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# Five-minute settlement and global settlement

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**August 2020**

5MS Bidding transition plan

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# Important notice

## PURPOSE

In relation to five-minute settlement implementation, the Bidding transition plan:

- Provides coordinated guidance to the industry on the transition to 5-minute bidding
- Outlines the expected responsibilities, activities, dependencies and timeframes for completion for elements of the bidding transition.

This publication has been prepared by AEMO using information available at 28 August 2020.

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## VERSION CONTROL

Version	Release date	Changes
0.1	14/07/2020	Draft released to the 5MS Readiness Working Group and Dispatch Focus Group for comment
1.0	28/08/2020	Final document published

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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 in the National Electricity Market (NEM). It then details the purpose and context of the Bidding 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. In July 2020, the AEMC determined that the commencement of the 5MS rule and GS rule should be delayed by 3 months, so that they commence on 1 October 2021.<sup>1</sup>

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.

Note that bidding changes only relate to 5MS implementation and not GS because GS only applies to settlement.

## 1.2 Bidding transition

In this document, "bidding transition" means the period 1 April 2021 to 30 September 2021.

This is distinct from the timeframe covered by the Bidding transition plan itself. The plan is effective from its publication through to 5MS commencement (1 October 2021).

### 1.2.1 Document purpose

The Bidding transition plan supports each element of the industry transition to 5-minute bidding. It outlines the expected responsibilities, activities, dependencies and timeframes for completion for elements of the bidding transition.

### 1.2.2 Development approach

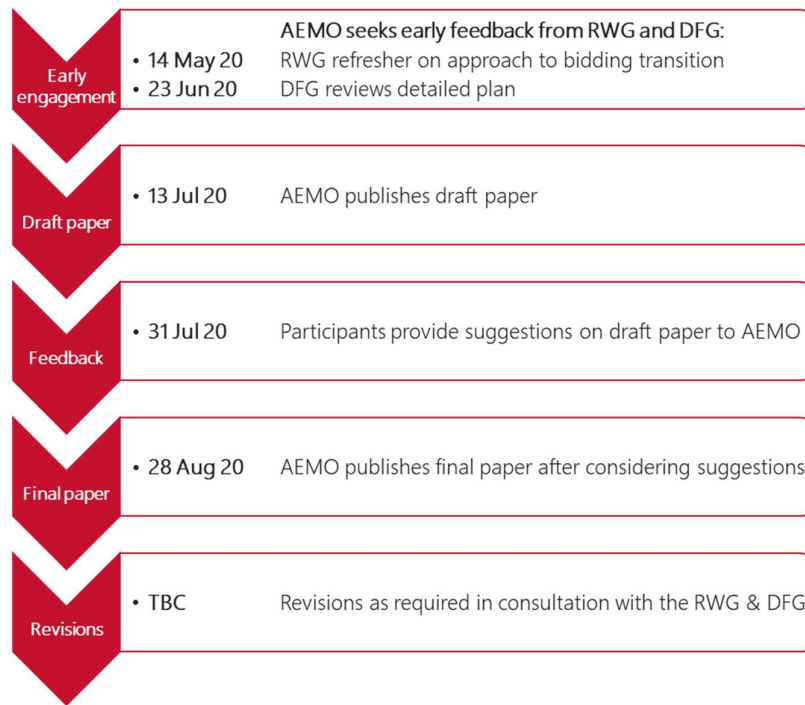
The Bidding transition plan was developed in consultation with industry through the 5MS and GS Readiness Working Group (RWG) and Dispatch Focus Group (DFG).<sup>2</sup> Figure 1 illustrates AEMO's engagement approach and timeline for developing the plan.

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<sup>1</sup> For more information on the Delayed implementation of five minute and global settlement, see: <https://www.aemc.gov.au/rule-changes/delayed-implementation-five-minute-and-global-settlement>

<sup>2</sup> For further details on the RWG see: <https://aemo.com.au/Electricity/National-Electricity-Market-NEM/Five-Minute-Settlement/Readiness-Workstream/Readiness-Working-Group>

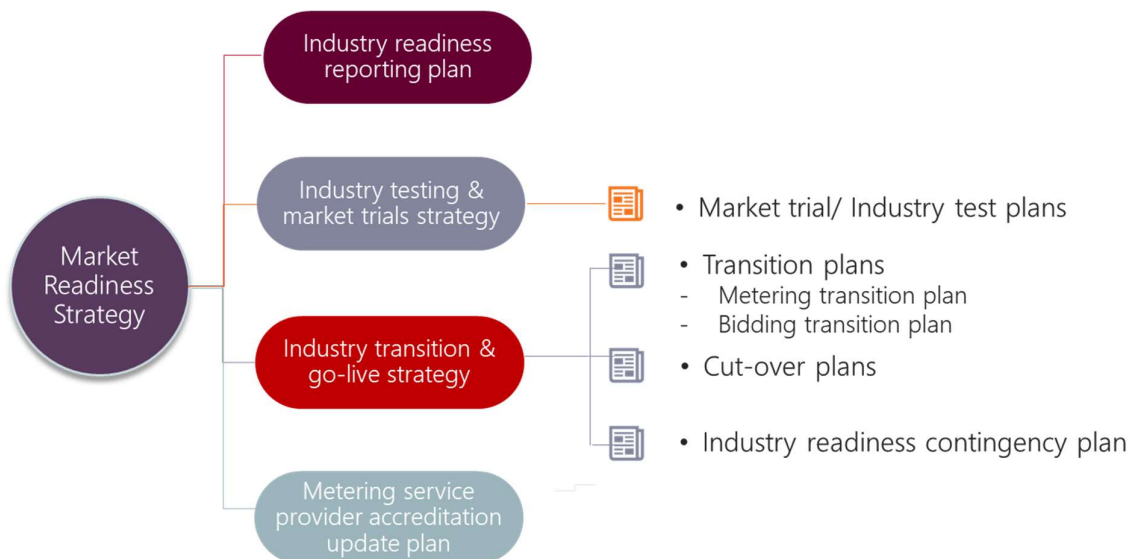
**Figure 1 Engagement approach for developing the Bidding transition plan**



### 1.2.3 Related documents

The Bidding transition plan is one of an integrated series of documents that support the 5MS and GS market readiness strategy,<sup>3</sup> 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**



<sup>3</sup> 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 Bidding transition plan interrelates with other key 5MS/GS readiness documents.

**Table 1 Relationship between BTP and other readiness documents**

Related document	Description of relationship
<b>Industry transition and go-live strategy</b>	The strategy provides an overarching view and structure for the transition to 5MS/ GS across participants and market functions. The Bidding transition plan provides the detailed support for the industry transition to 5-minute bidding.
<b>Industry readiness reporting plan</b>	The reporting plan details the readiness reporting framework and criteria that will enable regular assessments of AEMO's and participants' 5MS/GS readiness. It includes coverage and monitoring of participants' readiness for 5-minute bidding in the lead-up to 5MS commencement.
<b>Industry readiness contingency plan</b>	The contingency plan contains scenarios and responses that will be activated if an identified risk occurs. Agreed bidding-related contingency scenarios and trigger points have been incorporated into the Industry contingency plan. <sup>4</sup>

<sup>4</sup> Bidding-related contingency scenarios in the Industry readiness contingency plan are:

- C9: AEMO Bidding and dispatch platform deployment delayed
- C12: AEMO Bidding and dispatch platform cutover failure
- C15: AEMO Bidding and dispatch platform issues in production
- C16: 5-minute bids not being accepted by AEMO
- C22: AEMO Bidding and dispatch platform production failure

# 2. 5MS bidding and dispatch changes

This chapter sets out the high-level NEM bidding changes certain participants need to make as part of 5MS implementation. It also considers the changes AEMO is making to its dispatch and bidding system functionality.

Broadly, bidding changes affect participants and are the focus of this industry transition plan. AEMO's necessary 5MS dispatch functionality changes are discussed for completeness, along with how these changes relate to the 5MS Industry readiness contingency plan.

## 2.1 5MS-related participant changes

Table 2 shows the high-level changes that participants who bid in the NEM need to have implemented by the 5MS commencement.

**Table 2 Participants' 5-minute bidding requirements from 5MS commencement**

Change	Context
5-minute bidding, for energy, FCAS and MNSPs	Required by the 5MS rule
New rebid explanation fields	Recommended by the Australian Energy Regulator's <i>Rebidding and Technical Parameters Guideline</i>
Use of JSON file format for 5-minute bids	Required by AEMO's <i>Format and Validation for Energy, FCAS and MNSP Bids and Offers</i>
Bid submission method	Participants can choose to bid via any of: <ul style="list-style-type: none"><li>• FTP (updated method using JSON)</li><li>• API (new method)</li><li>• Web interface (updated method)</li></ul>
Data model changes	Described in AEMO's <i>EMMS Technical Specification – 5MS – Data Model v5.0</i>

## 2.2 5MS-related AEMO changes

Table 3 shows the high-level changes that AEMO needs to have implemented by 5MS commencement. These changes are monitored and reported through both the 5MS Program Consultative Forum<sup>5</sup> and 5MS readiness reporting.<sup>6</sup>

**Table 3 AEMO's 5-minute dispatch and bidding changes from 5MS commencement**

Change	Context
Use 5-minute bids as inputs to forecast models:	
<ul style="list-style-type: none"> <li>Pre-dispatch</li> </ul>	<p>The last 5-minute bid in each 30-minute period will be the input to pre-dispatch.</p> <p>No participant impacts are expected from this change.</p>
<ul style="list-style-type: none"> <li>ST PASA</li> </ul>	<p>The 5-minute bid with the lowest availability in each 30-minute period will be the input to ST PASA.</p> <p>No participant impacts are expected from this change.</p>
5-minute pre-dispatch	<p>As requested by the industry, AEMO will augment 5-minute pre-dispatch to include:</p> <ul style="list-style-type: none"> <li>15 sensitivities</li> <li>Fast start inflexibility profiles</li> </ul>
Rolling-sum price calculation	<p>The energy rolling-sum price calculation will be based on 5-minute spot price data (aligning it with the FCAS rolling-sum price calculation).</p> <p>No participant impacts are expected from this change.</p>
Data model changes	To accommodate 5-minute bidding and settlement.

### 2.2.1 Connection to the 5MS Industry readiness contingency plan

The 5MS Industry readiness contingency plan established that the minimum commencement criteria for 5MS and GS are that:

- “Essential meters” must be ready to produce and communicate 5-minute metering data.
- AEMO must be ready by providing market systems (bidding, metering, settlements) to support 5MS and GS.<sup>7</sup>

Therefore, for 5MS to commence, AEMO needs to have deployed its 5-minute bidding and dispatch solution, including the web bidding interface (AEMO's basic bidding offering). Note that AEMO's 5MS/GS readiness is tracked via readiness reporting and the contingency plan also applies to it.

<sup>5</sup> For more information on the 5MS Program Consultative Forum see: <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/5ms-program-consultative-forum-pcf>

<sup>6</sup> For more information on 5MS readiness reporting see: <https://aemo.com.au/initiatives/major-programs/nem-five-minute-settlement-program-and-global-settlement/readiness-workstream/readiness-reporting>

<sup>7</sup> Australian Energy Market Operator, *5MS and GS Industry readiness contingency plan*, June 2020, p13.



# 3. Bidding 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.<sup>8</sup> The Bidding transition plan supports both objectives by providing detailed and coordinated guidance on the industry transition to 5-minute bidding.

## 3.2 Principles

The Industry transition and go-live strategy principles apply to the Bidding 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<sup>9</sup>

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

1. Participants will use the BTP 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 BTP
2. Participants and AEMO will complete their bidding implementation activities by the transition end dates outlined in the BTP
3. Participants and AEMO must continue to fulfil all regulatory and compliance obligations during transition and system cutover periods
4. Participants and AEMO are to communicate any issues with meeting their BTP responsibilities in writing as soon as possible

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<sup>8</sup> 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>

<sup>9</sup> 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 BTP applies to the industry transition to 5-minute bidding under the 5MS rule. This includes the participant activities required to successfully implement the bidding changes outlined in section 2.1.

### 3.3.2 Out of scope

- Changes other than bidding that are within the scope of the 5MS program, for example changes to AEMO's dispatch functionality outlined in section 2.2.
- Bidding changes not related to 5MS that are made to support other NER or procedure requirements. For example, bidding changes to be made in support of the Wholesale Demand Response Mechanism.<sup>10</sup>

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<sup>10</sup> For information on the Wholesale Demand Response Mechanism see: <https://www.aemc.gov.au/rule-changes/wholesale-demand-response-mechanism>

# 4. Bidding transition plan

In keeping with the Transition and go-live strategy objective and principles, the Bidding transition plan provides coordinated guidance for AEMO and participants on the transition to 5-minute bidding. Importantly, the plan is the basis for participants to complete their own bidding transition plans.

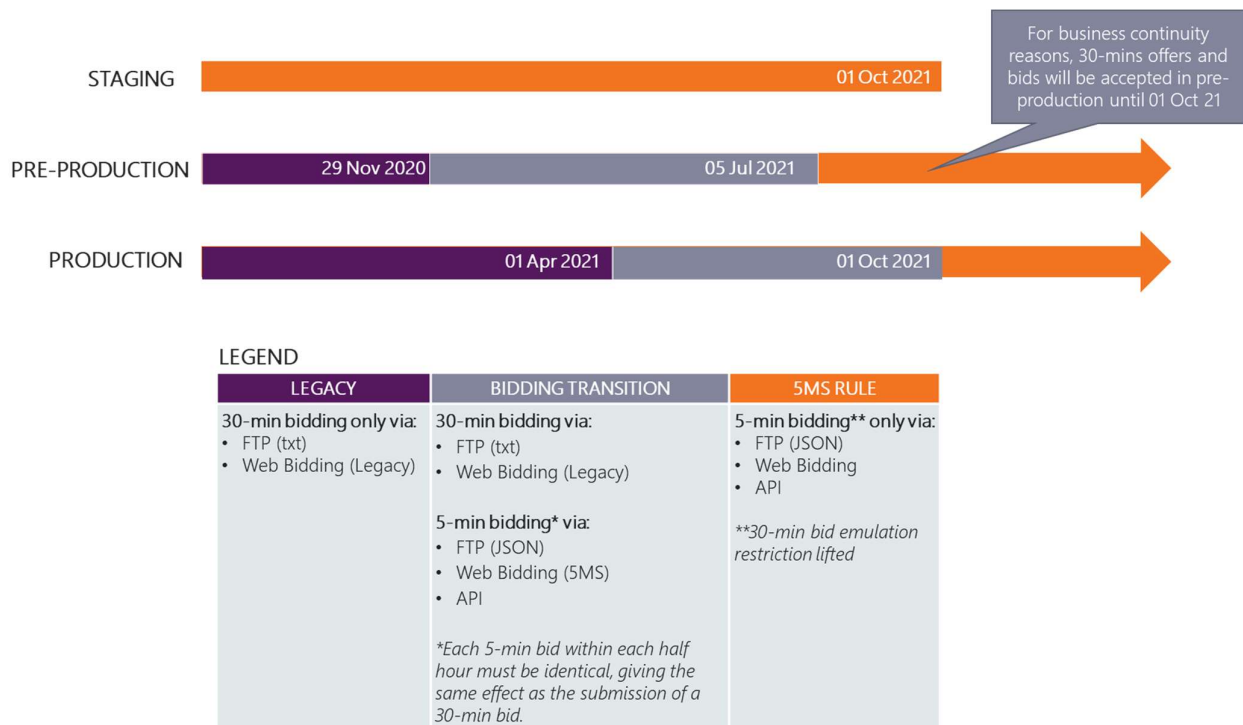
**Participants will individually develop and manage their 5-minute bidding activities based on the timeframes agreed in the plan.**

Figure 3 illustrates the overall approach to the industry transition to 5-minute bidding. The Bidding transition plan provides the supporting detail to this approach by outlining the expected activities, responsibilities, dependencies and timeframes, as well as other necessary elements required for completion of the bidding transition (see table 4). The full plan is published separately in Microsoft Excel format.

Note that:

- Preparing for a smooth industry transition to 5MS means that transition activities need to be planned and executed *by* the formal commencement dates. This is reflected in the transition timeframes set out in the plan.
- The 5MS staging environment and pre-production transition phases provide participants with the opportunity to test their systems and processes before the production go-live.

**Figure 3 5-minute bidding phases**



**Table 4 Description of Bidding transition plan elements**

<b>Bidding transition plan element</b>	<b>Purpose</b>
<b>BTA</b>	Indicates the unique bidding transition activity ID
<b>PHASE</b>	Describes the phases that support the transition to 5-minute bidding
<b>TRANSITION ACTIVITY</b>	Describes the bidding transition activity
<b>TRANSITION ACTIVITY OBJECTIVE</b>	Outlines the objective of the transition activity
<b>ASSUMPTIONS/COMMENTS</b>	Lists any assumptions or comments related to the activity
<b>RESPONSIBILITY</b>	Assigns leadership and responsibility of the bidding transition activity to a specific participant type
<b>DEPENDENCIES</b>	Lists any dependencies related to the activity
<b>ACTIVITY TRANSITION START DATE</b>	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.
<b>ACTIVITY TRANSITION END DATE</b>	Lists the transition end date of this activity. It is expected that all relevant participants have completed the activity by this date.
<b>RULE TIMING</b>	Lists the commencement date of the 5MS rule requirement that the activity supports

## 4.1 Maintaining the Bidding transition plan

If necessary, AEMO will continue to work in collaboration with the DFG to provide further details on how specific activities in the plan will be actioned. Any changes to the Bidding transition plan will be recommended to the RWG, and any agreed amendments will be incorporated.

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

## 4.2 Reporting on progress against the transition to 5-minute bidding

Reporting on readiness for 5-minute bidding will be through industry readiness reporting.<sup>11</sup> Readiness surveys include:

- Specific readiness criteria highlighting participant progress and status of 5-minute bidding implementations
- AEMO's progress on deploying its 5-minute bidding and dispatch solution, including the web bidding interface.

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

<sup>11</sup> 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

<b>Term</b>	<b>Definition</b>
5MS	Five-minute settlement
5MS commencement	Commencement date of the 5MS rule (1 October 2021)
AEMO	Australian Energy Market Operator
Bid	Bid or offer
BTA	Bidding transition activity
BTP	Bidding transition plan
DFG	Dispatch focus group
FCAS	Frequency control ancillary services
GS	Global settlement
JSON	Java-script online notation (encoded text file, similar to XML)
MNSP	Market network service provider
NEM	National electricity market
NER	National electricity rules
PCF	5MS/GS Program consultative forum
RWG	Readiness working group
ST PASA	Short-term projected assessment of system adequacy
SWG	Systems working group
Transition	Process of shifting from current to future operating state