Five-minute settlement and global settlement

November 2019

Industry transition and go-live strategy

Important notice

PURPOSE

The 5MS and GS Transition and go-live strategy sets out the high level approach and principles associated with transition and cutover activities, including industry co-ordination.

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VERSION CONTROL

Version	Release date	Changes
#0.1	30/09/2019	Draft released to the 5MS/GS Readiness Working Group for comment
#1.0	29/11/2019	Final document published
#1.1	December 2019	Two date errors in row 4 of Table 2 (p16) corrected, changed from 2020 to 2021

Executive summary

AEMO and National Electricity Market (NEM) participants are currently implementing the five-minute settlement (5MS) and global settlement (GS) market reforms and the implementation program has entered its market readiness phase.

The National Electricity Rules (NER) changes for 5MS and GS have amended or introduced new regulatory obligations on certain NEM participants and AEMO. They require significant updates or changes to market procedures, metering and market and participants' systems at various times. AEMO has a key coordination role, through collaboration with its industry working groups, to ready industry and itself for the market "go-live" dates.

The industry transition and go-live period is when AEMO and participants will transition from operating under the current arrangements to the new 5MS and GS arrangements. This paper sets out AEMO's Industry transition and go-live strategy and incorporates feedback from industry stakeholders. It is a key component of market readiness for 5MS and GS and is intended to inform industry stakeholders' own readiness programs.

At a high level, the strategy defines the objective, scope, approach, responsibilities and high-level schedule of the transition to 5MS and GS. It is supported by detailed transition, cutover and contingency plans. The strategy is consistent with and should be read in conjunction with the 5MS/GS Industry testing and market trials strategy.

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1. Introduction

This chapter explains the Australian Energy Market Operator's (AEMO) five-minute settlement (5MS) and global settlement (GS) implementation program. It then details the purpose and context of the 5MS and GS Industry transition and go-live strategy for the national electricity market (NEM).

1.1 AEMO's 5MS and GS implementation program

The Australian Energy Market Commission (AEMC) made the 5MS rule[1] in November 2017 and AEMO's extensive 5MS implementation program began in early 2018.[2] GS activities were incorporated into the program when the GS rule[3] 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[4]
- Systems – designs, develops, tests, and implements changes to AEMO's market systems[5]
- Readiness – coordinates, assists and prepares AEMO and participants for the transition to 5MS and GS.[6]

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

1.2 Purpose of the Industry transition and go-live strategy

The Industry transition and go-live strategy is a key component of AEMO's 5MS and GS Market readiness strategy. It particularly relates to the metering, business process and IT system changes necessary for a smooth transition to the new market arrangements. This strategy:

- sets out the high-level transition and go-live schedules for 5MS and GS
- defines AEMO's and participants' 5MS and GS transition responsibilities
- aligns with the Industry testing and market trial strategy for 5MS and GS implementation
- is supported by transition plans, cutover plans and a contingency plan that contain specific details of contingency arrangements to be implemented on the occurrence of defined scenarios.

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[1] *National Electricity Amendment (Five minute settlement) Rule 2017 No. 15*, Australian Energy Market Commission, available at: https://www.aemc.gov.au/rule-changes/five-minute-settlement, as further amended by the *National Electricity Amendment (Five minute settlement and global settlement implementation amendments) Rule 2019 No. 7*, available at https://www.aemc.gov.au/rule-changes/five-minute-settlement-and-global-settlement-implementation-amendments

[2] Details of AEMO's 5MS and GS implementation program: http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement

[3] *National Electricity Amendment (Global settlement and market reconciliation) Rule 2018 No. 14*, Australian Energy Market Commission, available at: https://www.aemc.gov.au/rule-changes/global-settlement-and-market-reconciliation, as further amended by the *National Electricity Amendment (Five minute settlement and global settlement implementation amendments) Rule 2019 No. 7*, op cit.

[4] Details of the procedures workstream: http://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Procedures-Workstream

[5] Details of the systems workstream: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Systems-Workstream

[6] Details of the readiness workstream: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream

1.3 Related documents

The Industry transition and go-live strategy is one of an integrated series of documents that support the 5MS and GS market readiness strategy, as illustrated by Figure 1. More information on each document is provided in the 5MS and GS market readiness strategy.

Figure 1 Key 5MS and GS readiness documents

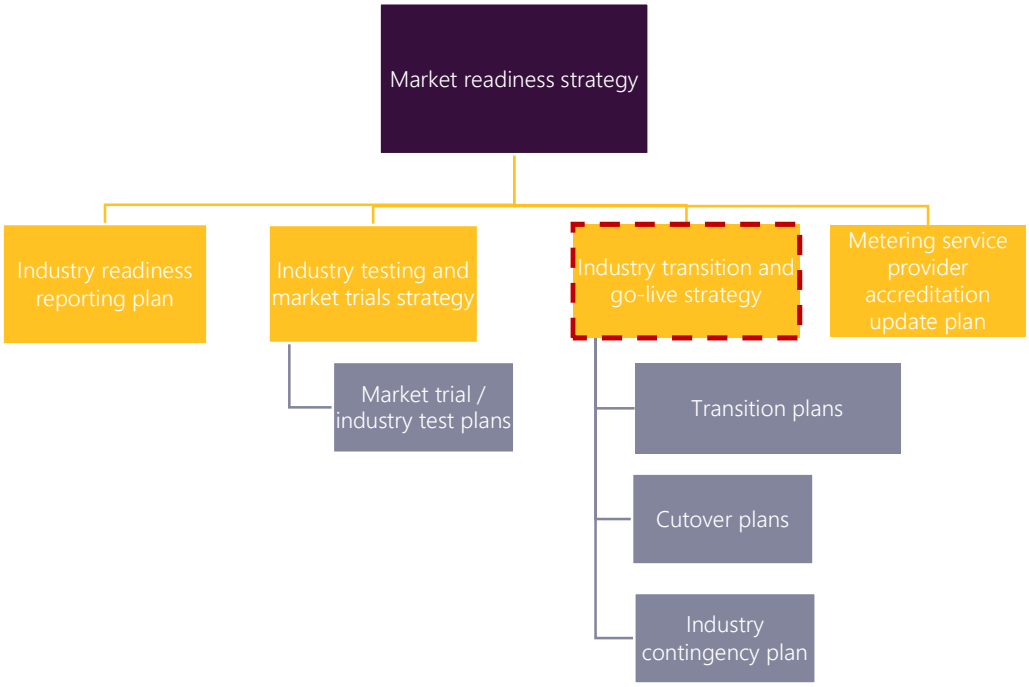

Table 1 shows how the Industry transition and go-live strategy interrelates with other key 5MS/GS readiness documents.

Table 1 Relationship between the Industry transition and go-live strategy and other 5MS/GS documents

Related document	Description of relationship
Market readiness strategy	The market readiness strategy is the overarching plan to guide AEMO and NEM participants' 5MS and GS readiness activities and operational preparedness. The Industry transition and go-live strategy provides further guidance on the high-level transition and go-live schedules for 5MS and GS.
Transition, cutover and contingency plans	These plans provide the detailed support for the transitions, cutovers and contingency management. See chapter 4.
Industry readiness reporting plan	The Industry readiness reporting plan sets out the information and processes that AEMO and NEM participants will use to monitor the industry's operational readiness for 5MS and GS commencements. Progress against readiness criteria will be a consideration in contingency decisions for market system capability releases and 5MS and GS commencements. See section 4.7.

1.4 Context: Transition and go-live challenges

AEMC's final 5MS[7] and GS determinations[8] and AEMO's 5MS[9] and GS high level designs[10] anticipated that a measured transition would be appropriate to implement these market reforms. The following sections set out some of the challenges in transitioning to the new market arrangements. Chapter 3 describes the strategy to meet these challenges.

1.4.1 Systems upgrades

Implementation of 5MS and GS requires upgrades to key systems (and associated back-end systems) across metering, bidding for dispatch and settlement processes for both AEMO and participants. Transition and go-live challenges in respect of system upgrades are:

- Deploying capability in a:
  - Logical order to support business processes and cycles
  - Timeframe that supports transition activities.
- Minimising the technology deployment risk to the operation of the market when introducing upgraded platforms
- Balancing the reduction in cutover risk from using a phased transition with the potential increase the complexity of testing and delivery programs
- Avoiding the need to run parallel system and operational processes while transitioning to new processes and capabilities.

1.4.2 Metering, metering data delivery and standing data updates

While 5MS and GS require key changes to bidding and settlement systems and processes, these market reforms require more significant changes to physical metering and metering data delivery and standing data systems and processes:

- 5MS from 1 July 2021, when all '*Excluded' metering installations*[11] must record and provide 5-minute data
- Updating the delivery of metering data to the NEM12 format and the provision of register level metering data from 1 July 2021
- Unaccounted for energy (UFE) reporting from 1 July 2021, which includes:[12]
  - NMI reclassifications to reflect new connection point requirements
  - Incorporation of tier 1 basic metering data into the UFE calculation
  - Installation of required cross-boundary meters
  - Definition and profiling of non-contestable unmetered loads
- GS on 6 February 2022 when all retailers begin having financial responsibility for UFE. This requires AEMO to convert the local retailer and certain FRMP responsibilities in MSATS to "GLOPOOL".

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[7] AEMC, Rule Determination: National Electricity Amendment (Five Minute Settlement) Rule 2017, section 7.3, 28 November 2017.

[8] AEMC, Rule Determination: National Electricity Amendment (Global Settlement and Market Reconciliation) Rule 2018, section 7.6, 6 December 2018.

[9] AEMO, Five-Minute Settlement: High Level Design, sections 8.4 and 8.5, September 2017.

[10] AEMO, Electricity Rule Change Proposal Global Settlement and Market Reconciliation, Appendix A: Global Settlement and Market Reconciliation - High Level Design, section 5.2, March 2018.

[11] As defined in the 5MS rule, *excluded metering installations* are types 1, 2, 3 and 7, along with 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*.

[12] Information on these changes is set out in 5MS/GS metering procedures (package #2) at: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Procedures-Workstream/Metering-package-2---MSATS-and-SLPs

- Non-Excluded new and replaced[13] metering installations must record and provide 5-minute data by 1 December 2022.

It should be noted that the relevant retailer, LNSP, MDP and AEMO can jointly agree to the delivery and receipt of data at sub multiples of a trading interval[14] before 1 July 2021, to facilitate a smooth transition to 5MS. If no agreement is in place, however, MDPs need to continue delivering 30-minute granularity metering data until 1 July 2021.

1.4.3 Coordinating diverse participants

Different NEM participants have differing 5MS/GS requirements depending on their role,[15] size and level of engagement. This will be reflected in different levels of effort and time committed to ensure preparedness for the 5MS/GS market reforms.

Through the 5MS/GS program forums some, but not all, participants supported a phased 5MS and GS implementation rather than the "big-bang" approach experienced through the *Power of Choice* implementation.[16] Coordinating the wide variety of participants' 5MS/GS views and activities will be a transition challenge, as many of them have dependencies on other participants' actions as well as specific commercial drivers around *when* they would like to adopt the changes. For example:

- AEMO and retailers are dependent on MDPs delivering 5-minute data for type 1-3 meters (and relevant type 4 meters) from 1 July 2021 for five-minute settlement and reconciliation purposes respectively.
- An MDP may service several retailers and DNSPs who all have different timing requirements for when they want to transition to receiving 5-minute data.[17]
- MDPs are dependent on metering providers (MPs) to ensure that type 1-3 meters (and relevant type 4 meters) are capable of and configured to provide five-minute data by 1 July 2021.
- Retailers are dependent on distribution network service providers (DNSPs) for the identification and profiling of non-contestable unmetered load for the accurate calculation of UFE, which will contribute directly to their settlement invoices under Global Settlement.

To date and through the 5MS/GS implementation program, AEMO and participants have proposed separate approaches for transitioning each of the metering, dispatch and settlement systems and procedures to the new market arrangements. The Industry transition and go-live strategy therefore needs to provide an integrated transition approach across these functional areas. The strategy will need to consider various industry dependencies and positions in the way that best meets the transition principles (set out in section 2.3).

[13] If installed or replaced on or after 1 December 2018 (1 December 2019 for type 4A installations)

[14] NER, 7.10.5(a)

[15] Examples of relevant participant types include: generator, local retailer, independent retailer, network service provider, metering data provider etc.

[16] Also known as "competition in metering". See Power of Choice program at: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Power-of-Choice

[17] NER 7.10.5(a) establishes the requirement for MDPs to deliver 30-minute granularity metering data prior to 1 July 2021 and 5-minute granularity data thereafter. This is unless there is agreement between the retailer, LNSP, MDP and AEMO for metering data to be delivered with a different granularity.

2. 5MS and GS Industry transition and go-live framework

This chapter establishes the framework for the Industry transition and go-live strategy by setting out the strategy's objective, scope and principles.

2.1 Industry transition and go-live strategy objective

"Industry transition and go-live" refers to how AEMO and NEM participants' systems will be managed during the transition and go-live phases of 5MS and GS implementation. These phases relate to when AEMO and participants will transition from operating under the current arrangements to the new 5MS and GS arrangements.

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.[18]

2.2 Industry transition and go-live strategy scope

2.2.1 In scope

The scope of the Industry transition and go-live strategy is:

- AEMO and participant IT system implementations required to provide 5MS and GS capability, particularly bidding, settlements, B2M transactions, reallocations and metering data systems.
- Metering upgrades and metering data delivery and standing data changes required for:
  - 5MS from 1 July 2021, when all 'Excluded' metering installations[19] must record and provide 5-minute data
  - Unaccounted for energy (UFE) reporting from 1 July 2021[20] which includes:
    - NMI reclassifications to reflect new connection point requirements
    - Incorporation of tier 1 basic metering data into the UFE calculation
    - Installation of required cross-boundary meters
    - Definition and profiling of non-contestable unmetered loads

[18] The Market readiness objective is "To implement all participant and AEMO preparatory activities required for successful 5MS and GS commencements while facilitating the uninterrupted and reliable operation of the NEM." See Market readiness strategy at: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Key-Readiness-Documents

[19] As defined in the 5MS rule, *excluded metering installations* are types 1, 2, 3 and 7, along with 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*.

[20] Rule 11.112.5 of the GS rule as further amended by the *National Electricity Amendment (Five minute settlement and global settlement implementation amendments) Rule 2019 No. 7*, requires AEMO to publish UFE amounts by 1 July 2021.

- B2B processes that are directly impacted by 5MS or GS
- GS on 6 February 2022 when all retailers begin having financial responsibility for UFE. This requires AEMO to convert the local retailer responsibility in MSATS to "GLOPOOL".
- Non-Excluded new and replaced metering installations[21] must record and provide 5-minute data by 1 December 2022.
- MP and MDP accreditation updates required as a result of 5MS and GS system or process changes
- Data migration of existing data from legacy to upgraded market platforms
- Development of joint cutover plans and cutover migrations
- Contingency planning

2.2.2 Out of scope

- Business as usual metering data transactions
- Any B2B processes that are not expected to change with the introduction of 5MS and GS.

2.3 Industry transition and go-live principles

The following principles will underpin this strategy and support its objective. They will also support the overarching market readiness objective.

1. Mandated 5MS and GS commencement dates should be met

Transition activities should be planned and executed in a way that supports AEMO and participants meeting the mandated 5MS and GS commencement dates. This includes providing market systems capability sufficiently far ahead that essential activities can be completed by the commencement date. Applying this principle may require some individual participants to adjust their transition approaches to ensure that all participants are able to meet key obligations.

2. NEM operations should be uninterrupted during periods of transition and go-live

The Industry transition and go-live strategy should be developed in a way that minimises risks to NEM market operation during implementation and transition.

3. Market system go-lives and 5MS and GS commencement risks should be minimised

The introduction of upgraded system capability to support the new market requirements carries a high degree of risk in both:

- managing the cutover
- ensuring operational stability of participant and AEMO platforms at the time of implementation.

The transition approach should aim to minimise and manage the risks of the multiple system go-lives required to support the introduction of 5MS and GS.[22] It may extend to having separate timing for IT platform

[21] If installed or replaced on or after 1 December 2018 (1 December 2019 for type 4A installations)

[22] The 5MS/GS Program Consultative Forum maintains the 5MS/GS Industry Risks & Issues Register. The register facilitates the monitoring and reporting of industry risks and issues identified within the program and includes the risk to market functions if various market systems all "go-live" at once on 1 July 2021. See: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Program-Management/Program-Consultative-Forum

upgrades from the 5MS and GS commencements and will include meeting defined readiness criteria prior to deployment.

4. More certainty for participants' project planning should be introduced

The transition strategy should be developed in a way that provides participants with a clear approach to integrate their 5MS and GS transition plans with those of AEMO and other participants for the implementation of both 5MS and GS. This includes identifying the dependencies that need to be managed for project delivery.

5. Participants should be provided with implementation flexibility where possible

The transition strategy should reflect the need to support varying participant program timeframes and technology delivery approaches. This includes providing alternative (interim) approaches for participant implementation to meet market requirements, such as alternative ways to interact with market systems. It should give participants the flexibility to implement their system changes at the same time as or after AEMO introduces 5MS and GS market systems capability. This principle aims to minimise, but not eliminate, the need for participants to upgrade technology earlier than they would like.

6. Participants and AEMO are responsible for their own transition and go-live planning

The transition strategy is the overall approach and framework against which:

- Individual programs can be aligned to allow participants confidence in their own 5MS and GS preparedness. These plans should have regard to the key activities, dates and dependencies set out in this Industry transition and go-live strategy and its associated plans.
- Readiness criteria can be established and monitored.

3. Industry transition and go-live strategy

This chapter sets out the transition and go-live strategy, comprising:

- the approach to transition
- high-level activities and timing.

3.1 Transition and go-live strategy approach

On balance a **staged transition** to 5MS and GS, where new market platforms and software are progressively introduced, is the appropriate approach for implementing these market reforms. This approach:

- Reduces the operational and market risks of a 'big-bang' transition (where new platforms and software would be introduced in a similar timeframe and close to the 5MS and GS commencements). Reducing these risks supports:
  - on-time 5MS and GS commencement
  - uninterrupted NEM operations throughout periods of transition and go-live.
- Allows new market platforms and software to be operationally stable *prior* to the 5MS and GS commencements which:
  - Supports participants' transition activities
  - Accommodates business processes and cycles by deploying market system capability in a logical order
  - Contributes to on-time delivery of 5MS and GS while facilitating the uninterrupted and reliable operation of the NEM.
- Where possible, provides flexibility that enables participants to design their program implementations in a way that suits them e.g. participants can adopt technology upgrades as AEMO introduces market systems capability or 'just in time' for the 5MS and/or GS commencements depending on their own commercial or other drivers. Providing flexibility supports participants' own project planning.
- Reflects the volume and complexity of the 5MS and GS-related changes to physical metering and metering data delivery and standing data systems and processes. It does this by providing a detailed **metering transition** approach.
- Supports a range of contingency approaches for both AEMO and participants. Contingency approaches include time and optionality. Participants can also use resourcing and investment as part of their own contingency approach.

AEMO considers that overall market readiness will be effectively monitored and managed against the defined readiness criteria and meeting scheduled milestones.

The staged transition approach may potentially increase the complexity of testing and delivery programs compared with a 'big-bang', hard start to 5MS and GS. However, this impact is outweighed by the reduction overall risk to 5MS and GS commencements provided by the staged transition.

AEMO has made available a test environment (additional to AEMO's pre-production) called the 'staging environment' to better support 5MS and GS participant testing and transition. The staging environment allows participants to test their interactions against key market system changes as these systems are updated.

It is not a market trial environment but enables participants to independently confirm their ability to interact successfully with AEMO's systems in advance of scheduled industry test phases. Software releases into the staging environment will be available based on the published release schedule.[23]

3.2 High level transition: market system capability releases

This section plans the flow of market system capability releases in a way that is consistent with the transition principles and staged approach for implementing 5MS and GS. Note that the Industry testing and market trials strategy is consistent wih this transition strategy.[24]

The 5MS and GS-related market system changes are:

- B2M APIs – introduction of API interface capability to provide an optional, alternative interface approach
- Reallocations – upgrade to AEMO's system to support 5-minute reallocations
- MDM platform – upgrade of AEMO's meter data management system to support meter data processing for 5MS and GS
- Bidding and dispatch – upgrade to AEMO's systems to support 5-minute bids and offers
- NEM settlements – upgrade to AEMO's settlements system to support 5MS and GS commencements.

Figure 22 shows the staged transition timing for these 5MS and GS market system changes, inclusive of industry testing periods for each change. The timing of these market system capability releases is consistent with the staged transition approach, which in turn is in-line with the transition principles.

In this figure:

- A 'release milestone' is when market systems capability has been deployed
- 'Rule commencement' milestones relate to the key 5MS and GS rule commencement dates
- A 'capability active' milestone means that specific market systems capability is available for participants to use.

The timing and overview of each release is discussed in more detail in Table 2, including information on how the changes affect participants and the relationship to the market testing phases.[25]

[23] For more information on the staging environment and its release schedule, see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Systems-Workstream/Staging-Environment

[24] See 5MS/GS Industry testing and market trials strategy at: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Key-Readiness-Documents

[25] Market testing phases are described in the 5MS/GS Industry testing and market trials strategy. Ibid.

Figure 2 Transition timing for market system capability releases supporting 5MS and GS commencements

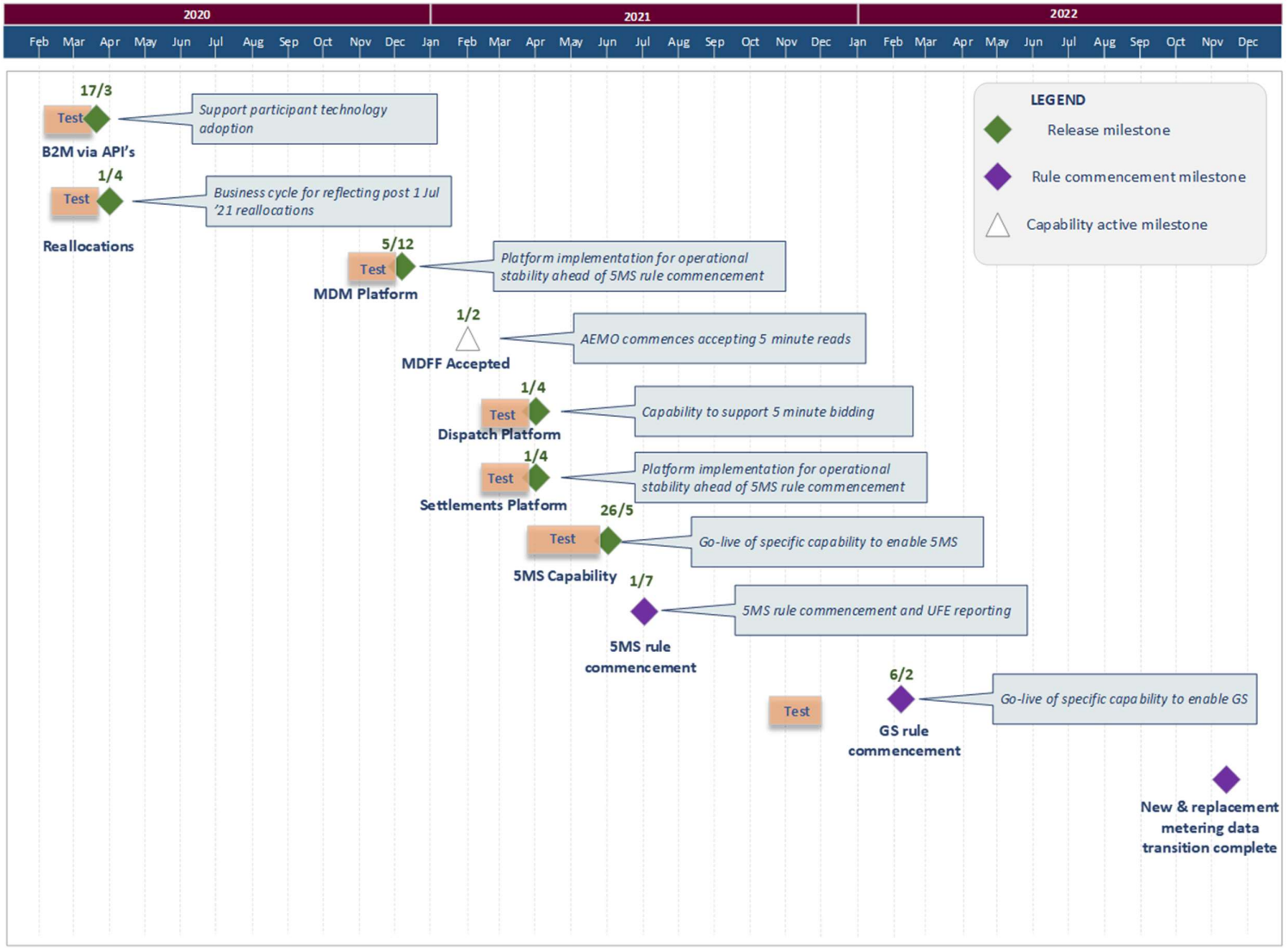

Table 2 Description and timing of market system releases for 5MS and GS

Release	Description	Impact on participants	Timing	Test phase
B2M via APIs	Progressive introduction of API capability for B2M transactions while maintaining current interfacing options. This approach: • Provides participants the option to adopt APIs in-line with their own technology programs • Establishes APIs well before the 5MS-related increase in metering data volumes. FTP transactions will remain open for the foreseeable future after 5MS goes live i.e. switching to API is not a mandatory part of the program.	Will only affect participants who choose to adopt the APIs. Post implementation participants can deploy their system upgrades at a time of their choosing	17 Mar 2020	2
Reallocations	Introduction of online transaction and API reallocation capability on a 5-minute basis. This provides participants with the capability to enter into 5-minute-based contract reallocations for periods beyond 5MS commencement (1 July 2021). 30-minute reallocations will be supported up to 1 July 2021.	Affects all participants who submit reallocations for periods beyond 1 July 2021 via online screens. Post implementation participants can deploy API integration upgrades at a time of their choosing	1 Apr 2020	1
MDM platform delivery	Introduction of the upgraded MDM platform on a 30-minute settlement "like-for-like" basis, providing: • capability option for MDPs to deliver 5-minute metering data as well as 15- and 30-minute metering data for settlement purposes (from 1 Feb 2021) • the CATS configuration necessary to support GS standing data updates put in place, providing the option for participants to commence updating NMI configurations • RM report updates • a period of operational establishment ahead of 5MS commencement.	No expected impacts to participants at implementation Post implementation provides the capability for participants to provide interval metering data in NEM12 format and at 5 minute granularity (subject to agreement)	7 Dec 2020 NOTE: capability for MDPs to deliver 5-min data active from 1 Feb 2021	3

Release	Description	Impact on participants	Timing	Test phase
Bidding and dispatch platform delivery	Introduction of the dispatch platform to provide the capability for 5-minute bidding. From 1 April 2021 to 30 June 2021, participants can choose to either: • continue to submit 30 minute bids • start submitting 5-minute bids ahead of 5MS commencement, enabling familiarisation with and providing assurance over key business processes • reporting updates From 1 July 2021, 5-minute bidding is mandatory, and any 30-minute bids submitted from this date will be rejected.	Participants can choose to submit 5-min bids once the new 5-minute capable Bidding & Dispatch platform is delivered. Participants must submit 5 minute bids from 1 July 2021.	1 Apr 2021	4
Settlement platform delivery	Introduction of the upgraded settlement and billing platform at the same time as the Dispatch Platform. Because the overlaps between settlements and dispatch in the data model, in this case, technical deployment risk is reduced with a joint release rather than independent releases for settlements and dispatch. The settlement platform on deployment will: • Support 30-minute "settlement by difference" prior to 5MS commencement • Assure platform operational stability prior to 5MS commencement.	No expected technical impacts to participants.	1 Apr 2021	4
5MS commencement	Activation of 5MS-specific capability across AEMO's three major market platforms (metering, settlements and dispatch) where required. This is the final deployment for 5MS commencement and includes the capabilities to: • produce invoices for that settlement week covering both 30- and 5-minute trading intervals[26] • provide UFE reports to each Market Customer from 1 July 2021 in support of GS.	No direct impact to participants at implementation NOTE: Participants will need to ensure any of their systems upgrades require to meet 5MS rule commencement is deployed prior to rule commencement.	26 May 2021	5

[26] 5MS begins on 1 July 2021 which is a Thursday. The NEM billing week runs from Sunday to Saturday. Therefore, for the billing week beginning Sunday 27 June 2021, this requires a once-off invoicing that addresses four days of 30-minute trading intervals, and three days of 5-minute trading intervals.

Release	Description	Impact on participants	Timing	Test phase
GS commencement	Activation of GS-specific capability: the shift from settlement-by-difference to global settlement occurs. Retailers will be financially responsible for and therefore invoiced for their allocation of UFE.	Updating of LR and required FRMP responsibilities by AEMO to reflect GS rule commencement with consequent data alignment performed by participants	6 Feb 2022	6

3.3 Metering transition activities and timeframes

This section sets out the high-level transition activities and their timings which underpin the metering transition activities required to implement 5MS and GS.

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.

Figure 3 provides an overview of the metering and metering data and standing data transition timeframes required to support 5MS and GS implementation. It includes:

- Rollout of 5-minute capable metering required for 5MS
- Updates to metering data and standing data necessary to begin publishing UFE on 1 July 2021

Table 3 then describes each element of the metering transition.

Figure 3 Timing of metering transition activities

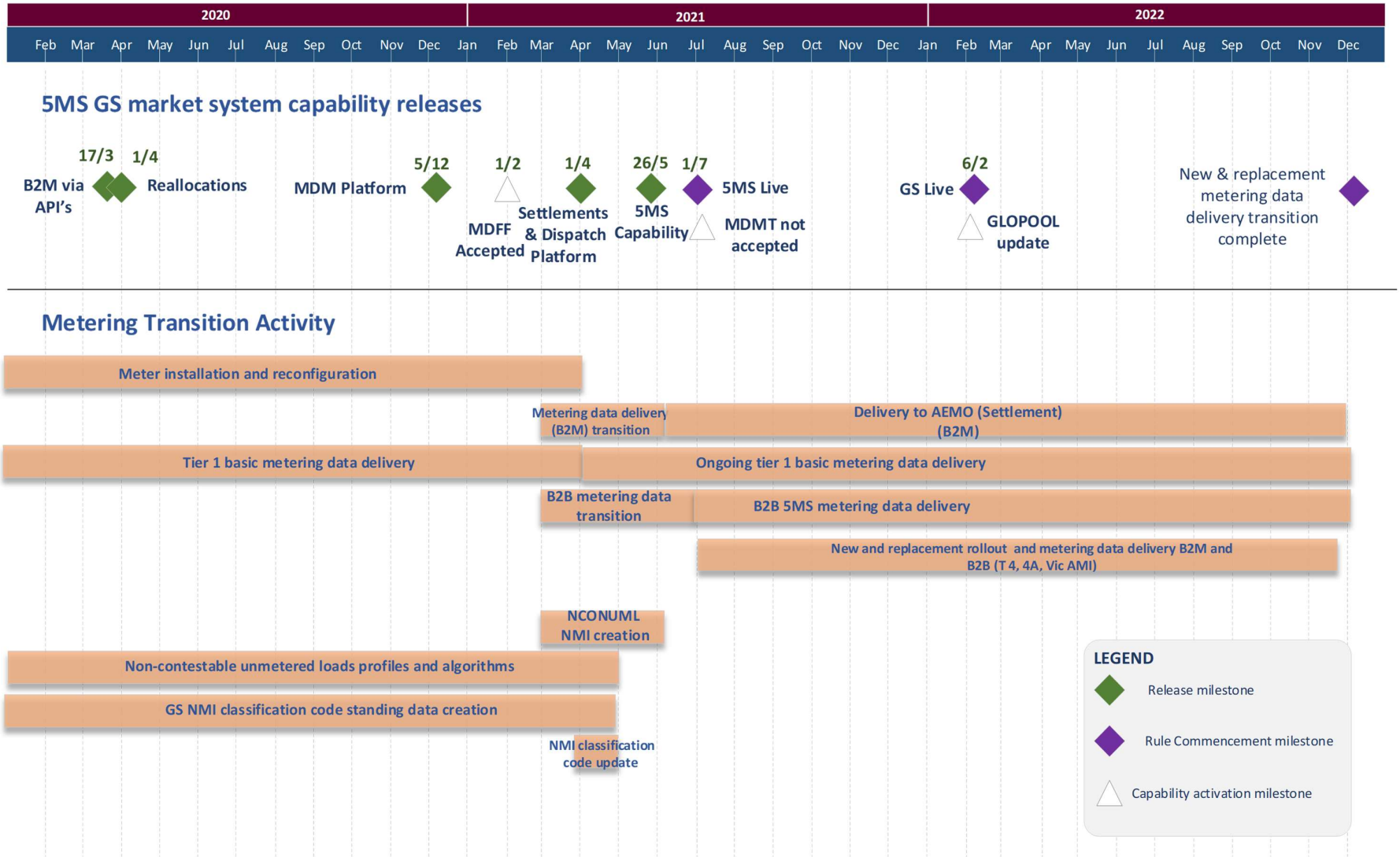

Table 3 Description and timing of metering transition elements

Metering transition element	Description	Transition Timing
Meter installation and reconfiguration	MSPs will need to implement works programs to ensure that all type 1,2,3 and a subset of type 4 metering installations are compliant and capable of recording and storing 5-minute reads. This may involve meter replacement or reconfiguration of those metering installations, to prepare for delivering 5-minute data to AEMO for settlement. Metering installation upgrades should be planned to allow sufficient time to support 5MS data delivery for those meters prior to 1 July 2021.	By 1 Jul 2021
5MS metering data delivery	Delivery of 5-minute granularity data for settlement is required for approximately 19,000 Type 1, 2,3, 7 and a subset of type 4 metering installations before 1 July 2021. MSPs will develop deployment schedules and share these with AEMO so that it has visibility of what metering and metering data deployments are occurring and when. Delivery of 5-minute granularity data by MDPs to AEMO is dependent on the new MDM platform being ready and able to accept MDFF files. This functionality is planned for 1 February 2021, following the successful implementation of the MDM platform. During this period participants will need to agree on the granularity of the B2B meter data provided by MDPs to retailers and DNSPs. This is to ensure retailer and DUOS billing processes are supported in the lead-up to 5MS. Under the NER, agreement needs to occur between the retailer, MDP, LNSP and AEMO for metering data granularity to be shorter than a trading interval.	By 1 July 2021
New and replacement metering data delivery	Prior to 1 December 2022, non-excluded new and replacement type 4 and 4A meters are required to transition to deliver 5-minute data for settlement.[27] Given the volume of meters to be transitioned in this period, a consolidated view of individual rollout plans for MSPs will be constructed. This view will give participants visibility of the upcoming rollout volumes that could affect them and provide an opportunity for negotiation on scheduling between participants to alleviate volume concerns and provide assurance that the transition will be completed as required by December 2022.	From 1 July 2021 to 1 December 2022
Interval metering data delivery	Data delivery for all interval meters (regardless of the meter data granularity) to AEMO will be required to conform to the MDFF / NEM12 format.	By 1 July 2021

[27] If relevant meter installed or replaced on or after 1 December 2018 (1 December 2019 for type 4A installations).

Metering transition element	Description	Transition Timing
Tier 1 basic metering data delivery to AEMO	MDPs need to start delivering tier 1 basic metering data to AEMO to support UFE calculation. This data will be required earlier than the start of UFE publishing (1 July 2021) because AEMO needs a full set of tier 1 type 6 actual reads and forward estimates given a typical 3 month reading cycle.	By 1 April 2021
MSATS standing data creation and maintenance	GS requires new standing data to be created and several changes to existing NMI standing data and metering data definitions, including: • Non-contestable unmetered loads • Cross-boundary metering • NMI classification updates to reflect new NMI categories Development, profiling and approval of these updates should be planned to complete in time to load the agreed profiles and data updates once the updated MDM platform provides the supporting system capability and configuration.	By 1 Jul 2021
	Changes to LR and FRMP fields will be performed by AEMO for GS commencement.	By 6 Feb 2022

4. Industry transition and go-live strategy implementation

This chapter explains the interaction of the Industry transition and go-live strategy with other components of the 5MS and GS market readiness approach. It provides content and timing details for the subsidiary transition and cutover plans that will be developed to support 5MS and GS market readiness. Overall market readiness will be monitored and managed against the defined readiness criteria and meeting scheduled milestones. It then describes contingency management as part of the staged transition.

4.1 Industry engagement with the transition and go-live strategy

The strategy sets out the transition approach and high-level timing for system go-lives and 5MS and GS commencements. To operationalise the strategy, more detailed plans will be developed to set out the details associated with the transition activities:

- Cutover plans for each system go-live and for the 5MS and GS commencements (see section 4.2)
- Metering transition plan covering each of the metering transition elements (see section 4.3)
- Dispatch transition plan covering the transition to 5-minute bidding.

The plans will be developed with input from the RWG and its subsidiary focus groups, such as:

- Transition focus group: established in August 2019 to:
  - Engage in detail on 5MS and GS transitional matters
  - Collaborate on the development of the Transition and Go Live Strategy and detailed transition plans
  - Ensure that transitional considerations are captured in program timelines as readiness activities.

- Cutover focus group: to be established January 2020 to:
  - Engage in detail on 5MS and GS cutover event planning and execution with membership and involvement required dependant on each individual cutover and level of participant involvement.
  - Collaborate on the development of detailed cutover plans where required for integrated cutover activity
  - Ensure that cutover considerations are captured in program timelines as readiness activities.

4.2 Cutover plans

Cutover plans will be developed for each of the system implementations. The cutover plans will:

- Set out timings and dependencies for cutover tasks, including any potential dress rehearsals, in the period leading up to, during and immediately post the cutover event
- Determine agreed completion, escalation and communication protocols to be activated during the cutover events
- Include a decision-making protocol for 'proceed' and commitment decisions. The decision-making processes will reflect the level of dependence between participant and AEMO cutover activity for each system go-live. Where there are no interdependent cutover activities the market systems deployments will be managed by AEMO with notification of successful deployment and capability availability at completion.
- Establish heightened support post-cutover for the transition to 'business-as-usual' operations. The level of heightened support will be dependent on the extent and scope of the change being deployed. It will involve augmenting existing resources for support activities, rather than introducing additional processes.

Table 4 sets out the timetable for the development of the industry cutover plans. Note the cutover plans and dates are complementary to the industry testing dates that are set out in the 5MS and GS Industry testing and market trials strategy.

Table 4 Indicative timing for preparing 5MS and GS cutover plans

Cutover	Engagement	Draft Plan	Consultation	Finalised Plan	Cutover Date
B2M APIs	Mid- Dec 19	Mid Jan 20	3 weeks	End Feb	17 Mar 2020
Reallocations	Mid Dec 19	Mid - Jan 19	2 weeks	End Feb	1 Apr 2020
MDM Platform	Jul 20	Mid Sep 20	3 weeks	Nov 20	5 Dec 2020
Dispatch and Settlement	Dec 20	End Jan 21	3 weeks	Mar 21	1 Apr 2021
5MS Capability	Late Jan 21	Feb 21	3 weeks	May 21	26 May 2021
GS Capability	Sep 21	Oct 21	3 weeks	Dec 21	6 Feb 2022

4.2.1 Cutover responsibilities

Each participant (and AEMO) participating in a cutover event will be responsible for developing and executing their individual cutovers in accordance with the timings and notification protocols in the relevant Industry cutover plan.

4.3 Metering transition plan

The metering transition plan will be developed to support each phase of the metering transition. It will:

- outline the expected responsibilities, activities, dependencies and planning timeframes for completion for elements of the metering transition
- form the framework for participant progress and readiness reporting on metering activities

Table 5 sets out the timetable for the development of the industry metering transition plan.

Table 5 Timing for preparing 5MS and GS Metering transition plan

	RWG and TFG engagement initiated	Draft Plan	Consultation	Comments due	Final Plan
Metering transition plan	Aug 19	29 Nov 2019	3 weeks	20 Dec 19	7 Feb 2020

4.3.1 Metering transition responsibilities

Participants and AEMO will individually develop and manage their physical metering and metering data activity based on the overall timeframes agreed in the transition plan. Progress against the achievement of metering transition activities will be incorporated into readiness criteria for those impacted participants

4.4 Dispatch transition plan

The dispatch transition plan will be developed to support the transition to 5-minute bidding. It will:

- outline the expected responsibilities, activities, dependencies and planning timeframes for completion for elements of the transition
- form the framework for participant progress and readiness reporting on bidding and dispatch activities.

Table 6 sets out the timetable for the development of the industry Dispatch transition plan.

Table 6 Timing for preparing the 5MS Dispatch transition plan

	RWG and TFG engagement initiated	Draft Plan	Consultation	Comments due	Final Plan
Dispatch transition plan	Jun 20	10 Jul 20	3 weeks	31 Jul 20	28 Aug 20

4.5 Staged transition contingency management

Contingency planning involves defining action steps to be taken if an identified risk event should occur.[28] A 5MS/GS Industry contingency plan will be developed to:

- Be activated if an identified risk occurs[29]
- Support successful 5MS and GS commencements
- Support the 5MS/GS readiness objective.

5MS/GS contingency management will incorporate several approaches, as set out in Table 7.

Table 7 5MS and GS program contingency approaches and their implementation

Contingency approaches	Implementation
Staged deployments	• Readiness criteria established for each system delivery • Readiness review point established prior to each go-live to confirm readiness criteria has been met, and/or agreed mitigation options put in place • Contingency option to reschedule deployment should the market risk of proceeding with the deployment be considered excessive.
Rollback	• Each system deployment to include planning for rollback during cutover • Where feasible, separate market system deployments from participant system deployments (like-for-like implementation) to minimise the risk of concurrent AEMO and participant go-lives • Communication of proceed and rollback decisions in-line with the protocols set out in cutover plans.
Individual participant contingency approaches	• Where multiple integration options exist, participants can switch between approaches dependent on their own program delivery approach e.g. web bidding vs API integration or applying additional resources etc.

Implementing contingency management will involve:

- Developing contingency event scenarios and responses as a component of transition plans and cutover plans. Contingency event scenarios will represent the identified risks for which agreed actions will be developed and put in place, in consultation with participants. Each contingency scenario will consider:
  - Description
  - Classification
  - Priority
  - Affected stakeholders
  - Triggers
  - Contingency response / Actions
  - Monitoring mechanism

[28] Project Management Institute, see: www.pmi.org

[29] Identified risks are listed on the 5MS Industry risks and issues register managed by the 5MS/GS Program Consultative Forum, see: https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Program-Management/Program-Consultative-Forum

- Developing decision review points as a component of transition plans and cutover plans
- Reporting against and assessing readiness event criteria as component of readiness reporting and in-line with the identified review points
- Establishing the consultation processes and decision rights for activating contingency responses.
- Timing for preparing the 5MS Dispatch transition plan

Table 8 sets out the timetable for the development of the 5MS/GS Industry contingency plan.

Table 8 Timing for preparing the 5MS/GS Industry contingency plan

	RWG and TFG engagement initiated	Draft Plan	Consultation	Comments due	Final Plan
Industry contingency plan	Sep 19	20 Dec 19	6 weeks	31 Jan 20	28 Feb 20

4.6 Post go-live support and activities

AEMO's normal operational support processes will be supplemented with increased resourcing after the 5MS and GS market system changes are implemented. This will assist in the turnaround of post go-live issues. Communication and notification processes of issues and resolutions will follow the normal BAU processes to limit the impact to participant issue management processes.

4.7 Role of readiness reporting in transition and go-live planning and execution

Participant readiness reporting will be:

- Developed and administered by AEMO in accordance with the Industry readiness reporting plan
- Used to monitor participants' progress against the meeting the relevant system implementation and transition activities, go-lives and readiness for rule commencements
- Used to monitor AEMO readiness against the relevant system implementation and market commencement activities
- Used to inform progress against market readiness criteria for each phase of the staged transition. Readiness criteria will also be set out in the relevant cutover plan for each of the market system capability releases and for the 5MS and GS commencements
- Used to inform decisions to proceed with system implementations and/or to invoke contingency responses for market system capability releases and the 5MS and GS commencements.

Table 9 sets out examples of market readiness criteria and where decision-making responsibility rests.

Table 9 Responsibility for proceed and contingency decisions for market system capability releases and 5MS and GS commencements

	Examples of market readiness criteria	Responsibility for proceed and contingency decisions
Market system capability release	Will include: • AEMO's market system readiness • AEMO business readiness • Industry readiness to use capability	AEMO Industry input through the PCF and EF
5MS and GS commencements	Will be based around readiness metrics and monitored on an ongoing basis via readiness reporting. For example: • Required market systems in place and operating effectively • Sufficient industry readiness to adopt relevant 5MS and GS processes.	AEMO Industry input through the PCF and EF, bilateral discussions with the AEMC and/or AER

Glossary

This document uses many terms that have meanings defined in the National Electricity Rules (NER). The NER meanings are adopted unless otherwise specified.

Term	Definition
5MS	Five-minute settlement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
API	Application Programming Interface
B2M	Business to market i.e. business to AEMO transactions
BAU	Business as usual
CATS	Consumer administration and transfer solution
Cutover	System implementation event
DNSP	Distribution network service providers
GS	Global settlement
Industry testing	Informal, uncoordinated testing by participants in AEMO's IT environments. Self-testing of functionality such as connectivity, and/or coordinated multi-party testing of functional scenarios.
Invitation industry testing	Coordinated testing of business process scenarios with a select number or subset of participants with systems ready for testing.
LNSP	Local network service provider
Market trials	Formal, industry coordinated test activities between participants' and AEMO's IT environments. Involves coordinated multi-party end-to-end testing of business process scenarios.
Market testing	Umbrella term covering industry testing, invitation industry testing and market trials
MC	Metering coordinator
MDFF	Meter data file format
MDMF	Meter data management format
MDP	Metering data provider
MDM	Metering data management system
MP	Metering provider

Term	Definition
MSP	Metering service provider – including MPs, MDPs and MCs
MSATS	Metering, settlement and transfer solution
NCUL	Non-contestable unmetered loads
NEM	National electricity market
NER	National electricity rules
PCF	5MS/GS program consultative forum
RWG	Readiness working group
SWG	Systems working group
Transition	Process of shifting from current to future operating state
UFE	Unaccounted for energy