.4(f) of the NER. Based on this consultation, AEMO will recommend that the jurisdictional metrology material be included in the metrology procedures in the form submitted to AEMO by the COAG Energy Council, with the addition of minor clarifications noted in table 1 and table 2 in Appendix B to this Final Report.

For reference purposes, the proposed amendments to the jurisdictional metrology material are shown in the amended metrology procedures (Parts A and B) published with this Final Report. However, AEMO cannot at this stage confirm the inclusion of that material. All amended jurisdictional material is subject to change on the advice of the COAG Energy Council following its consideration of AEMO's report.

Subject to any advice received from the COAG Energy Council, AEMO will confirm or update the jurisdictional material in the published metrology procedures at a later date.

APPENDIX A. GLOSSARY

Term or acronym	Meaning
5MS	Five-Minute Settlement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
B2B	Business to business
B2M	Business to market
CLP	Controlled load profile
GS	Global Settlement
LNSP	Local Network Service Provider
MDFF	Meter Data File Format
MDMF	Meter Data Management Format
MDP	Metering Data Provider
MDPP	Meter Data Provision Procedures
MP	Meter Provider
MSATS	Market Settlements and Transfer Solution
NER	The National Electricity Rules made under Part 7 of the National Electricity Law.
NSLP	Net System Load Profile
Profile Area	A geographical area comprising a group of one or more TNIs for which a single NSLP is calculated. If part of an LNSP local area is located within the local area of another LNSP, that part of the local area of the first LNSP is considered to be part of the profile area of the second LNSP.
TNI	Transmission Node Identifier
UFE	Unaccounted for energy

APPENDIX B. SUMMARY OF SECOND STAGE SUBMISSIONS AND AEMO RESPONSES

Table 1 – Metrology Procedure: Part A

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
1.	AGL	3.2	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each DataStream associated with the metering installation in 90 seconds or less.	Agree	AEMO notes the respondent's support of the proposed change.
2.	AusNet	3.2	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering	AusNet Services supports this alteration allowing the download up to 90 seconds per Datastream.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			installation in 90 seconds or less.		
3.	Energy Queensland	3.2	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less.	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
4.	Flow Power	3.2	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less.	Agree to this update	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
5.	Meridian Powershop	3.2	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less.	While we recognise the potential value of the provision of datastream information we are concerned that the procedure as drafted has the potential to require a significant reconfiguration of a large number of existing Type 4A and 5 meters at a significant cost and with minimal benefits to consumers given such meters are obsolete. Retrospective application of this requirement to existing but obsolete meters would be inconsistent with the NEO.	This Procedure change does not require meters to be reconfigured, the change allows more time for metering data to be collected from type 4A and type 5 meters in recognition that larger data volumes will be collected from manually read meters that produce 5-minute metering data.
6.	Momentum	3.2(c)	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less.	Use of Optical ports and Pulse Outputs Agree to the proposed update	AEMO notes the respondent's support of the proposed change.
7.	Origin	3.2	A type 4A or 5 metering installation must have an optical port that	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less.		
8.	Red Lumo	3.2	A type 4A or 5 metering installation must have an optical port that meets the AS 1284.10.2 or AS 62056.21 or a computer serial port to facilitate downloading of 90 days of interval energy data for each Datastream associated with the metering installation in 90 seconds or less.	Red Energy and Lumo Energy (Red and Lumo) support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
9.	AGL	3.5	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
10.	Energy Queensland	3.5	Jurisdictional Update	Energy Queensland supports the proposed change. However, we note that in the Queensland material in the table in clause 3.5 (b), paragraph (a), contains a reference to paragraph (c) which, due to the redrafting, is different to the new clause (c) (i.e. the previous paragraph (d)). Energy Queensland suggests that the reference to paragraph (c) should be removed from paragraph (a) – i.e. delete the text "*in accordance with (c), below*".	AEMO concurs with the suggestion to amend (a) and will advise COAG EC that this change should be made to the Jurisdictional material.
11.	Flow Power	3.5	Jurisdictional Update	Agree to this update	AEMO notes the respondent's support of the proposed change.
12.	Meridian Powershop	3.5	Jurisdictional Update	Support	AEMO notes the respondent's support of the proposed change.
13.	Origin	3.5	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
14.	Red Lumo	3.5	Jurisdictional Update	Red and Lumo request the following is amended for clarification (consistent with the advice provided by the COAG Energy Council. *(b) The type 5 metering installation values of "x" applicable ~~to a Jurisdiction~~ as set by the Minister of each jurisdiction are specified in the following table:*	Clause 3.5 is related to "y" values for type 6 metering installations, clause 3.4 is related to type 5 metering installation "x" values. NER Table S7.4.3.1 Items 3 and 4 state that the Minister of a participating jurisdiction determines "x" and "y" values. Metrology Procedure: Part A lead-in paragraphs 3.4(b) and 3.5(b) do not change these NER provisions, they state that listed "x" or "y" values are applicable to a Jurisdiction. The Victorian comment in the COAG EC document is stating that

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
					Victoria chose to include a jurisdictional change that is not "Jurisdictional metrology material", as defined in the NER.
15.	AGL	3.8	Meter Installation Clock	AGL notes AEMOs response and suggest that this matter be considered when metering equipment standards are being reviewed.	AEMO notes this suggestion.
16.	AGL	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Agree	AEMO notes the respondent's support of the proposed change.
17.	Energy Queensland	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
18.	Flow Power	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	1. We note that the term TI is defined in Retail electricity market procedures- glossary and framework. However, in practice Meteorology procedure would be read as a standalone. Since the term TI might mean different things to different people, in order to provide clarity we request that this term to be replaced with trading interval across the document. 2. The first paragraph of clause 3.9 makes specific reference to 3.9 (b) and (c) in that it refers to the 15 min and 30 min intervals. To be consistent with this approach we suggest this paragraph to also address 3.9 (a) by making the following changes- Replace the sentence " Where a metering installation… T1, 15 min …." With " Where a metering installation… T1, 5 minute,15 min …."	The Glossary and Framework document was developed to ensure that defined terms were consistently applied across all NEM Procedures and , as stated in all NEM Procedure, forms part of each NEM Procedure. The first paragraph of 3.9 refers to sub-paragraphs (a) to (d) (refer to Draft Determination version of Metrology Procedure: Part A).

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
19.	Meridian Powershop	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Trading Intervals are defined in the NER and these procedures cannot override those definitions. In any event this attempt at clarifying when trading intervals should end is confusing and likely to mislead.	However AEMO acknowledges the focus of this consultation is making the procedures consistent with 5MS.
20.	Momentum	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Agree	AEMO notes the respondent's support of the proposed change.
21.	Origin	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Noted	AEMO notes the respondent's support of the proposed change.
22.	PlusES	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Clause (d) should be amended to include sub multiples of 5 minute.	Clause 3.9(d) requires AEMO and industry participants to agree on the definition of sub-multiple intervals. Clause 3.9 can be modified in the future through BAU Procedure change processes when an appropriate sub-multiple interval definition is developed.
23.	Red Lumo	3.9	The end of each TI must be on the hour (EST) and each continuous period of 5 minutes thereafter.	Red and Lumo support the amendment as proposed.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
24.	Red Lumo	4.1	Minimum Services Specification	Red and Lumo note AEMO's response to our first-round consultation response. In order to remove any ambiguity, we request that AEMO include the following within section 4.1: *Metering Service Standards including accuracy requirements are as defined in NER S7.4*.	NER 7.8.8(a) requires metering installations to comply with S7.4. On that basis there is no need to repeat this in the Procedure.
25.	AGL	6	Jurisdictional Update	Noted Noting that while this is a jurisdictional; requirement, the obligation as it currently stands doers not align with roles and responsibilities in the market post PoC and applies obligations on MCs that they may not be able to manage. Any new child meter will be an interval meter as a matter of obligation now, therefore the obligation to change meters would now effectively sit with the FRMP and MC of the parent meter. Given the parent MCs is most likely to be to different FRMP from the child FRMP, this AGL suggest that AEMO should work with the jurisdictions to ensure clarity of obligations in this matter.	Refer to Item 29 response.
26.	Energy Queensland	6	Jurisdictional Update	Energy Queensland has no comments on this proposed change as it does not apply in Queensland.	AEMO notes this comment.
27.	Flow Power	6	Jurisdictional Update	Agree to this update	AEMO notes the respondent's support of the proposed change.
28.	Meridian Powershop	6	Jurisdictional Update	Support	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
29.	Momentum	6	Jurisdictional Update [Embedded Networks]	Momentum's response is in relation to AEMO's response detailed in Table 1 of the draft determination for the First Stage Consultation consultation: > Section 6 requires the MC to ensure that interval meterir is in place for child and parent connection points, th section does not require the MC to change a meter at connection point where it is not responsible. What mechanism will be provided by AEMO for the purpose? What is the required timing by which the MC for the Child NMI to communicate with the MC of the parent NMI about the requirement for an interval meter in the scenario where the Retailer for the Parent NMI is not the Retailer for the Child NMI or where the Retailer is the same participant for both Parent NMI and Child NMI but the parties in the MC Role are different.	Timeframes to be included in Package2 consultation.
30.	Origin	6	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
31.	Red Lumo	6	Jurisdictional Update	<u>Clause 6 Embedded Network and Reversion of metering Installation</u> We note the comments provided by the COAG Energy Council. Red and Lumo request the following is amended for clarification: *Victoria* — *Embedded network child metering in Victoria is regulated by a combinatio of the Victorian Orders and the NER metering competition rules.*	To be reviewed in the Metering Procedure Changes (Package 2) consultation.
32.	AGL	7	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
33.	AusNet	7	Jurisdictional Update	AusNet Services supports the proposed removal of embedded network and reversion provisions on the basis of Victorian Orders in Council incorporate provisions for these arrangements.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
34.	Energy Queensland	7	Jurisdictional Update	Energy Queensland has no comments on this proposed change as it does not apply in Queensland.	AEMO notes this comment.
35.	Flow power	7	Jurisdictional Update	Agree to this update	AEMO notes the respondent's support of the proposed change.
36.	Meridian Powershop	7	Jurisdictional Update	Support	AEMO notes the respondent's support of the proposed change.
37.	Momentum	7	Jurisdictional Update	Victoria – Agree to the deletion based on the stated treatment of new and replacement meters under 5-minute settlement (no new type 6 meters are expected to be installed) NSW –agree to the insertion of meter type 4A and deletion/ removal of Meter Installation type 5 (4) The MC must ensure ……is settled *market on the basis of a metering installation type 6.* *Suggest amendment to the statement:* *The MC must ensure that the energy measured by a meter, which is a sample interval meter installed for the purposes of calculating a CLP, is settled* ***in the*** *market on the basis of a metering installation type 6* South Australia – Agree Queensland – Minor correction for the new (43) Remove one of the character 'a' The metering coordinator must ensure that the energy measured by a sample Interval Meter installed for the purposes of calculating the CLP is settled in the market on the basis of a type 6 metering installation. Tasmania – No comments	Victoria – AEMO notes the agreement with the proposal. NSW – AEMO is unable to amend Jurisdictional material without approval from the Jurisdiction. AEMO will address the removal of "type 5" with the Jurisdiction. NSW (4) – Jurisdictional wording in Metrology Procedure: Part A v5.30 will be used.
38.	Origin	7	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
39.	Red Lumo	7	Jurisdictional Update	<u>Victoria</u> We note the comments provided by the COAG Energy Council. Red and Lumo request the following is added for clarification: *Victoria* | *Metering Coordinators in Victoria are regulated by a combination of the Victorian Orders and the NER metering competition rules.* <u>Queensland</u> <u>Clause 7(2)Meter Installation Reversion</u> Please provide information on the legislative amendments that warrant this change. Further, given the AEMC are currently consulting on the reversion of a meter from Type 4 to 4A (and 4A to 4), we recommend that this clause is not amended until the finalisation of the rule change.	Victoria – To be reviewed in the Metering Procedure Changes Package 2 consultation Queensland – Changed in accordance with COAG EC request.
40.	AGL	9.3	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
41.	Energy Queensland	9.3	Jurisdictional Update	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
42.	Flow Power	9.3	Jurisdictional Update	Agree to this update	AEMO notes the respondent's support of the proposed change.
43.	Meridian Powershop	9.3	Jurisdictional Update	Support	AEMO notes the respondent's support of the proposed change.
44.	Origin	9.3	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
45.	Red Lumo	9.3	Jurisdictional Update	The Queensland Electricity Connection Manual (QECM) and Queensland Electricity Metering Manual (QEMM) provide minimum requirements for connection of supply and	The removal of the Jurisdictional requirement to check that a metering installation complies

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				metering of customer installations. Currently the LNSP publishes information for Electrical Contractors to completing works within their distribution area. With this proposed removal, who will be responsible for managing and publishing these operational requirement documents?	with the Queensland Electricity Connection and Metering Manual does not mean that this document will not be maintained as it is currently. The Metering Provider Service Level Procedure still requires the Metering Provider to comply with, among other things, Jurisdictional legislation, including safety legislation and regulations, and any reasonable requirements of the LNSP.
46.	AGL	12.2	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
47.	Energy Queensland	12.2	Jurisdictional Update	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
48.	Flow Power	12.2	Jurisdictional Update	Agree to this update	AEMO notes the respondent's support of the proposed change.
49.	Meridian Powershop	12.2	Jurisdictional Update	Support	AEMO notes the respondent's support of the proposed change.
50.	Momentum	12.2	Jurisdictional Update	12.2(b) Jurisdiction NSW Please refer to Section 7 Reversion of Metering Installation types for the NSW Jurisdiction (1), AEMO has commented that it will seek approval from COAG to remove reference to Metering Installation type 5. 12.2(b)(1) has had the narrative amended for type 5 meters. Suggests the following amendment for clarity:	Change suggested to 12.2(b)(1) cannot be made as type 5 meters cannot be installed after 1 December 2017.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				(1) *Subject to section 7[NSW](4), the type 5 accumulation boundary is 100 MWh per annum for type 5 meters installed prior to and since 1 December 2017 (Power of Choice)*.	
51.	Origin	12.2	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
52.	Red Lumo	12.2	Jurisdictional Update	AEMO has not articulated in the consultation process the legislative amendments that warrants this change, please provide this information in the final determination.	Change made in accordance with COAG EC request. AEMO stated in the Draft Report that the procedure change process incorporates jurisdictional amendments to the Metrology Procedures submitted to AEMO by the COAG Energy Council (reference Executive Summary page 2)
53.	AGL	12.2(i)	Editorial	As the table in 12.2(i) has been deleted, the lead in clause can also be deleted.	Jurisdictional material in Table in 12.2(i) has not been deleted, it has been modified in accordance with COAG EC request.
54.	AGL	12.4	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
55.	Flow Power	12.4	Jurisdictional Update	Agree to this update	AEMO notes the respondent's support of the proposed change.
56.	Meridian Powershop	12.4	Jurisdictional Update	Support	AEMO notes the respondent's support of the proposed change.
57.	Momentum	12.4	Jurisdictional Update	Agree with request and for clauses 12.4 © & 12.4(d) to be identified as 12.4(b) and 12.4(c)	Remaining clauses to be numbered correctly in the Final procedure.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
58.	Origin	12.4	Jurisdictional Update	Noted	AEMO notes the respondent's support of the proposed change.
59.	Red Lumo	12.4	Jurisdictional Update	AEMO has not articulated in the consultation process the legislative amendments that warrants this change, please provide this information in the final determination.	Refer to item 52 response.
60.	AGL	12.5	To validate that all metering data stored in the metering data services database is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable),	Noted Although this sentence seems to be a higher-level obligation which would apply to all the sub-clauses, and AGL questions whether the initial sentence, starting 'To facilitate the verification…' should also include this statement about validating metering data, otherwise this statement only applies to the testing to AS….	Wording revised in response to this comment in the Final procedure.
61.	Energy Queensland	12.5	To validate that all metering data stored in the metering data services database is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable),	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
62.	Flow Power	12.5	To validate that all metering data stored in the metering data services database is consistent with the	Agree to this update.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			energy data stored in the metering installation or the Physical Inventory (as applicable),		
63.	Meridian Powershop	12.5	To validate that all metering data stored in the metering data services database is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable),	This should read "To validate that ~~all~~ metering data stored in the metering data services database is appropriately consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable)…" The words as drafted would imply 100% accuracy which is not the intent.	Refer to Item 60 response.
64.	Momentum	12.5	To validate that all metering data stored in the metering data services database is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable),	Suggest the following modification: *Each MC must ensure that a Sample Test Plan is established and maintained in accordance with Australian Standards and to validate that all metering data stored in the metering data services is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable)*	Refer to Item 60 response.
65.	Origin	12.5	To validate that all metering data stored in the metering data services database is	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable),		
66.	Red Lumo	12.5	To validate that all metering data stored in the metering data services database is consistent with the energy data stored in the metering installation or the Physical Inventory (as applicable),	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
67.	AGL	12.6(f)	Grammatical Changes	Noted	AEMO notes the respondent's support of the proposed change.
68.	AGL	12.8.2 (b)	Grammatical Changes	Noted	AEMO notes the respondent's support of the proposed change.
69.	AGL	12.8.2	Embedded Network Metering	AGL understands that within an embedded network there is only a requirement for both parent and child meters to be interval meters, so one could be a 30-minute meter and the other a 5-minute meter. AGL seeks to understand how as a parent retailer of the ENO – the energy allocations would be made. A possible process may be: **Scenario 1** • Parent 30 minute – child 5 minute • Add child up to 30 min intervals	Scenario 1 – As 5-minute metering data will be the "primary" metering data form for 5-minute settlements, the parent metering data would be profiled to 5-minute intervals using the 5-minute load profile as described in Metrology Procedure: Part B 12.3.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				• subtract from parent • Adjusted Parent load then profiled to 5-minute load using NSL **Scenario 2** • Parent 5 minute – child 30 minute • Child profiled to 5 minute – How – percentage or profile ? • Subtract from parent • Adjusted Parent load at 5-minute intervals The fundamental question is how the two different metering intervals are managed. A simple mechanism may be to use the uniform profile process (i.e. divide the 30-minute data by 6). The question then becomes is that a suitable mechanism. If this is used for the child, should the parent meter be used as a profile for the child instead of even intervals ? If however, the 30-minute parent meter is being profiled for settlements, then should it be profiled prior to the 5-minute child load being removed. If so, then what will be the process for a retailer of the parent to get the initial 5-minute profile information. AGL wishes to ensure that whatever mechanism is used should be detailed in the metrology procedure to ensure consistent application for AEMO and the ability for the parent retailer to re-calculate and reconcile the information. In summary, AGL suggests that this process be clearly defined to ensure consistent application and repeatability by retailers undertaking reconciliation.	Scenario 2 – Child metering data would be profiled to 5-minute intervals using the 5-minute load profile as described in Metrology Procedure: Part B 12.3. 30-minute parent metering data can only be profiled to 5-minute intervals prior to 5-minute child load is removed The 5-minute parent data for scenario one would be available in the types of settlement reports that are currently provided to retailers.

Table 2 – Metrology Procedure Part B

<table>
<tr><th>#</th><th>RESPONDENT</th><th>CLAUSE</th><th>HEADING/ DEFINITION</th><th>PARTICIPANT COMMENT</th><th>AEMO RESPONSE</th></tr>
<tr><td>1.</td><td>AGL</td><td>2.3</td><td>Jurisdictional Update</td><td>Noted</td><td>AEMO notes the respondent's support of the proposed change.</td></tr>
<tr><td>2.</td><td>Energy Queensland</td><td>2.3</td><td>Jurisdictional Update</td><td>Energy Queensland has no comments on this proposed change as it does not apply in Queensland.</td><td>AEMO notes this comment.</td></tr>
<tr><td>3.</td><td>Flow Power</td><td>2.3</td><td>Jurisdictional Update</td><td>Agree to this update</td><td>AEMO notes the respondent's support of the proposed change.</td></tr>
<tr><td>4.</td><td>Meridian Powershop</td><td>2.3</td><td>Jurisdictional Update</td><td>Support</td><td>AEMO notes the respondent's support of the proposed change.</td></tr>
<tr><td>5.</td><td>Momentum</td><td>2.3</td><td>Jurisdictional Update</td><td>Recommend update for clarity:<table><tr><th>Jurisdiction</th><th>Variation in accordance with jurisdictional policy</th></tr><tr><td>Victoria</td><td>Where metering data for a type 5 metering installation is collected via remote acquisition, estimations need not be provided routinely or as a result of a change to the current publishedScheduled Reading Date</td></tr></table></td><td>Changed to "collected by remote acquisition" in accordance with COAG EC request.</td></tr>
<tr><td>6.</td><td>Origin</td><td>2.3</td><td>Jurisdictional Update</td><td>Noted</td><td>AEMO notes the respondent's support of the proposed change.</td></tr>
<tr><td>7.</td><td>Red Lumo</td><td>2.3</td><td>Jurisdictional Update</td><td>Red and Lumo support the amendments as proposed.</td><td>AEMO notes the respondent's support of the proposed change.</td></tr>
<tr><td>8.</td><td>AGL</td><td>2.4</td><td>Change to 'F' Metering Data Quality Flag</td><td>Noted – however:
Inconsistency in cross references -
<u>Table Quality Flag F</u>
Is the reference to 2.5(e) correct as this refers to a RoLR event or should it be (f).</td><td>Reference to 2.5(e) is correct. A Final Substitution is made for accumulated metering data related to a RoLR event as actual metering data will never be available.</td></tr>
</table>

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				Should 2.5(h) also be included in this statement to be consistent with the statement at the end of the clause. <u>Final Statement</u> Cross Reference error - the final statement for "F" metering data refers to clause 2.5.1 in three instances. There is no clause 2.5.1 – only 2.5 The table and statement are dealing with the concepts of updating F quality data and replacing F data with A data. AGL suggests that the two areas be reviewed and re-written to make it the various obligations and exceptions clearer.	2.5.1 to be changed to 2.5 as suggested in the Final Procedure.
9.	Energy Queensland	2.4	Change to 'F' Metering Data Quality Flag	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
10.	Flow Power	2.4	Change to 'F' Metering Data Quality Flag	Noted	AEMO notes the respondent's support of the proposed change.
11.	Meridian Powershop	2.4	Change to 'F' Metering Data Quality Flag	Support	AEMO notes the respondent's support of the proposed change.
12.	Momentum	2.4	Change to 'F' Metering Data Quality Flag	Note the following: • Description of "F" Quality Flag: "For Substitutions that are of a permanent or final nature and, subject to section 2.5(b) & (e),the final Substituted metering data would not be replaced by Actual Metering Data at any time." • "'F' metering data can only be replaced with 'F' metering data as per section 2.5.1(f) or 'A' metering data as per section 2.5.1(b) or 2.5.1(h)."	Refer to Item 8 response.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				My query/potential changes: • Remove ".1" as there is not a 3rd level in Section 2.5. Should the "(e)" be changed to "(h)" in the Description of F Quality Flag?	
13.	Origin	2.4	Change to 'F' Metering Data Quality Flag	Noted	AEMO notes the respondent's support of the proposed change.
14.	Red Lumo	2.4	Change to 'F' Metering Data Quality Flag	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
15.	AGL	2.6	Page number links replaced with section links	Agree	AEMO notes the respondent's support of the proposed change.
16.	Energy Queensland	2.6	Page number links replaced with section links	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
17.	Flow Power	2.6	Page number links replaced with section links	Noted	AEMO notes the respondent's support of the proposed change.
18.	Meridian Powershop	2.6	Page number links replaced with section links	Support	AEMO notes the respondent's support of the proposed change.
19.	Momentum	2.6	Page number links replaced with section links	Agree to the insertion of Type 21 and Type 59 to the Summary table However section 3.2(f) should be updated to reflect the following: The MDP may only undertake Substitution types 14,15,16,17,18,19,20 or **21** where Substitution types 11,12, and 13 are not applicable or cannot be carried out.	Suggested change made in the Final Procedure.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
20.	Origin	2.6	Page number links replaced with section links	Noted	AEMO notes the respondent's support of the proposed change.
21.	Red Lumo	2.6	Page number links replaced with section links	Noted.	AEMO notes the respondent's support of the proposed change.
22.	Momentum	3.2	Substitution Rules	Does any other specific clarification need to be provided as to when new Substitution Type 21 (from table in Section 2.6) must be applied or when Substitution Type 21 is not applicable?	AEMO considers that no further clarifications are required.
23.	AGL	3.3.8	Change to Type 18 – Alternative wording	Agree	AEMO notes the respondent's support of the proposed change.
24.	Energy Queensland	3.3.8	Change to Type 18 – Alternative wording	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
25.	Flow Power	3.3.8	Change to Type 18 – Alternative wording	Noted	AEMO notes the respondent's support of the proposed change.
26.	Meridian Powershop	3.3.8	Change to Type 18 – Alternative wording	No Response	AEMO notes the respondent's support of the proposed change.
27.	Origin	3.3.8	Change to Type 18 – Alternative wording	Please add in extreme weather as per below. (b) a method where an adjusted profile is used to take into account local conditions that affect consumption (e.g. local holiday, End User shutdown or **Extreme Weather**), or	Suggested change made in the Final Procedure.
28.	Red Lumo	3.3.8	Change to Type 18 – Alternative wording	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
29.	AGL	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Agree	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
30.	Energy Queensland	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
31.	Flow Power	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Noted	AEMO notes the respondent's support of the proposed change.
32.	Meridian Powershop	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Has consideration been given to allowing profiling historical data on average system profile (whether on a regional, LNSP or NSLP basis) rather than a straight average?	The straight average method was considered more appropriate for system development simplicity as this method would be used rarely and for only a short period. Once the metering installation problem is rectified and producing 5-minute metering data, 5-minute "historical data" is being created.
33.	Momentum	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Suggest the following narrative as the proposed statement is ambiguous; the metering installation is not one where data is available for 5m interval: *Where no five-minute Historical Data exists for a metering installation, following the conversion of 15 or 30-minute metering to five-minute metering, the MDP may provide a substitute for the interval metering data as follows: …..*	The reference to a five-minute metering installation in the current wording clarifies that the converted metering installation is expected to produce 5-minute metering data but is unable to do so shortly after the conversion process.
34.	Origin	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
35.	Red Lumo	3.3.11	Addition of Type 21 - Five-minute Conversion No Historical Data	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
36.	Momentum	4.2	Substitution and Estimation Rules	Does any other specific clarification need to be provided as to when new Substitution Type 59 (from table in Section 2.6) must or must not be applied? For example in 4.2(d)(i) and/ or 4.2(d)(ii)	Added type 59 to Substitutions and Estimations.
37.	AGL	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Agree	AEMO notes the respondent's support of the proposed change.
38.	Energy Queensland	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
39.	Flow Power	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Noted	AEMO notes the respondent's support of the proposed change.
40.	Meridian Powershop	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Support (subject to comment in Section 7 of this response regarding Embedded Networks)	AEMO notes the respondent's support of the proposed change.
41.	Momentum	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Suggest the following narrative for clarity: To perform a type 53 Substitution, MDP must re-substitute or change the original substituted metering data, prior to collecting an Actual Meter Reading or prior to the date referred to as R@ in the data delivery ……	Suggested change made in the Final Procedure.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
42.	Origin	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Noted	AEMO notes the respondent's support of the proposed change.
43.	Red Lumo	4.3.3	Changes to Type 53 - Revision of Substituted Metering Data	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
44.	AGL	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	Agree	AEMO notes the respondent's support of the proposed change.
45.	Energy Queensland	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
46.	Flow Power	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	We note that Type 21 also relate to Sub for 5 minute conversion with no historical data. However, no explanation is given for the difference between the two types. Please provide explanation.	The proposed new substitution methods are related to situations where historical 15 or 30-minute metering data exists, but no 5-minute historical metering data is available as the basis for substitutions.
47.	Meridian Powershop	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	Has consideration been given to allowing profiling historical data on average system profile (whether on a regional, LNSP or NSLP basis) rather than a straight average?	Refer to Item 32 response.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
48.	Momentum	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	Refer to 3.3.11	Refer to Item 33 response.
49.	Origin	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	Noted	AEMO notes the respondent's support of the proposed change.
50.	Red Lumo	4.3.9	Addition of Type 59 – Five-minute Conversion No Historical Data	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
51.	AGL	11.2.1	Update to section reference to Metrology Procedure: Part A	Agree	AEMO notes the respondent's support of the proposed change.
52.	Energy Queensland	11.2.1	Update to section reference to Metrology Procedure: Part A	Energy Queensland has no comments on this proposed change as it does not apply in Queensland.	AEMO notes this comment.
53.	Flow Power	11.2.1	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
54.	Meridian Powershop	11.2.1	Update to section reference to Metrology Procedure: Part A	No response	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
55.	Origin	11.2.1	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
56.	Red Lumo	11.2.1	Update to section reference to Metrology Procedure: Part A	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
57.	AGL	11.2.2	Update to section reference to Metrology Procedure: Part A	Agree	AEMO notes the respondent's support of the proposed change.
58.	Energy Queensland	11.2.2	Update to section reference to Metrology Procedure: Part A	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
59.	Flow Power	11.2.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
60.	Meridian Powershop	11.2.2	Update to section reference to Metrology Procedure: Part A	No response	AEMO notes the respondent's support of the proposed change.
61.	Origin	11.2.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
62.	Red Lumo	11.2.2	Update to section reference to Metrology Procedure: Part A	Noted.	AEMO notes the respondent's support of the proposed change.
63.	AGL	11.2.3	Update to section reference to Metrology Procedure: Part A	Agree	AEMO notes the respondent's support of the proposed change.
64.	Energy Queensland	11.2.3	Update to section reference to Metrology Procedure: Part A	Energy Queensland has no comments on this proposed change as it does not apply in Queensland.	AEMO notes the respondent's support of the proposed change.
65.	Flow Power	11.2.3	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
66.	Meridian Powershop	11.2.3	Update to section reference to Metrology Procedure: Part A	No response	AEMO notes the respondent's support of the proposed change.
67.	Origin	11.2.3	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
68.	Red Lumo	11.2.3	Update to section reference to Metrology Procedure: Part A	Noted.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
69.	AGL	11.3.1	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference updated to 'Interval'	Agree	AEMO notes the respondent's support of the proposed change.
70.	Energy Queensland	11.3.1	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference updated to 'Interval'	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.
71.	Flow Power	11.3.1	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference updated to 'Interval'	Noted	AEMO notes the respondent's support of the proposed change.
72.	Meridian Powershop	11.3.1	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference updated to 'Interval'	No response	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
73.	Origin	11.3.1	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference updated to 'Interval'	Noted	AEMO notes the respondent's support of the proposed change.
74.	Red Lumo	11.3.1	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference updated to 'Interval'	Noted.	AEMO notes the respondent's support of the proposed change.
75.	AGL	11.3.1(b)	Formula	Typo - Remove space in the word 'accumulati on' Adjust subscripts for $CLP1_j$ – large spaces in some of the formula	Suggested changes made in the Final Procedure.
76.	AGL	11.3.2	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Agree	AEMO notes the respondent's support of the proposed change.
77.	Energy Queensland	11.3.2	Update to section reference to	Energy Queensland has no comments on the proposed changes as it does not apply in Queensland.	AEMO notes this comment.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Metrology Procedure: Part A Change end dates from '23:30' to '23:55'		
78.	Flow Power	11.3.2	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
79.	Meridian Powershop	11.3.2	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	No response	AEMO notes the respondent's support of the proposed change.
80.	Origin	11.3.2	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
81.	Red Lumo	11.3.2	Update to section reference to	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Metrology Procedure: Part A Change end dates from '23:30' to '23:55'		
82.	AGL	11.4	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI' 'Half hourly' reference updated to 'Five minute' Updates made to formulas	Agree	AEMO notes the respondent's support of the proposed change.
83.	Energy Queensland	11.4	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI' 'Half hourly' reference updated to 'Five minute' Updates made to formulas	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.

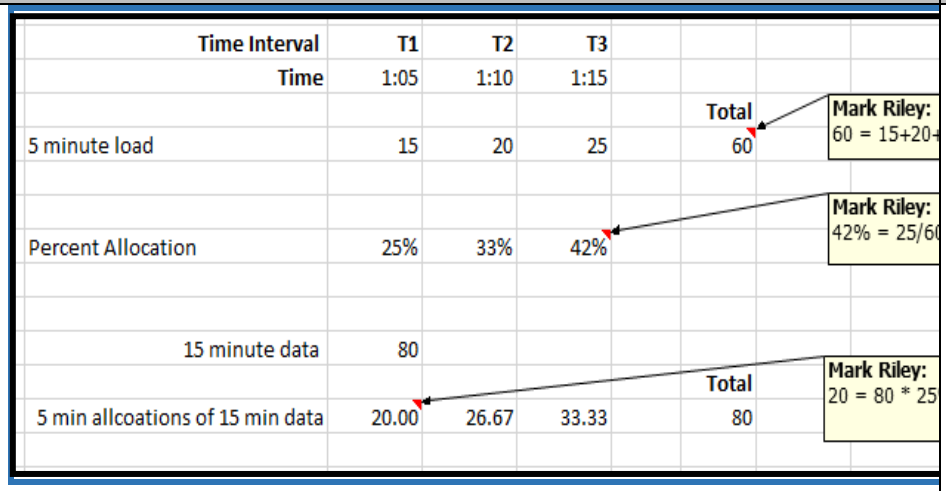
#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
84.	Flow Power	11.4	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI' 'Half hourly' reference updated to 'Five minute' Updates made to formulas	Noted	AEMO notes the respondent's support of the proposed change.
85.	Meridian Powershop	11.4	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI' 'Half hourly' reference updated to 'Five minute' Updates made to formulas	There are many references to load in this procedure when in fact the reference is intended to apply load and generation. Consideration should be given to either changing the reference or changing the definition of load for the purposes of the procedure.	Small customer generation (e.g. photo voltaic, etc.) will continue to be considered as negative load at the specific connection point, therefore the use of the term load is contextually correct in this section.
86.	Momentum	11.4	Update to section reference to	Agree with section reference update Suggest the following for the definition of s: *s = Five-minute loads (including type 7 market loads*) in Profile Area except interval metering data in respect of loads at child connection points in an embedded network*.	Further changes to the treatment of unmetered loads are envisaged for GS, therefore any required clarification comments will be addressed in the Metering

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI' 'Half hourly' reference updated to 'Five minute' Updates made to formulas	*Reference Section 13.1.1©	Procedure Changes (package 2) consultation.
87.	Origin	11.4	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI' 'Half hourly' reference updated to 'Five minute' Updates made to formulas	Noted	AEMO notes the respondent's support of the proposed change.
88.	Red Lumo	11.4	Update to section reference to Metrology Procedure: Part A 'Half hourly' reference in formulas updated to 'TI'	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			'Half hourly' reference updated to 'Five minute' Updates made to formulas		
89.	AGL	11.5	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
90.	Energy Queensland	11.5	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.
91.	Flow Power	11.5	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
92.	Meridian Powershop	11.5	Update to section reference to	Support	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Metrology Procedure: Part A Change end dates from '23:30' to '23:55'		
93.	Origin	11.5	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
94.	Red Lumo	11.5	Update to section reference to Metrology Procedure: Part A Change end dates from '23:30' to '23:55'	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
95.	AGL	11.6	Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
96.	Energy Queensland	11.6	Change end dates from '23:30' to '23:55'	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
97.	Flow Power	11.6	Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
98.	Meridian Powershop	11.6	Change end dates from '23:30' to '23:55'	Support	AEMO notes the respondent's support of the proposed change.
99.	Origin	11.6	Change end dates from '23:30' to '23:55'	Noted	AEMO notes the respondent's support of the proposed change.
100.	Red Lumo	11.6	Change end dates from '23:30' to '23:55'	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
101.	AGL	12	New section added to detail the conversion of interval metering data, previous section 12, and following section numbering, have been changed due to this insertion	12.4 (b) and (d) in particular The description of the process (particularly points (ii)) could be clarified. (ii) Sum the 3/6 five-minute interval values to produce an equivalent 15/30-minute 5-minute interval energy allocation; (iii) convert the five-minute interval loads to percentages of the 15/30-minute equivalent energy allocation in (ii) for each five-minute intervals; (iv) Apply the five-minute percentages to the relevant 15/30- minute meter data to produce five-minute profiles of the 15/30-minute load. Also, with these processes an example may provide more help and insight to readers. See below for example **Example calculation for 12.4 profiling**	Example to be added to the Final Procedure.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
					
102.	Energy Queensland	12	New section added to detail the conversion of interval metering data, previous section 12, and following section numbering, have been changed due to this insertion	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
103.	Flow Power	12	New section added to detail the conversion of interval metering	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			data, previous section 12, and following section numbering, have been changed due to this insertion		
104.	Meridian Powershop	12	New section added to detail the conversion of interval metering data, previous section 12, and following section numbering, have been changed due to this insertion	Support	AEMO notes the respondent's support of the proposed change.
105.	Momentum	12	New section added to detail the conversion of interval metering data, previous section 12, and following section numbering, have been changed due to this insertion	Please consider rewording for clarity/consistency: 12.3(b) *The energy associated with all non-wholesale boundary metering installations that have five-minute metering data (excluding those specified in (a)) is summed, both for first-tier and second tier loads. This includes metering data associated with type 7 metering installations but excludes metering data for child connection points*.	Suggested change made in the Final Procedure.
106.	Origin	12	New section added to detail the conversion of interval metering	Noted – no concerns with proposed approach.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			data, previous section 12, and following section numbering, have been changed due to this insertion		
107.	Red Lumo	12	New section added to detail the conversion of interval metering data, previous section 12, and following section numbering, have been changed due to this insertion	Red and Lumo support the amendments as proposed. We request AEMO include a detailed example that incorporates AEMO's methodology for conversion of metering data.	Refer to Item 101 response.
108.	AGL	13.1.4	Update to section references	Noted	AEMO notes the respondent's support of the proposed change.
109.	Energy Queensland	13.1.4	Update to section references	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
110.	Flow Power	13.1.4	Update to section references	Noted	AEMO notes the respondent's support of the proposed change.
111.	Meridian Powershop	13.1.4	Update to section references	Support	AEMO notes the respondent's support of the proposed change.
112.	Origin	13.1.4	Update to section references	Noted	AEMO notes the respondent's support of the proposed change.
113.	Red Lumo	13.1.4	Update to section references	Noted.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
114.	AGL	13.2.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
115.	Energy Queensland	13.2.2	Update to section reference to Metrology Procedure: Part A	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
116.	Flow Power	13.2.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
117.	Meridian Powershop	13.2.2	Update to section reference to Metrology Procedure: Part A	Support	AEMO notes the respondent's support of the proposed change.
118.	Origin	13.2.2	Update to section reference to Metrology Procedure: Part A	With the introduction of global settlements, it is recommended that the requirements for the unmetered inventory table are prescriptive to ensure quality information and standardisation across Networks. The inventory table is largely the source information that is used to adjust retail systems. Address information and asset types can be vague; end dates not populated and NMIs dropping in and out.	Inventory Table requirements will be addressed when non-market unmetered load processes are developed as part of the Metering Procedure Changes (Package 2) consultation.
119.	Red Lumo	13.2.2	Update to section reference to Metrology Procedure: Part A	Noted.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
120.	Energy Queensland	13.2.4	Update to section references Update to formulas	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.
121.	Flow Power	13.2.4	Update to section references Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
122.	Meridian Powershop	13.2.4	Update to section references Update to formulas	Support	AEMO notes the respondent's support of the proposed change.
123.	Origin	13.2.4	Update to section references Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
124.	Red Lumo	13.2.4	Update to section references Update to formulas	Noted.	AEMO notes the respondent's support of the proposed change.
125.	Endeavour Energy	13.2.5	Update to formulas	Clause 13.2.5.b: The formula for the TI during which the off time occurs is incorrect. It should be: (Period load is switched on) = (Off time) – (Start time of TI)/5	Change made in the Final Procedure.
126.	Energy Queensland	13.2.5	Update to formulas	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
127.	Flow Power	13.2.5	Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
128.	Meridian Powershop	13.2.5	Update to formulas	Support	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
129.	Origin	13.2.5	Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
130.	Red Lumo	13.2.5	Update to formulas	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
131.	Energy Queensland	13.2.6	Update to section references Update to formulas	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.
132.	Flow Power	13.2.6	Update to section references Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
133.	Meridian Powershop	13.2.6	Update to section references Update to formulas	Support	AEMO notes the respondent's support of the proposed change.
134.	Origin	13.2.6	Update to section references Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
135.	Red Lumo	13.2.6	Update to section references Update to formulas	Noted.	AEMO notes the respondent's support of the proposed change.
136.	Energy Queensland	13.3	Update to section references	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
137.	Flow Power	13.3	Update to section references	Noted	AEMO notes the respondent's support of the proposed change.
138.	Meridian Powershop	13.3	Update to section references	Support	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
139.	Origin	13.3	Update to section references	Noted	AEMO notes the respondent's support of the proposed change.
140.	Red Lumo	13.3	Update to section references	Noted.	AEMO notes the respondent's support of the proposed change.
141.	AGL	13.3.2	Inventory Table	AGL believes that the requirements for the unmetered inventory table are inadequate and should more closely reflect that of a meter installation database. Recent experience in trying to reconcile unmetered loads between retailer, network and customer showed discrepancies of asset numbers, customer identification, location of assets and types of assets. With the move to global settlements, a clear and precise inventory will be required to manage the assessment of unmetered loads. AGL strongly recommends that this section be enhanced to ensure new unmetered loads are captured and that existing loads can be updated with more information. AGL understands that there is a proposal to develop unmetered processes in preparation for Global Settlements and that the inventory table matter be included as part of this process.	Refer to response to Item 118.
142.	Energy Queensland	13.3.2	Update to section reference to Metrology Procedure: Part A	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
143.	Flow Power	13.3.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
144.	Meridian Powershop	13.3.2	Update to section reference to Metrology Procedure: Part A	Support	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
145.	Origin	13.3.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
146.	Red Lumo	13.3.2	Update to section reference to Metrology Procedure: Part A	Noted.	AEMO notes the respondent's support of the proposed change.
147.	AGL	13.4	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
148.	Energy Queensland	13.4	Update to section reference	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
149.	Flow Power	13.4	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
150.	Meridian Powershop	13.4	Update to section reference	Support	AEMO notes the respondent's support of the proposed change.
151.	Origin	13.4	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
152.	Red Lumo	13.4	Update to section reference	Noted.	AEMO notes the respondent's support of the proposed change.
153.	AGL	13.5.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
154.	Energy Queensland	13.5.2	Update to section reference to	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Metrology Procedure: Part A		
155.	Flow Power	13.5.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
156.	Meridian Powershop	13.5.2	Update to section reference to Metrology Procedure: Part A	Support	AEMO notes the respondent's support of the proposed change.
157.	Red Lumo	13.5.2	Update to section reference to Metrology Procedure: Part A	Noted.	AEMO notes the respondent's support of the proposed change.
158.	AGL	13.5.4	Update to section reference Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
159.	Origin	13.5.2	Update to section reference to Metrology Procedure: Part A	Noted	AEMO notes the respondent's support of the proposed change.
160.	Energy Queensland	13.5.4	Update to section reference Update to formulas	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.
161.	Flow Power	13.5.4	Update to section reference Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
162.	Meridian Powershop	13.5.4	Update to section reference Update to formulas	Support	AEMO notes the respondent's support of the proposed change.
163.	Origin	13.5.4	Update to section reference Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
164.	Red Lumo	13.5.4	Update to section reference Update to formulas	Noted.	AEMO notes the respondent's support of the proposed change.
165.	AGL	13.5.5	Update to formulas	Agree	AEMO notes the respondent's support of the proposed change.
166.	Energy Queensland	13.5.5	Update to formulas	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
167.	Flow Power	13.5.5	Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
168.	Meridian Powershop	13.5.5	Update to formulas	Support	AEMO notes the respondent's support of the proposed change.
169.	Origin	13.5.5	Update to formulas	Noted	AEMO notes the respondent's support of the proposed change.
170.	Red Lumo	13.5.5	Update to formulas	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
171.	AGL	14.1	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
172.	Energy Queensland	14.1	Update to section reference	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
173.	Flow Power	14.1	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
174.	Meridian Powershop	14.1	Update to section reference	Support	AEMO notes the respondent's support of the proposed change.
175.	Origin	14.1	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
176.	Red Lumo	14.1	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
177.	AGL	14.3	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
178.	Energy Queensland	14.3	Update to section reference	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
179.	Flow Power	14.3	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
180.	Meridian Powershop	14.3	Update to section reference	Support	AEMO notes the respondent's support of the proposed change.
181.	Origin	14.3	Update to section reference	Noted	AEMO notes the respondent's support of the proposed change.
182.	Red Lumo	14.3	Update to section reference	Noted.	AEMO notes the respondent's support of the proposed change.

Table 3 – Meter Data File Format Specification NEM12 & NEM13

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
1.	Momentum	1.1(a)	Purpose and Scope of the MDFF Specification document	Suggest revision of the statement to reflect the inclusion of AEMO as the current statement is incorrect where MDP do not provide Meter Data files to other MDPs: *This document specifies the Meter Data File Format(MDFF) to be used by MDPs for the provision of metering data to AEMO, ENMs, and Registered Participants.*	MDPs send metering data to each other to support meter churn processes – refer to Metrology Procedure: Part A 3.12.2.
2.	AGL	3.3.3	Included references to five-minute interval metering data	Noted	AEMO notes the respondent's support of the proposed change.
3.	Energy Queensland	3.3.3	Included references to five-minute interval metering data	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
4.	Flow Power	3.3.3	Included references to five-minute interval metering data	Noted	AEMO notes the respondent's support of the proposed change.
5.	Meridian Powershop	3.3.3	Included references to five-minute interval metering data	Support	AEMO notes the respondent's support of the proposed change.
6.	Momentum	3.3.3	Included references to five-minute interval metering data	Agree	AEMO notes the respondent's support of the proposed change.
7.	Origin	3.3.3	Included references to five-minute interval metering data	Noted	AEMO notes the respondent's support of the proposed change.
8.	Red Lumo	3.3.3	Included references to five-minute interval metering data	Noted.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
9.	AGL	4.3	NMI data details record (200) - Added '5' to the Interval Length field Definition	Noted Now that the load recording is reduced to 5 minutes, the file format will allow for recording duration up to 1-minute intervals Given the changes being introduced for battery response and demand response, a shorter recording duration may be needed. If a recording duration of less than 1 minute is required (e.g. 30 sec) the field would need to be modified (e.g. Numeric (2.2)). Is this an appropriate time to consider this requirement while all parties are managing file standard updates, especially as other fields – e.g. kWh are being modified to include more decimal points.	AEMO considers that it would be more appropriate to make Procedure changes to facilitate other interval values when participants are ready to develop definitions of sub-multiples trading intervals.
10.	Energy Queensland	4.3	NMI data details record (200) - Added '5' to the Interval Length field Definition	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
11.	Flow Power	4.3	NMI data details record (200) - Added '5' to the Interval Length field Definition	Noted	AEMO notes the respondent's support of the proposed change.
12.	Meridian Powershop	4.3	NMI data details record (200) - Added '5' to the Interval Length field Definition	Support	AEMO notes the respondent's support of the proposed change.
13.	Momentum	4.3	NMI data details record (200) - Added '5' to the Interval Length field Definition	Will the N1 and N2 *MDMDataStreamIdentifier* field values still be mandatory in the NEM12 200 record once the MDMF file format is no longer in use? Similar questions were raised by CitiPower, Powercor and United Energy in Round 1, but not addressed in the AEMO responses – #19. United Energy "Refer to response to Item 16". Response to #16 Citipower and Powercor: "Noted".	N values in the MDMDataStream field will still be mandatory while the datastream table does not identify the register level data streams that are to be used in settlements.
14.	Origin	4.3	NMI data details record (200) - Added '5' to the	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Interval Length field Definition		
15.	Red Lumo	4.3	NMI data details record (200) - Added '5' to the Interval Length field Definition	Noted.	AEMO notes the respondent's support of the proposed change.
16.	PlusES	Appendix B	Change of Character Lengths	Note: This amended section was missed in the Participant Response Template OK - Noting this is applicable to ALL Interval Lengths.	AEMO notes the respondent's support of the proposed change.
17.	AGL	Appendix H	Section added to include five-minute meter data file example	Noted Although AGL believes that this section should be either H2 or H1A, rather than H9, as it more closely aligns with H1, which is a straightforward interval meter file (at 5 minutes), not a composite or adjusted file. Also, as the data value has been extended to more decimal places, it would be good for the example to show how different decimal values are represented in the MDFF.	AEMO notes this comment.
18.	Energy Queensland	Appendix H	Section added to include five-minute meter data file example	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
19.	Flow Power	Appendix H	Section added to include five-minute meter data file example	Noted	AEMO notes the respondent's support of the proposed change.
20.	Meridian Powershop	Appendix H	Section added to include five-minute meter data file example	Suggest sample data H9 be more reflective of likely data i.e. samples vary between intervals as per sample H6.	The interval energy values in Appendix H examples are for illustrative purposes only, the actual values are unimportant. The purpose of the examples is to demonstrate how all interval energy values are to be presented in the 300 record.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
21.	Momentum	Appendix H	Section added to include five-minute meter data file example	Suggestion is to extend reads to 4 decimal places in all examples as per H.1 More specifically the data displayed in H.9 300 as is relevant to a 5-minute intervals	The interval energy values in Appendix H examples are for illustrative purposes only. AEMO believes that the H1 example is sufficient to illustrate how interval values in the 300 record are presented when four decimal place precision is used.
22.	Origin	Appendix H	Section added to include five-minute meter data file example	Can interval meter data file examples be amended to show 4 decimal places?	The interval energy values in Appendix H examples are for illustrative purposes only. AEMO believes that the H1 example is sufficient to illustrate how interval values in the 300 record are presented when four decimal place precision is used.
23.	Red Lumo	Appendix H	Section added to include five-minute meter data file example	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.

Table 4 – Retail Electricity Market Procedures – Glossary and Framework

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
1.	Momentum	1.3	Related AEMO Documents	Please insert the hyperlink for the approved version of the Metering Data Provision Procedures	Hyperlink added to the Final Procedure.
2.	Momentum	2.3.2	Metrology Procedure: Part B	Please revise the current statements as the Unmetered Load Guideline has been incorporated as Section 13 within Metrology Procedure: Part B and it is Section 13 - Unmetered Loads – Determination of Metering Data which is not subject to consultation under the NER'	Section 13 of Metrology Procedure: Part B describes how metering data for unmetered loads is determined, whereas the Unmetered Load Guideline assists unmetered load proponents to determine the unmetered device load that would be used in calculation of metering data. The Glossary and Framework document is correct – the Unmetered Load Guideline is a separate document that is not included in the Metrology Procedure: Part B.
3.	AGL	2.6.3	Update to TI	Noted However, this is a not a technical section, but rather a summary of another document and the amendment doesn't read easily in this instance. Suggest 'Conversion of meter reading data to interval data for settlements.'	"Meter Readings" and "TI" are terms defined in the Glossary and Framework document, therefore it is appropriate to use those terms in 2.6.3.
4.	Energy Queensland	2.6.3	Update to TI	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
5.	Flow Power	2.6.3	Update to TI	Noted	AEMO notes the respondent's support of the proposed change.
6.	Meridian Powershop	2.6.3	Update to TI	Support	AEMO notes the respondent's support of the proposed change.
7.	Momentum	2.6.3	Update to TI	Agree	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
8.	Origin	2.6.3	Update to TI	Noted	AEMO notes the respondent's support of the proposed change.
9.	Red Lumo	2.6.3	Update to TI	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
10.	AGL	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Noted	AEMO notes the respondent's support of the proposed change.
11.	CitiPower Powercor	4.4.4	Removal of NEM12 & NEM13 File Clarifications	CitiPower Powercor seeks clarification why the NEM12 & NEM13 references have been removed from the Glossary? Will these be added to the MDFF Specification procedure?	Minutes from the June 2014 MSWG (Metering Services Working Group) meeting indicated that MDFF Clarifications were incorporated into changes made to v1.01 and 1.02 of the MDFF Specification an v7 of the Meter Churn Procedure. The MDFF Clarifications document will be removed from AEMO's website.
12.	Energy Queensland	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Energy Queensland supports the proposed change. Energy Queensland notes that AEMO will consider a change of name for the document as part of the consultation for Package 2. However, in our previous submission, Energy Queensland merely suggested that the subtitle of paragraph (a) be changed from "*MDM File Format and Load Process*" to "*MDFF File Format and Load Process*" or "*MD File Format and Load Process*".	The name of the MDM File Format and Load Process document will be reviewed during the Metering Procedure Changes (Package 2) consultation.
13.	Flow Power	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
14.	Meridian Powershop	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Support	AEMO notes the respondent's support of the proposed change.
15.	Momentum	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Agree	AEMO notes the respondent's support of the proposed change.
16.	Origin	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Noted	AEMO notes the respondent's support of the proposed change.
17.	Red Lumo	4.4.4	Removal of NEM12 & NEM13 File Clarifications	Noted.	AEMO notes the respondent's support of the proposed change.
18.	AGL	5	Updates to various Glossary items	Agree	AEMO notes comment.
19.	AusNet	5	Updates to various Glossary items	In the first stage of Consultation, we made the comment the definition of Maximum Demand is fit for the purpose of allowing the customer to compare their Network Use of System charges (if the retailer passes these through to the customer). Despite the consultation response "revised definition now in Glossary and Framework document", the Maximum Demand definition is still "not for purpose" and does not allow Maximum	Suggested changes to be made to the Final Procedure.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				Demand to be expressed in 30 minute periods if their billing charges utilize a 30 minute average maximum demand calculation method. Generally, the over-heating impacts on network assets are smoothed over by the thermal mass of equipment; hence 5 minute maximum demand billing approaches are not Cost Reflect. Our AER approved revenue is based on maximum demand calculated over a 30 minute. Hence, we strongly recommend changes that establish, where the customer is being billed on 30 minute demand, only 30 minute demand data needs to be provided. We submit the following suggested alteration. For 5 minute intervals, the highest 5 minute interval usage that occurs during each "To Date" period is identified and multiplied by 12 to obtain the maximum demand expressed in kW, unless Demand charges are calculated over a different period. When Demand charges are calculated over a demand charging period, the Maximum Demand is the highest usage of consecutive 5 minute intervals over this defined period multiplied by the number of 5 minute intervals in the demand charging period multiplied by 2.	
20.	Energy Queensland	5	Updates to various Glossary items	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
21.	Flow Power	5	Updates to various Glossary items	Noted	AEMO notes the respondent's support of the proposed change.
22.	Meridian Powershop	5	Updates to various	Support subject to a question relating to the definition of Generation.	Term to be returned to Metering Data Provision Procedure to avoid confusion.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			Glossary items	As this definition will now apply to all Retail Market procedures (including WIGS) it would appear to define generation for the purposes of the WIGs procedure as being limited to ener*gy generated by the retail customers* which is entirely inconsistent with the purpose and scope of the WIGs procedures. This is likely to create confusion and make the procedures unintelligible for a range of participants (not just generators but also Small Generation Aggregators).	
23.	Momentum	5	Updates to various Glossary items	Agree	AEMO notes the respondent's support of the proposed change.
24.	Origin	5	Updates to various Glossary items	Noted	AEMO notes the respondent's support of the proposed change.
25.	PlusES	5	Updates to various Glossary items	Comment. Some entries have been removed from the glossary and returned to MDPP as they are only used in that Procedure (e.g. 'Accumulated Metering Data – Summary Data', but, an entry has been added from the MDPP (e.g. 'Average Daily Load Profile'). We should adopt a consistent approach with respect to these Glossary definitions.	Terms that only appear in MDPP will be returned to that Procedure to avoid confusion.
26.	Red Lumo	5	Updates to various Glossary items	Noted.	AEMO notes the respondent's support of the proposed change.

Table 5 – Metering Data Provision Procedures

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
1.	AGL	1.1	Changes to NER clause references and minor administrative updates	Agree	AEMO notes the respondent's support of the proposed change.
2.	Energy Queensland	1.1	Changes to NER clause references and minor administrative updates	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
3.	Flow Power	1.1	Changes to NER clause references and minor administrative updates	Noted	AEMO notes the respondent's support of the proposed change.
4.	Meridian Powershop	1.1	Changes to NER clause references and minor administrative updates	We query whether the reference in this clause should be to Retailers, DNSPs, Exempt EN Service Providers and ENMs given that the clauses referenced specifically deal with these four parties.	NER 7.14 refers to Retailers and Distribution Network Service Providers (DNSP) only. ENMs are not DNSPs as they are not registered as Network Service Providers and Exempt EN Service Providers are not parties bound by the NER or Procedures authorised under the NER. Exempt EN Service Providers are bound by the provisions of the AER's Network Service Provision Exemption Guideline.
5.	Momentum	1.1	Changes to NER clause references and minor administrative updates	Agree	AEMO notes the respondent's support of the proposed change.
6.	Origin	1.1	Changes to NER clause references and minor administrative updates	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
7.	Red Lumo	1.1	Changes to NER clause references and minor administrative updates	Noted.	AEMO notes the respondent's support of the proposed change.
8.	AGL	1.2.1	Various updates	Agree	AEMO notes the respondent's support of the proposed change.
9.	Energy Queensland	1.2.1	Various updates	Energy Queensland supports the proposed changes.	AEMO notes the respondent's support of the proposed change.
10	Flow Power	1.2.1	Various updates	Noted	AEMO notes the respondent's support of the proposed change.
11	Meridian Powershop	1.2.1	Various updates	Support	AEMO notes the respondent's support of the proposed change.
12	Momentum	1.2.1	Various updates	Agree	AEMO notes the respondent's support of the proposed change.
13	Origin	1.2.1	Various updates	Noted	AEMO notes the respondent's support of the proposed change.
14	Red Lumo	1.2.1	Various updates	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
15	AGL	1.2.2	Interpretation section removed from the document	Noted	AEMO notes the respondent's support of the proposed change.
16	Energy Queensland	1.2.2	Interpretation section removed from the document	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
17	Flow Power	1.2.2	Interpretation section removed from the document	Noted	AEMO notes the respondent's support of the proposed change.
18	Meridian Powershop	1.2.2	Interpretation section removed from the document	Support	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
19	Momentum	1.2.2	Interpretation section removed from the document	Agree	AEMO notes the respondent's support of the proposed change.
20	Origin	1.2.2	Interpretation section removed from the document	Noted	AEMO notes the respondent's support of the proposed change.
21	Red Lumo	1.2.2	Interpretation section removed from the document	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
22	AGL	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Noted	AEMO notes the respondent's support of the proposed change.
23	Energy Queensland	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
24	Flow Power	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Noted	AEMO notes the respondent's support of the proposed change.
25	Meridian Powershop	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Support	AEMO notes the respondent's support of the proposed change.
26	Momentum	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Agree to the inclusion May I request that AEMO insert the hyperlinks to the related documents before publication please?	Hyperlinks to be inserted in the Final Procedure.
27	Origin	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Noted	AEMO notes the respondent's support of the proposed change.
28	Red Lumo	1.3	Retail Electricity Market Procedures – Glossary and Framework added as a related document	Noted.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
29	AGL	2.3	Update to section (d)	The change is noted, but AGL is not sure that it has made the obligation clearer. For 2.3(d)(ii) we're not sure that the sentence is grammatically correct. The two clauses use the word 'provided' and 'supplied' in relation to the validation information, due to the edits. Suggest that for consistency the word 'provided' or 'supplied' is used consistently. Possibly for clarity the clauses could begin: (i) For those customers where all validation information has been provided …comply with clauses. For those customers where the validation information has not been provided comply with clause	To be clarified by using "provided" related to the provision of metering data and "supplied" related to the supply of verification information.
30	Energy Queensland	2.3	Update to section (d)	Energy Queensland supports the proposed change.	AEMO notes the respondent's support of the proposed change.
31	Flow Power	2.3	Update to section (d)	Noted	AEMO notes the respondent's support of the proposed change.
32	Meridian Powershop	2.3	Update to section (d)	No Response	AEMO notes the respondent's support of the proposed change.
33	Momentum	2.3	Update to section (d)	There is an error in the update of clause 2.3(d)(i), it should read as detailed below: *Within the timeframes specified in clauses 2.3(b) and 2.3(c), provide metering data for those retail customers for which all verification has <u>not</u> been supplied.*	2.3(d)(i) is related to instances where all verification information is provided for all retail customers and refers to the timeframes in 2.3(b) and (c) for metering data provision. Clause 2.3(d)(i) is therefore correct. Clause 2.3(d)(ii) is related to instances where all verification information is not supplied and refers to timeframes in 2.1(e) for metering data provision.
34	Origin	2.3	Update to section (d)	Noted	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
35	Red Lumo	2.3	Update to section (d)	Red and Lumo support the amendments as proposed.	AEMO notes the respondent's support of the proposed change.
36	AGL	3.4	Removal of 'single'	AGL notes the change to 3.4(a) but suggests that the obligation is for the retailer or DNSP to provide a meter data file or meter data files for the period requested. (a) 3.4(b) is more of a supporting note.	Clause 3.4(a) changed for clarity in the Final Procedure.
37	Energy Queensland	3.4	Removal of 'single'	Energy Queensland supports the proposed change	AEMO notes the respondent's support of the proposed change.
38	Flow Power	3.4	Removal of 'single'	Noted	AEMO notes the respondent's support of the proposed change.
39	Meridian Powershop	3.4	Removal of 'single'	Support	AEMO notes the respondent's support of the proposed change.
40	Momentum	3.4	Removal of 'single'	Agree	AEMO notes the respondent's support of the proposed change.
41	Origin	3.4	Removal of 'single'	Noted	AEMO notes the respondent's support of the proposed change.
42	Red Lumo	3.4	Removal of 'single'	Red and Lumo note the feedback provided by Energy Queensland in response to the first stage consultation. We have concerns on the impact this may have to retailers if 'single' is removed. We suggest that instead of removing the obligation to provide a single metering data file that we instead include a provision that it allows for multiple files, if restricted due to file size. *(a) Subject to clause 3.4(b), retailers and DNSPs must provide a single metering data file in relation to a retail customer's metering installation for the requested period.*	Clause 3.4(b) covers the provision of separate metering data files for different metering configurations that occurred during the requested period. This clause will remain. Clause 3.4(a) changed for clarity.

<table>
<tr><th>#</th><th>RESPONDENT</th><th>CLAUSE</th><th>HEADING/ DEFINITION</th><th>PARTICIPANT COMMENT</th><th>AEMO RESPONSE</th></tr>
<tr><td></td><td></td><td></td><td></td><td>(b) A DNSP may provide multiple metering data files to a retailer, where required due to file size limitations.</td><td></td></tr>
<tr><td>43</td><td>AGL</td><td>4.1</td><td>Change to character length</td><td>Noted
Although AGL suggests that the specific information should directly refer to the MDFF specification and the table shown as an example, e.g.:
Meter Data File Format Specification NEM12 & NEM13 - Appendix B. Format & Unit of Measure Field Details
For example
<table>
<tr><th>Permitted Value</th><th>Description</th><th>Format</th><th>Character Length</th></tr>
<tr><td>kWh</td><td>Kilowatt hour (energy)</td><td>Numeric</td><td>15.4</td></tr>
<tr><td>kW</td><td>Kilowatt (demand/capacity)</td><td>Numeric</td><td>15.4</td></tr>
</table>
This is to ensure that the specification always references the MDFF and links to the NEM 12/13 Files.</td><td>MDPP already states that the MDFF Specification is the source of reference for Units of Measure and formats.</td></tr>
<tr><td>44</td><td>Energy Queensland</td><td>4.1</td><td>Change to character length</td><td>Energy Queensland supports the proposed change.</td><td>AEMO notes the respondent’s support of the proposed change.</td></tr>
<tr><td>45</td><td>Flow Power</td><td>4.1</td><td>Change to character length</td><td>Noted</td><td>AEMO notes the respondent’s support of the proposed change.</td></tr>
<tr><td>46</td><td>Meridian Powershop</td><td>4.1</td><td>Change to character length</td><td>Support</td><td>AEMO notes the respondent’s support of the proposed change.</td></tr>
</table>

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
47	Momentum	4.1	Change to character length	Agree	AEMO notes the respondent's support of the proposed change.
48	Origin	4.1	Change to character length	Noted	AEMO notes the respondent's support of the proposed change.
49	Red Lumo	4.1	Change to character length	Noted.	AEMO notes the respondent's support of the proposed change.
50	Red Lumo	General		The proposed changes seek to allow AEMO to be a recipient of meter data files. Red and Lumo seek clarification on whether these procedures and the obligations imposed within them, will extend to include AEMO? If this change is progressed to allow AEMO to receive all energy and non-energy metering data, AEMO must update the procedures specifically address the following: ● How would additional data be stored? ● Include provision of AEMO's responsibility to ensure obligations under Privacy Act 1988 (Commonwealth) are met ● What confidentiality requirements would be placed on it? ● Who would have access? Will AEMO's legislated indemnity apply to data that isn't covered under the Rules or Procedures?	AEMO does not propose that MDPP data is to be sent to AEMO.

Table 6 – Other Issues

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
1.	AGL		Profiling 15 and 30-minute meter reads	See comments above relating to Embedded Network Metering. AGL has undertaken some analysis of 5-minute data compared to 30-minute data and has determined that there are measurable variations	AEMO would welcome the opportunity to work with AGL to analyse this data.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			to 5-minute trading intervals	between the actual 5-minute data and the equivalent 30-minute data profiled back 5-minute data.	
2.	AusNet		Profiling 15 and 30-minute meter reads to 5-minute trading intervals	AusNet Services agree with the initial application of the proposed approach to profiling 15- and 30-minute meter reads to 5-minute trading intervals from July 2012. However, by Dec 2022 we expect there will be statically significant proportion of Type 4 and Type 5 AMI meters newly installed or replaced since Dec 2018. In our network, we are expecting about 13% of our AMI meters would be providing 5-minute data. Given this is the case, a new profiling approach to 5-minute trading intervals from 30-minute meter data would be justified. Rather than just subtracting all five-minute metering data to determine the shape of the 30-minute meter data, this sample shape from the 5-minute meters could also be used to shape the 30 minute metering data and then allocating any residual distortions to the accumulation load profile. In doing this, AEMO could have separate 30-minute profiles for solar, non-solar and I&C customers.	AEMO intends to review the profiling methodologies when sufficient numbers of metering installations measuring specific types of energy flows exist in the market.
3.	Energy Queensland		Profiling 15 and 30-minute meter reads to 5-minute trading intervals	Energy Queensland supports the approach proposed by AEMO.	AEMO notes the respondent's support of the proposed change.
4.	Flow Power		Profiling 15 and 30-minute meter reads to 5-minute trading intervals	No comments	AEMO notes the respondent's support of the proposed change.
5.	Meridian Powershop		Profiling 15 and 30-minute meter reads	As discussed above we believe that profiling should be easy to achieve and should be preferred over straight-line interpolation.	Straight-line interpolation is only intended to be used for controlled load profiles, as these loads do not

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
			to 5-minute trading intervals		modulate at connection point level, and for the no 5-minute historical metering data substitution methods.
6.	Origin		Profiling 15 and 30-minute meter reads to 5-minute trading intervals	N/A	AEMO notes this comment.
7.	PlusES		Profiling 15 and 30-minute meter reads to 5-minute trading intervals	No Comment	AEMO notes this comment.
8.	Red Lumo		Profiling 15 and 30-minute meter reads to 5-minute trading intervals	As previously stated, Red and Lumo note the efforts AEMO has undertaken in determining a profiling solution for 5-minute settlement. Further to our comments provided previously we question if this will have any impacts to meter data delivery timeframes to a retailer, specifically; 1. Will the MDP's still deliver the meter data within the same time periods as they currently have to deliver, even with this additional step of AEMO processing the data to convert to 5-minute intervals? Has AEMO conducted any analysis on whether this will impact the time retailers currently receive these files (should retailer expect a delay)?	AEMO does not intend to change the metering data delivery timeframes for MDPs.
9.	AGL		Meter Data Delivery to AEMO	AGL has no further comment at this time.	AEMO notes the respondent's support of the proposed change.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
10.	Energy Queensland		Meter Data Delivery to AEMO	Energy Queensland supports the proposed changes to the delivery of meter data, whereby AEMO will continue to support and accept MDMF files for BASIC meter reads. Energy Queensland also supports the gradual transition of Net data stream records to register level data streams but would like to see a more structured time-line applied to this, and an indication of how the MPBs and MDPs would coordinate updates to the CATS NMI Data Stream table so the MDM Contributory Suffix on the Meter Register is kept in-line with Data Stream changes.	AEMO notes the respondent's support of the proposed change. Timelines related for coordination of Datastream Table and Meter Register Table updates will be addressed in the Metering Procedure Changes (Package 2) consultation and the readiness activities.
11.	Flow Power		Meter Data Delivery to AEMO	No comments	AEMO notes the respondent's support of the proposed change.
12.	Meridian Powershop		Meter Data Delivery to AEMO	We are supportive of AEMO being able to receive additional metering (register level and non-energy) data provided that it does not impose significant additional obligations on Participants (e.g. should be optional) and it does not result in significant changes to AEMO's core systems. Consequently we are comfortable with the option of provision of non-energy data and the provision of register level data if AEMO continues to provide participants with NET data (whether provided directly from the MDP or calculated by AEMO from register level data).	AEMO notes the respondent's support of the proposed change.
13.	Origin		Meter Data Delivery to AEMO	N/A	AEMO notes this comment.
14.	PlusES		Meter Data Delivery to AEMO	PLUS ES supports the delivery of register level metering data to AEMO using the NEM12 file format. However:- 1. PLUS ES disagrees with the proposed need for the MDP to continue to have to manage datastreams for meter data	Please refer to section 4.2.6 for AEMO's position regarding MDP and MP coordination requirements to ensure alignment of MSATS and MDFF data and the

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				delivered at a register level. PLUS ES takes this position for the following reasons: - a. NMI Suffixes are currently maintained in MSATS by the MPB within the NMI Meter Register table. The population of this information is mandatory. b. Obligations currently exist on the MPB and MDP to manage the accuracy and consistency of register and suffix information within the NMI Meter Register table. Refer MSATS Procedures clauses 2.4 (k), 2.4 (q), 2.5 (a) c. Obligations currently exist on the MDP to align information contained within the MDFF with MSATS (i.e. Register IDs). This obligation only exists for type 4, 4A and 5 metering installations, but could easily be expanded to all metering types. d. Retailers currently validate metering data supplied in the MDFF against the NMI Meter Register table. This is common practice among most retailers. e. The duplication of suffix and register information in the Datastream table is an unnecessary overhead and will likely lead to confusion and discrepancies. Quite simply, such duplication is bad practice. f. To support the proposed transitional approach, AEMO will need to validate MDFF data against the NMI Meter Register table during any period for which the datastreams remain 'Net'. This process could continue: Validate MDM against Datastream table, validate MDFF against NMI Meter Register table. PLUS ES disagrees with placing an obligation on MDPs to provide metering data associated with reactive energy unless the supply of such metering data is required to support the settlement process. Metering	provisioning of register level metering data, including reactive energy. The implementation of AEMO's positions regarding changes to the delivery of metering data to AEMO will be consulted on in Metering Procedure Changes - Package 2 and Package 3.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				data for reactive energy is collected for all WIGS and LARGE customers, and a relatively insignificant number of SMALL customers. In most cases, both import and export reactive energy flows are measured to support the network tariff. In the majority of instances, the energy measured against the import channel (K1) is zero. The inclusion of this metering data, where it is not required to support the settlement process places an unnecessary increase on the volumes of data being sent to MSATS.	
15.	Red Lumo		Meter Data Delivery to AEMO AEMO transitioning to MDFF	Red and Lumo Energy AEMO's comment to our provided feedback and questions in our first stage consultation, however, as AEMO did not respond to our questions, we again request clarification on: 1. What validation processes and issues has AEMO considered? 2. How will the rejection process work? Who is notified? Will the notification processes also be amended? If AEMO rejects a file is the FRMP notified?	Metering data validation and rejection processes will be addressed in the Metering Procedure Changes (Package 2) consultation.
16.	Red Lumo		Meter Data Delivery to AEMO <u>AEMO supporting the reception of register level meter data</u>	Red and Lumo reaffirm that we do not support the reception of register level meter data and firmly believe that this must not be considered for change at this time. Aside from the fact that this will impose significant costs to participants, we consider that this outside of the scope of 5 Minute Settlement. AEMO has made this clear in their responses to both us and other participants in this consultation process. AEMO's comment that "Active and Reactive to support AEMO's obligation to monitor and report on UFE". It is unclear how AEMO currently meet their UFE obligations without active and reactive data. Further, we understand that may assist AEMO under their requirements for the Global Settlement rule change. However, this is not up for consultation. As a result, we firmly recommend that this is	Please refer to section 4.2.6 for AEMO's position regarding the provisioning of register level metering data, including reactive energy. The implementation of AEMO's positions regarding changes to the delivery of metering data to AEMO will be consulted on in Metering Procedure Changes - Package 2 and Package 3.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				excluded and managed in the procedure amendments to Global Settlements. Further, AEMO's comments in the draft determination that states the need for this change is to also support emerging initiatives such as Distributed Energy Resources and Consumer Data Rights. It is inappropriate to implement a change based on potential future initiatives that are unclear, have not yet been finalised and outside of the scope of 5 Minute Settlement.	
17.	Red Lumo		Meter Data Delivery to AEMO MDPs sending the same files to both market participants and AEMO, energy and non-energy	Red and Lumo note AEMO's feedback to our comments provided in relation to delivery of energy and non-energy data however, as stated in above response we understand AEMO has UFE obligations as part of other rule changes and not 5 Minute Settlement. As AEMO provided a non-descript response to our feedback. We re-provide the following questions for AEMO in relation to this change which were not clarified in our previous feedback; 1. What information pertaining to energy or non-energy is being proposed? And for what purpose would AEMO or other market participants require non-energy information? 2. Participants currently pay through contractual agreements for the provision of non-energy data (see PlusES feedback in Stage 1) will AEMO pay for this or will AEMO share all data with the retailer also? 3. How would additional data be stored? what confidentiality requirements would be placed on it? who would have access? Will AEMO's legislated indemnity apply to data that isn't covered under the Rules or Procedures? 4. How will this data be used differently to the current reporting obligation retailers have to AEMO such as Demand Side Participation and being proposed as part of the Distributed Energy Resources Guideline? Could AEMO not meet their UFE obligations from information currently being provided.	1. From 1 July 2021, the required meter reads to be sent to AEMO are: import and export active energy (kWhs - E and B registers) and import and export reactive energy (kVarhs - Q and K registers). 2. The specific issues associated with implementing our approach will be considered as part of Package 2. 3. The data would be stored in AEMO's MDM solution. Access and treatment of the data would be on the same basis as today. 4. Improved power factor will reduce technical losses in the network and consequently contribute to the reduction of UFE. The provision of reactive energy components will allow AEMO to correlate such UFE reductions with improved network utilisation when preparing the UFE reports that are mandated by the NER.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
				5. What additional functions does AEMO see itself performing with the data (energy and non-energy) it receives? Will these functions be completed on a user-pays basis or will the costs of conducting these functions be paid for by all customers? How will AEMO use the additional data if not to perform additional functions? AEMO noted in their draft determination that there was participant support to this initiative however, the multiple concerns and questions from Metering Providers and some retailers that were not addressed. AEMO must not make a new obligation on the provision of metering data without addressing the concerns raised by participants who will ultimately bare the cost of this optional, AEMO led implementation.	5. AEMO is proposing to receive this data to create efficiencies to its current core functions, including settlement query/dispute management, as well as fulfilling its NER obligations associated to UFE Trend reporting. As discussed in section 4.2.6, AEMO believes that the provision of register level active and reactive is necessary in supporting AEMO's obligation under the GS Rule. The implementation of AEMO's positions regarding changes to the delivery of metering data to AEMO will be consulted on in Metering Procedure Changes - Package 2 and Package 3.
18.	AGL		Multi-Meter Sites	Similar to the Embedded Network Question, can a multi-meter NMI have mixed data recording lengths – e.g. 30 min and 5 min ? Under the MSATS NMI Procedure, there is a requirement to submit data to MSATS as Net data, which tends to imply that the data for a mixed meter site either needs to be manipulated (i.e. profile, percentage etc. for 30 min data or 5 min data summed to 30 min) or recorded at a consistent level at all meters. AGL believes that there will be issues with retailer and network system starting from the basis of the data stream being received at the NMI level (e.g. basic or interval) through to data processing such as application of tariffs to load, application of products (e.g. Solar PV netting) etc. Again, like embedded networks, if mixed recording intervals are to be allowed, then AGL believes that there needs to be clarity on how meter data from these sites are managed for consistent application by all parties and to allow parties to manage further system changes.	The NER refers to "a metering installation" producing 5-minute metering data, therefore mixed metering at the one NMI is not contemplated under the NER.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
19.	CitiPower Powercor		Draft Report and Determination	Page 12 of the Draft Report and Determination under section *Meter Data Frequency* states 'MDPs must put in place processes to ensure meter data version alignment between AEMO and other market participants. CitiPower Powercor seeks clarification re what is meant by version alignment? Does it mean if an MDFF file is rejected by AEMO & not the retailer (or vice versa)?	The intention of this statement was to elicit feedback from MDPs as to how they can best support the alignment of metering data versioning between AEMO and other market participants.
20.	CitiPower Powercor		Draft Report and Determination	Page 12 of the Draft Report and Determination under section *Meter Data Granularity* states 'Net data stream records to be progressively replaced by Register level data stream records in the CATS NMI Data Stream (CNDS) table, with the aim of having a sunset period for this transition to occur' CitiPower Powercor seeks clarification re the above statement whether it is intended to imply both: • New interval meters (from 01/07/2021) will only have E1, B1, Q1, K1 or similar datastreams in the CNDS table, and Existing interval meters will have their N1, N2,… datastreams in this table replaced by E1, E2 etc. datastreams progressively replaced from 01/07/2021	The following procedure changes will be proposed in the Metering Procedure Changes (Package 2) procedures: • From 1 July 2021, all new datastream records are to be created at the register level. • Existing Net datastream records can remain active post 1 July 2021 until an update to the Datastream record is required e.g. meter replacement. Where an update is required, the Net datastream is to be inactivated and any new datastreams records are to be created at the register level.
21.	Meridian Powershop		Embedded Networks	Throughout these documents there is an assumption that all customers are connected to a DNSP and have a direct arrangement to a Retailer. In practice, many customers are now connected to embedded networks and therefore this assumption does not hold true. There needs to be a review of the documents to ensure that they properly reflect the operation of the market through embedded network connections.	AEMO intends to review the Embedded Network framework when more information related to the AEMC's Embedded Network proposed changes is available.

#	RESPONDENT	CLAUSE	HEADING/ DEFINITION	PARTICIPANT COMMENT	AEMO RESPONSE
22.	Momentum		NMI transitions from 15/30 minute to 5-minute intervals. (There does not appear to be explicit procedural specifications addressing these matters – necessary in order to specify system requirements)	Clarification if multi metered NMIs must have aligned interval length for all meters/data streams In what situations interval reads can be replaced with different interval length reads? • i.e.: will it be clear as to when an installation becomes a "five-minute meter installation" and therefore neither: ○ 15/30-minute data (of any quality) will be provided on or after such a date, and 5-minute data (of any quality) will be provide before such a date? The same interval length must be provided for all reads for all data streams for a given NMI for any given consumption date.	The NER refers to "a metering installation" producing 5-minute metering data, therefore mixed metering at the one NMI is not contemplated under the NER.
23.	Red Lumo		General	We firmly object to all changes that are beyond the scope of the 5 minute settlement rule. AEMO must justify any costs associated with an expanded scope of its system build or functionality that goes beyond the scope of the changes that 5-minute settlement have been mandated to apply. AEMO will bear additional costs, which ultimately will be passed onto consumers, resulting from this extra unrequired functionality and enhancements that AEMO states explicitly in its consultation paper that is "not required by the 5MS rule". Red and Lumo Energy request that AEMO note that all non-mandatory changes implemented as part of this project be included on the risk register as a potential impact to industry readiness.	AEMO's position regarding metering data requirements has changed as a result of the Final GS Rule. This has been reflected in this Final Determination. Package 2 will further consider how these changes will be implemented.