AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Five-minute settlement and global settlement

February 2020

FINAL Metering transition plan

Important notice

PURPOSE

In relation to five-minute settlement and global settlement implementation, the Metering transition plan:

- Outlines the expected responsibilities, activities, dependencies and timeframes for completion for elements of the metering transition
- Forms the framework for the metering component of participant progress and readiness reporting.

This publication has been prepared by AEMO using information available at 7 February 2020.

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VERSION CONTROL

Version	Release date	Changes
0.1	29/11/2019	Draft released to the 5MS/GS Readiness Working Group for comment
1.0	07/02/2020	Final document published

Contents

Tables

Figures

1. Introduction

This chapter explains the Australian Energy Market Operator's (AEMO) five-minute settlement (5MS) and global settlement (GS) implementation program in the National Electricity Market (NEM). It then details the purpose and context of the Metering transition plan.

1.1 AEMO's 5MS and GS implementation program

The Australian Energy Market Commission (AEMC) made the 5MS rule in November 2017 and AEMO's extensive 5MS implementation program began in early 2018. GS activities were incorporated into the program when the GS rule was made in December 2018 because aligning 5MS and GS implementation activities is intended to minimise costs for AEMO and market participants.

The program covers the procedural, IT system and market readiness arrangements needed to implement 5MS and GS using the following workstreams:

- Procedures – defines and implements the required changes to market procedures
- Systems – designs, develops, tests, and implements changes to AEMO's market systems
- Readiness – coordinates, assists and prepares AEMO and participants for the transition to 5MS and GS.

AEMO's 5MS and GS implementation program has entered the market readiness phase of the project. This plan relates to the transition and go-live phases of market readiness.

1.2 Metering transition plan

In this document, "metering transition" means the metering installation and reconfiguration, metering data delivery and standing data update activities needed for the NEM to transition to 5MS and GS.

1.2.1 Document purpose

The Metering transition plan supports each element of the 5MS and GS metering transition. It:

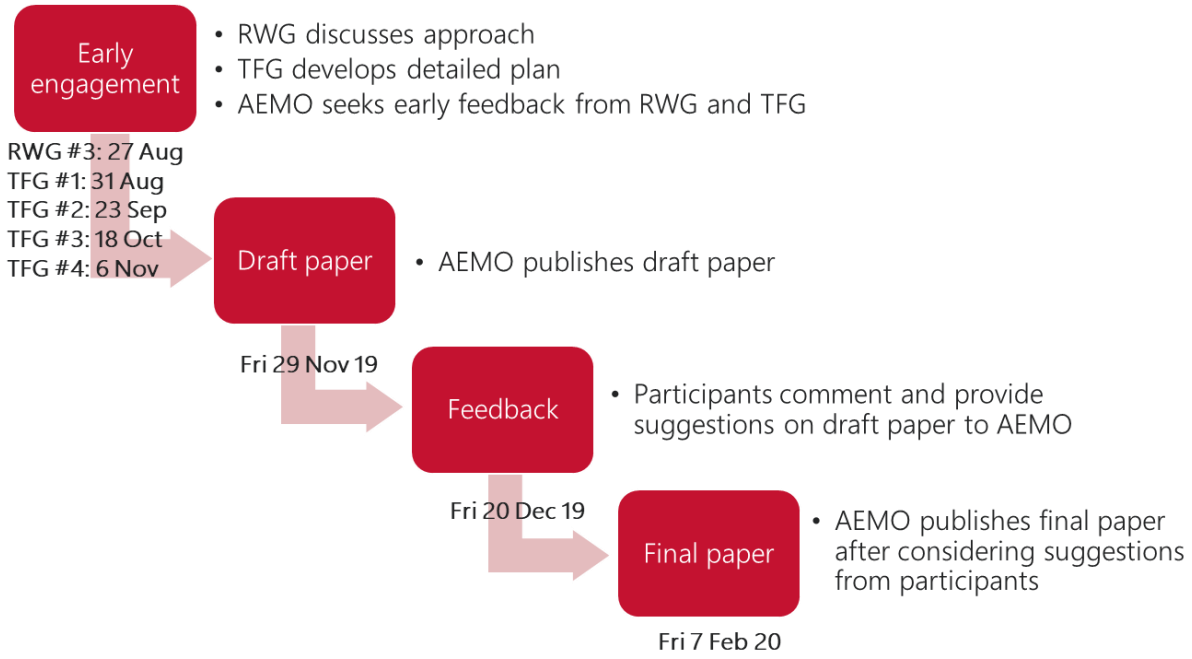
- Outlines the expected responsibilities, activities, dependencies and timeframes for completion for elements of the metering transition
- Forms the framework for the metering component of participant progress and readiness reporting.

1.2.2 Development approach

The Metering transition plan was developed in consultation with industry through the 5MS and GS Readiness Working Group (RWG) and its subsidiary Transition Focus Group (TFG).[1] Figure 1 illustrates AEMO's engagement approach and timeline for developing the plan.

[1] For further details on the RWG see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Readiness-Working-Group

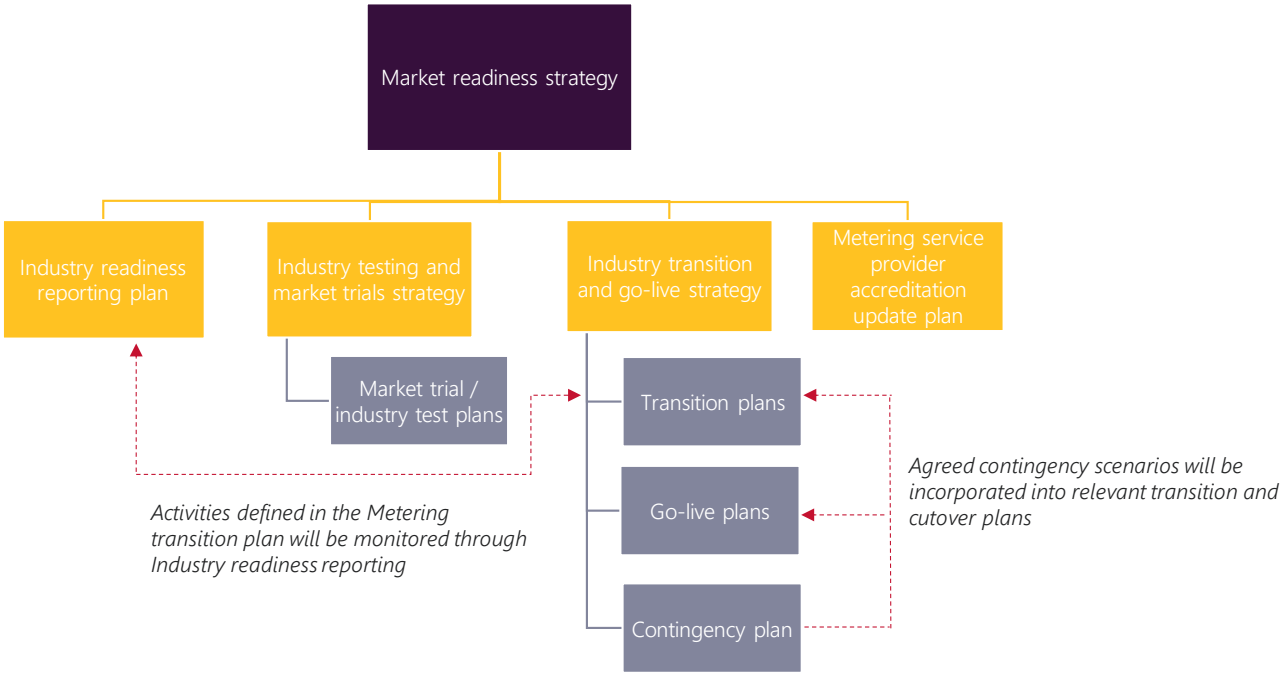
Figure 1 Engagement approach for developing the Metering transition plan



1.2.3 Related documents

The Metering transition plan is one of an integrated series of documents that support the 5MS and GS market readiness strategy,[2] as illustrated by Figure 2. More information on each document is provided in the 5MS and GS market readiness strategy.

Figure 2 Key readiness documents



[2] For more information and access to 5MS and GS market readiness documents see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Key-Readiness-Documents

Table 1 shows how the Metering transition plan interrelates with other key 5MS/GS readiness documents.

Table 1 Relationship between Metering transition plan and other 5MS/GS readiness documents

Related document	Description of relationship
Industry transition and go-live strategy	The strategy provides an overarching view and structure for the transition to 5MS/ GS across participants and market functions. The Metering transition plan provides the detailed support for the transition of the physical metering and meter data delivery aspects of the strategy.
Metering service provider accreditation update plan	The MSP Accreditation update plan sets out the timing and process for MSPs to apply for accreditation updates where necessary and as a result of 5MS and GS implementation activities. Accreditation updates are a prerequisite for MSPs to perform the various activities detailed in the Metering transition plan. Risks and contingency requirements arising from accreditation updates will be managed against the specific activities in the Metering transition plan.
Industry readiness reporting plan	The reporting plan details the readiness reporting framework and criteria that will enable regular assessments of AEMO's and participants' 5MS/GS readiness. Key activities in the Metering transition plan will be: • Incorporated as readiness criteria within the Industry readiness reporting plan • An input into measures of overall industry readiness.
Industry contingency plan	The contingency plan will contain scenarios and responses that will be activated if an identified risk occurs. Agreed metering related contingency scenarios and trigger points will be incorporated into the Metering transition plan.

2. 5MS and GS metering and metering data changes

This chapter sets out the main changes to metering, metering data delivery and standing data changes required to implement 5MS and GS.

2.1 Meter installation and reconfiguration

5MS relies on certain NEM meters recording and providing 5-minute data from 1 July 2021. The 5MS rule also introduced an obligation for new and replacement type 4 and type 4A meters to transition to 5-minute metering data provision.

Table 2 sets out the 5MS rule requirements for different meter types in the NEM. The requirements reflect the wording in the final rule and determination.

Table 2 Treatment of meters under 5MS

Metering type	5MS rule requirement	Date
Types 1, 2, 3 and 7	Must be capable of recording and providing, and configured to record and provide, five-minute trading interval energy data.	From 1 July 2021
Type 4 transmission and generation*	Must be capable of recording and providing, and configured to record and provide, five-minute trading interval energy data. *Type 4 metering installations 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	From 1 July 2021
Other Type 4, 4A and Vic AMI	All new or replacement metering installations (other than type 4A metering installations) installed from 1 December 2018 must be capable of recording and providing, and configured to record and provide, five-minute trading interval energy data. All new or replacement type 4A metering installations installed from 1 December 2019 must be capable of recording and providing, and configured to record and provide, five-minute trading interval energy data.	By 1 Dec 2022

2.1.1 Meter storage exemption

The 5MS rule enables AEMO to grant an exemption where a type 1, 2, 3 or type 4 (transmission or generation) meter is not quite capable of storing the full 35 days of metering data required by the National Electricity Rules (NER). AEMO has made an exemption procedure allowing exemptions for meters that have 30-34 days of storage, if AEMO is reasonably satisfied that the Metering Provider will be able to otherwise satisfy the requirements of Chapter 7 of the NER.[3]

2.2 Metering data delivery

In consultation with participants, AEMO made procedure changes relating to metering data delivery requirements to support 5MS and GS implementation.[4] These data delivery requirements need to be completed by the market commencement date in order to support 5MS and GS implementation from market commencement. These requirements are set out in Table 3.

Table 3 Metering data delivery changes to support 5MS and GS implementation

Topic	Requirement	Date
File Format	• MDFF NEM12 files to be in the required file format – For all interval metering data being delivered to AEMO • MDFF NEM13 files to be supported by AEMO • MDMF files for basic meter reads will continue to be supported and accepted	By 1 July 2021
Granularity	• NEM12 interval metering data to be: – Delivered at the register level (E, B, Q and K)[5] – NEM12 200 records must be accurate[6] – As per the meter's trading interval configuration i.e. 5, 15 or 30-minute intervals	By 1 July 2021
Energy	• Metering data which must be sent to AEMO: – Import and Export Active energy (kWh) (E and B) – Import and Export Reactive energy (kVarh) (Q and K), where applicable • All other forms of measurement (such as volts and amps) are not required to be delivered to AEMO but will be accepted if they are provided.	By 1 July 2021

[3] National Electricity Amendment (Five Minute Settlement) Rule 2017 No. 15, clause 7.8.2(a)

[4] For further information on metering procedure changes as a result of the 5MS and GS rules, see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Procedures-Workstream

[5] N register level data will still be available where the MDM DS ID has not yet been updated to E,B,Q, K

[6] For more information on NEM12 200 records please see: https://www.aemo.com.au/-/media/Files/Electricity/NEM/IT-Systems-and-Change/2019/MSATS-Release-Schedule-and-Technical-Specification---5MS---Meter-Data.pdf

2.3 MSATS standing data creation and maintenance

In consultation with participants, AEMO made procedure changes relating to standing data creation and maintenance requirements to support 5MS and GS implementation.[7] These are set out in table 4.

Table 4 MSATS datastream standing data changes to support 5MS and GS implementation

Metering Type	Requirement	Date
Types 1, 2, 3 and 7	• Net datastreams (N1) must be converted to Register level datastreams (E1, B1, etc.)	By 31 May 2021
Subset of Type 4*	• Net datastreams (N1) must be converted to Register level datastreams (E1, B1, etc.)	By 31 May 2021
Types 4, 4A and Vic AMI	• All new records relating to interval meters must be created at the register level e.g. E and B. • 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. • Datastreams associated with import and export reactive energy e.g. Q and K must be created in the CNDS table if they exist in the CRI table.[8]	By 31 May 2021
Basic Meters	• To facilitate delivery of 1st tier Basic metering data to AEMO by 1 July 2021 for UFE calculation purposes, all 1st tier Basic Meter datastreams must be activated.	By 31 Mar 2021

Further, to support the calculation of 'unaccounted for energy' (UFE),[9] the following activities must be completed:

- Non-contestable unmetered load profiles and algorithms to be developed and approved by 28 February 2021
- Non-contestable unmetered load and Cross Boundary NMIs and associated standing data to be created in MSATS by 31 May 2021
- Non-contestable unmetered load and Cross Boundary metering data to be delivered by 31 May 2021
- NMI Classification Code updates, for affected existing NMIs, to reflect the new code requirements (Table 5) by 31 May 2021

To support UFE settlement on 6 February 2022, AEMO will update LR and FRMP fields to GLOPOOL for existing NMIs as required.

[7] For further information see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Procedures-Workstream

[8] Datastreams must be established in a manner that ensures they are not included in market settlements.

[9] National Electricity Amendment (Global settlement and market reconciliation) Rule 2018 No. 14, clause 3.15. See also, Australian Energy Market Commission, *Final Rule Determination - National Electricity Amendment (Global Settlement and Market Reconciliation) Rule 2018*, pp. 1-2.

Table 5 NMI classification code changes to support UFE calculation by 1 July 2021

NMI Classification Code	Description
BULK	*Connection point* where a *transmission network* connects to a *distribution network* (also termed 'Bulk Supply Point')
DWHOLSAL	*Distribution network connection point* where energy is directly purchased from the *spot market* by a *Market Customer*
NCONUML	*Non-contestable unmetered load*
NREG	*Connection point* associated with a *non-registered embedded generator*, i.e. a *generating unit* that is not classified by a *Market Generator*, but may be classified by a *Small Generation Aggregator* as a *market generating unit*.
WHOLESAL	*Transmission network connection point* where energy is directly purchased from the *spot market* by a *Market Customer*
XBOUNDRY	*Connection point* where a *distribution network* connects to another to *distribution network*

3. Metering transition plan framework

3.1 Objective

The Industry transition and go-live strategy objective for the 5MS and GS market reforms is:

> *to provide coordinated guidance to NEM participants on transition and go-live activities and schedules as they transition from current market arrangements to 5MS and GS.*

This objective supports, and is consistent with, the market readiness objective set out in the overarching 5MS and GS Market readiness strategy.[10] The Metering transition plan supports both objectives by providing coordinated guidance on the metering transition for 5MS and GS.

3.2 Principles

The Industry transition and go-live strategy principles apply to the Metering transition plan. These are:

1. Mandated 5MS and GS commencement dates should be met
2. NEM operations should be uninterrupted during periods of transition and go-live
3. Market system go-lives and 5MS and GS commencement risks should be minimised
4. More certainty for participants' project planning should be introduced
5. Participants should be provided with implementation flexibility where possible
6. Participants and AEMO are responsible for their own transition and go-live planning[11]

In addition, the following principles are specific to the Metering transition plan:

1. NEM participants and AEMO:
   a) Will use the Metering transition plan as the basis of their implementation plans, and will develop individual plans that have regard to the:
      - Key activities and dates set out in the Metering transition plan
      - Impact of their activities on other relevant parties.
   b) Will coordinate and work collaboratively with other participants to minimise the impact of metering implementation activities on other parties.
   c) Will complete their metering implementation activities by the transition end dates outlined in the Metering transition plan
   d) Must continue to fulfil all regulatory and compliance obligations during transition and system cutover periods
   e) Are to communicate any issues with meeting their Metering transition plan responsibilities in writing as soon as possible

[10] For all 5MS and GS readiness documents, see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Key-Readiness-Documents

[11] Full descriptions of each principle are set out in the Industry transition and go-live strategy at: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Key-Readiness-Documents

3.3 Scope

3.3.1 In scope

The Metering transition plan applies to the 5MS and GS metering transition. This includes the required metering installation and reconfiguration, metering data delivery and standing data update activities required to successfully implement the metering changes, as outlined in section 2.

Also in scope are the:

- Consequential impacts to B2B metering data delivery arising from these changes.
- Timing of MSP accreditation update activities.

3.3.2 Out of scope

- Non-metering related changes within the scope of 5MS/GS.
- Changes made solely to support NER or procedure changes other than 5MS and GS.

4. Metering transition plan

The Metering transition plan is set out in the attached spreadsheet.

In keeping with the Transition and go-live strategy objective and principles, the Metering transition plan provides coordinated guidance for AEMO and participants on the metering transition for 5MS and GS. Importantly, the Metering transition plan is the basis for participants to complete their own metering transition plans. Participants will individually develop and manage their physical metering and metering data activity based on the timeframes agreed in the plan.

The Metering transition plan outlines the expected activities, responsibilities, dependencies and timeframes, as well as other necessary elements required for completion of the metering transition (see table 6). The full Metering transition plan is published separately in Microsoft Excel format.

The activities support different parts of the metering transition and can be grouped into the following high level categories:

- Meter installation and reconfiguration
- Metering data delivery
- MSATS standing data creation and maintenance
- Metering service provide (MSP) accreditation updates.

Appendix 1 illustrates key metering transition activities in a diagrammatic view. Note that only selected activities are presented, and the full list of activities can be found in the Microsoft Excel sheet published together with this document.

Note that some metering changes will require activities in more than one category. For example, necessary cross-boundary metering changes will be:

- Installation of cross-boundary metering where needed
- Reconfiguration of cross-boundary metering to record and provide 5-minute data where necessary
- Updating cross-boundary standing data in MSATS to reflect changes to physical metering and to accommodate the new NMI classification code
- Ensuring cross-boundary metering data is delivered in NEM 12 format to AEMO by 1 July 2021.

Note that the timeframes for undertaking activities reflect that preparing for a smooth transition to 5MS and GS means that readiness activities need to be planned and executed *by* the formal commencement dates.

Table 6 Description of Metering transition plan elements

Metering transition plan element	Purpose
CATEGORY	High level groupings for metering transition activities: • Meter installation and reconfiguration • Meter data delivery • MSATS standing data creation and maintenance • Metering accreditation updates
SID	Indicates the unique sub-category ID

Metering transition plan element	Purpose
SUB-CATEGORY	Groups a set of related metering transition activities (e.g. Type 7 metering installations) within a category
AID	Indicates the unique activity ID
ACTIVITY	Describes the Metering transition activity
ASSUMPTIONS	Lists any assumptions related to the activity
RESPONSIBILITY	Assigns leadership and responsibility of the metering transition activity to a specific participant type
DEPENDENCIES	Lists any dependencies related to the activity
VOLUME/SIZE CONSIDERATIONS	Provides an indication of volume/size implications of the activity
DIRECTLY AFFECTED PARTIES	Lists out parties that are directly involved in executing the activity
TRANSITION START DATE	Lists the transition start date for this activity. When no transition start date is specified for an activity, participants may commence the transition at any time prior to the transition end date for that activity.
TRANSITION END DATE	Lists the transition end date of this activity. It is expected that all relevant participants have completed the activity by this date.
RULE / PROCEDURE TIMING	Lists the commencement date of the 5MS or GS rule requirement that the activity supports
TRANSITION OBJECTIVE / OUTCOME	Outlines the objective of the transition activity
COMMENTS (by AEMO or from TFG)	Lists any comments made by AEMO or the TFG

4.1 Maintaining the Metering transition plan

AEMO will continue to work in collaboration with the TFG as necessary to:

- provide further details on how specific activities in the plan will be actioned
- undertake regular reviews of the plan using readiness reporting and other relevant information as inputs into the reviews.

Any changes to the Metering transition plan will be recommended to the RWG, and any agreed amendments will be incorporated after the RWG meetings on:

- 10 June 2020
- 08 October 2020
- April 2021

AEMO may also consider essential updates to the plan at any time in consultation with the TFG and RWG. Any participant or AEMO can propose an update to the Metering transition plan to support its effective implementation.

4.2 Reporting on progress against the Metering transition plan

Reporting on Metering transition plan implementation progress will be through industry readiness reporting.[12] Reporting will track progress at a sub-category level, where respondents will be asked to report on their status towards completing the associated transition activities relevant to their participant type.

This approach will show whether participants are on track, at risk, or late in relation to the agreed transition dates in the metering transition plan. It will also provide participants with visibility of how different participant types are progressing, particularly those who they affect or are affected by.

Progress reports will be made to the RWG for it to consider and to manage any readiness risks arising from the Metering transition plan's implementation.

[12] For more detail see the 5MS/GS Industry readiness reporting plan at: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Key-Readiness-Documents

Glossary

Term	Definition
5MS	Five-minute settlement
AEMO	Australian Energy Market Operator
B2M	Business to market i.e. business to AEMO transactions
GS	Global settlement
MC	Metering coordinator
MDP	Metering data provider
MP	Metering provider
MSATS	Metering, settlement and transfer solution
MSP	Metering service provider. Includes MCs, MDPs and MPs.
NEM	National electricity market
NER	National electricity rules
NMI	National metering identifier
PCF	5MS/GS program consultative forum
RWG	Readiness working group
SWG	Systems working group
Transition	Process of shifting from current to future operating state

A1. Key metering transition activities

Figure 3 Key metering transition activities