

EMMS - Technical Specification - July 1 2025

1.00 January 2025

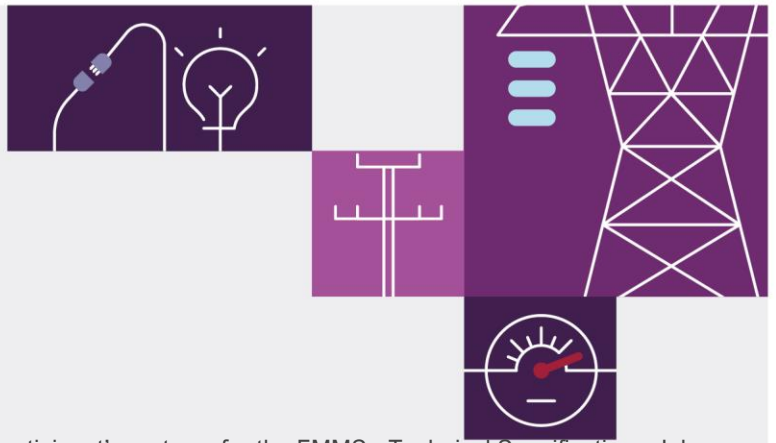
Pre-production: Wednesday 21 May 2025

Production: Tuesday 1 July 2025

Rules effective: Tuesday 1 July 2025

Release series: EMMS01072025





Important notice

Purpose & audience

This document describes the technical changes required to participant's systems for the EMMS - Technical Specification - July 1 2025 (Release). The Australian Energy Market Operator (AEMO) provides this information as a service targeting business analysts and IT staff in participant organisations. It provides guidance about the changes to their market systems under the National Electricity Rules (Rules), as at the date of publication.

How to use this document

- If you have questions about the business aspects of these changes, please see Consultations on AEMO's website.
- The references listed throughout this document are primary resources and take precedence over this document.
- Unless otherwise stated, you can find resources mentioned in this guide on AEMO's website.
- **Text in this format** is a link to related information. Some links require access to MarketNet.
- **Text in this format**, indicates a reference to a document on AEMO's website.
- **Text in this format** is an action to perform in the Markets Portal.
- This document is written in plain language for easy reading. Where there is a discrepancy between the Rules and information or a term in this document, the Rules take precedence.
- Glossary Terms are capitalised and have the meanings listed against them in the Glossary.
- Rules Terms have the meaning listed against them in the **National Electricity Rules** (Rules).

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Distribution

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Version History

1.00 See Changes in this version.

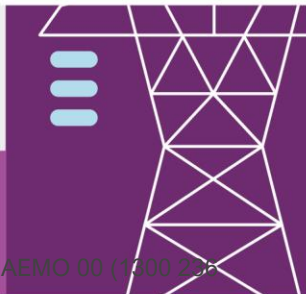
Documents made obsolete

The release of this document changes only the version of EMMS - Technical Specification - July 1 2025.



Support Hub

To contact AEMO's Support Hub use Contact Us on AEMO's website or for urgent matters phone: 1300 AEMO 00 (1300 236 600).





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1 Introduction

1.1 Audience


AEMO provides this information as a service targeting business analysts and IT staff in Registered Participant companies.

- 1. The primary audience is business analysts and IT staff in Registered Participant companies.
- 2. The secondary audience is IT staff from Scheduled Bidirectional Units (BDUs) and Scheduled Generators.

1.2 Objective

The EMMS - Technical Specification - July 1 2025 (Release) describes the projects planned by AEMO from a participant perspective and includes any system related changes for participants.

1.3 Status

Version	Status
1.00	Updated version based on the design. We still expect changes to the design while development and testing are in progress.
0.01	<div></div> Initial Draft for review. The design is not ready for participants' builds Presents the EMMS - Technical Specification - July 1 2025 evolving design. Please send feedback to Contact Us . In the Details of your enquiry section, mention the EAS Knowledge Management team as the Resolver group.

1.4 Release dates

Scheduled for implementation in:

- Pre-production: Wednesday 21 May 2025
- Production: Tuesday 1 July 2025

1.5 Projects and enhancements

Changes and enhancements for this Release include:

No.	Functionality	Change
1	APIs	For more information, see High-level changes
2	EMMS Data Model v5.5	
3	Markets Portal	

1.6 Rule and procedure changes

The following rules and procedures take precedence over technical specifications and guides.

Title	Project	Version/status	Effective
Enhancing reserve information (formerly Operating reserves)		Final	1 July 2025
NEM Dispatch Engine (NEMDE)			

1.7 Related technical specifications

Title	Description
EMMS – Technical Specification – Data Model v5.5 – April 2025	Updated

1.8 Related documents

Once published, these resources take precedence over this technical specification

These guides and resources are updated according to this technical specification and published for the pre-production Release Date.

Title	Description	Status
Markets Portal Help	Updates the Energy and FCAS Bidding topics: <ul style="list-style-type: none"> - Energy and FCAS Web Bids - Format and Validation for FTP Energy, FCAS and MNBP Bids and Offers - Bidding Validation Messages 	Not started
Data Interchange Online help	Help using Data Interchange and the Data Model	Not started
NEM Dispatch Bidding API Reference	Allows authorised participants to submit and retrieve their NEM Dispatch Bids/Offeres.	Not started

1.9 Approval to change

There is no approval or agreement to change required from participant change controllers for this Release.

No approval or agreement to change required from participant change controllers. Agreement was sought in the [May 2022 readiness working group \(RWG\)](#).

1.10 Market systems user group meetings

The Market Systems User Group (MSUG) is an industry user group established to discuss NEM wholesale and retail IT systems releases. Its purpose is to facilitate the continuing improvement of AEMO's IT systems by seeking feedback and collaboration from participants.

MSUG meetings are open to all interested parties, with invitations sent to all included on the distribution list. If you have a technical question for a project and want to attend the MSUG ask your company's support team to include your email address in their [AEMO Help Desk Bulletin \(CRM\)](#) distribution list.

1.11 Version numbers

AEMO releases new versions of this document as the technical requirements are streamlined.

Incremental version numbers such as 1.01, 2.01 and so on mean there is a minor change to the technical specification.

Major version numbers such as 1.00, 2.00 means there are substantial changes to the technical specification. Participants must carefully review these changes, detailed on page 4.

1.12 Changes in this version

This version includes the following updates:

- Adds information about the validation message in the Bidding service section.

2 Proposed Timeline

The dates for the Market System User Group Meetings (MSUG) are tentative. We will provide an invitation one week prior to the meeting.

Milestone	Date	Description
Approval required	NA	Final date for participant approval of this Release
Revised Technical Specification	February 2025	<p>AEMO releases new versions of this document as the technical requirements are streamlined. During the project this document is the source of truth</p> <p>From the production release, the technical specification becomes final and the Related become the source of truth.</p> <p>Technical Specification Portal</p>
Related Documents publication	21 May 2025	Release of guides and resources mentioned in Related
MSUG meeting: pre-release review	5 February 2025	<p>Market Systems User Group Meeting (MSUG) to review the technical specification and ask AEMO technical SMEs questions</p> <p>This date is tentative. The Knowledge Management Team provides the invitation prior to the meeting</p>
Pre-production Data Model auto subscription	25 March 2025 No auto-subscription for existing files	<p>For any existing files with modified or new tables, if participants are subscribed, AEMO moves them to the Legacy version</p> <p>For more details, see Data subscription on page 7</p>
Pre-production Data Model release	25 March 2025	Participant Data Model scripts released
Pre-production refresh	24 February 2025 – 28 February 2025 (TBC)	<p>Refresh of the pre-production system with data refreshed from the production system. An outage of up to five days can occur to the pre-production environment during this period. Participant access is not restricted, however, AEMO do not guarantee the pre-production data content or system availability. During the refresh, access to other AEMO systems such as AWEFS, EMMS, OPDMS, and STTM may be intermittently affected</p>

Proposed Timeline

Milestone	Date	Description
ERI pre-production implementation	13 May 2025 – 20 May 2025	<p>AEMO implements components of the Release to pre-production for participant testing</p> <p>AEMO has full access to the system during this period</p> <p>Participant access is not restricted; however, the data content or system availability is not guaranteed</p>
ERI pre-production available	21 May 2025	Testing period begins for participants
Industry Testing	21 May 2025 - 17 June 2025	Unstructured participant testing in the pre-production environment
MSUG meeting: pre-production review	16 April 2025 (TBC)	<p>MSUG to review the technical specification and ask AEMO technical SMEs questions</p> <p>This date is tentative. The Knowledge Management Team provides the invitation prior to the meeting</p>
Production Data Model auto subscription	29 April 2025 (TBC) No auto-subscription for existing files	<p>For any existing files with modified or new tables, if participants are subscribed, AEMO moves them to the Legacy version</p> <p>For more details, see Data subscription on page 7</p>
Production Data Model release	29 April 2025	Participant Data Model scripts released
ERI production implementation	21 May 2025 - 17 June 2025	AEMO implements the release to production
ERI production systems available	1 July 2025	Production systems available to participants
MSUG meeting: post-production review	14 May 2025 (TBC)	<p>Market systems user group meeting to review the implementation of the production release</p> <p>This date is tentative. The project manager will provide an invitation one week prior to the meeting</p>
Rule effective date	1 July 2025	ERI rule change enforced

3 Participant Impact

To comply with this Release, participants must:

TBC

1.1 EMMS data model v5.5

Participants must refer to the [EMMS Technical Specification – Data Model v5.5 – April 2025](#) for all tables and data population dates related to the Enhancing Reserve Information project.

1.2 Data subscription

1.2.1 Auto-subscription

Existing participants are auto-subscribed to any new files when they upgrade to the latest data model version. New file names to be advised.

1.2.2 Legacy files

There is **no** auto-subscription for the following existing files. Participants are moved to the Legacy version of this file and continue to receive the same data until they upgrade to the latest data model version and subscribe manually to the updates files.

4 Enhancing Reserve Information

4.1 Goal

The Enhancing Reserve Information (ERI) project aims to improve the transparency of energy available across the National Electricity Market (NEM). This enables participants to make more informed decisions.

The following changes are introduced:

- Publish the previous trading day's 5-minute data for batteries.
- Publish the daily energy limits (total availability) for scheduled generators and bidirectional units (BDUs) that are not batteries.
- Publish the aggregated state of charge of batteries.
- For scheduled BDUs to provide the Maximum Storage Capacity value.

4.2 High-level changes

Function	Description	Reference
APIs	Detailed specifications and context for API development	APIs
EMMS Data Model v5.5	Updates to tables in the DISPATCH, P5MIN, PRE_DISPATCH, and PD7DAY tables. For more information, see EMMS Technical Specification – Data Model v5.5 – April 2025 .	
Markets Portal	Updates the Energy & FCAS web interface on the Markets Portal.	

4.3 Bidding service

Updates the validation message as follows:

Validation messages

Error code	Error title	New message
NEM-BIDDING-VALIDATION-DAILYENERGYCONSTRAINTERROR	Invalid DailyEnergyConstraint	Daily energy constraint must be null or an integer not less than 0 and less than 24 X DUID MAXCAPACITY. The maximum capacity is a configurable value.

In the Bidding web interface, the validation message appears as follows:

AEMO Markets Portal
Set as:
User used for **EMM Market Testing for Macquarie**

- [Menu](#)
- [Favourites](#)

Enter bid

References to time are in Australian Eastern Standard Time

Trading date *

Dispatchable unit identifier (DUID) *

Service type *

Event time

Reference ID

Rebid reason

00 :hh 00 :mm 00 :ss

[Additional reasons](#)

Bid details

Daily energy constraint

Fast start min load

T1 - Time to synchronise

T2 - Time to min load

T3 - Time at min load

T4 - Time to shutdown

Select hour
eg 04:00

Options
Duplicate records

Change Prices

Quick-fill Bid

Expand

Export

Import

Period ID	Period	Max Avail	PASA Avail	Ramp Up	Ramp Down	Fixed Load	Avail 1 \$0.00	Avail 2 \$1.00	Avail 3 \$2.00	Avail 4 \$4.00	Avail 5 \$8.00	Avail 6 \$10.00	Avail 7 \$20.00	Avail 8 \$40.00	Avail 9 \$80.00	Avail 10 \$100.00
1	04:05	35	35	5	5		0	0	0	0	0	0	0	0	0	50
2	04:10	35	35	5	5		0	0	0	0	0	0	0	0	0	50
3	04:15	35	35	5	5		0	0	0	0	0	0	0	0	0	50
4	04:20	35	35	5	5		0	0	0	0	0	0	0	0	0	50
5	04:25	35	35	5	5		0	0	0	0	0	0	0	0	0	50
6	04:30	35	35	5	5		0	0	0	0	0	0	0	0	0	50
7	04:35	35	35	5	5		0	0	0	0	0	0	0	0	0	50
8	04:40	35	35	5	5		0	0	0	0	0	0	0	0	0	50
9	04:45	35	35	5	5		0	0	0	0	0	0	0	0	0	50
10	04:50	35	35	5	5		0	0	0	0	0	0	0	0	0	50

1 errors found

Invalid DailyEnergyConstraint
Daily energy constraint must be null or an integer not less than 0 and less than 24 X DUID MaxCapacity.

Submit

4.3.1 API validation

Request

```
{
  "referenceId": "{{referenceId}}",
  "comments": "{{comments}}",
  "authorisedBy": "{{authorisedBy}}",
  "energyBids": [
    {
      "tradingDate": "{{tradingDate}}",
      "duid": "{{duid}}",
      "dailyEnergyConstraint" : 1201,
      "prices": [0,1,2,4,8,10,20,40,80,100], "energyPeriods": [
        {"periodId":1,"rampUpRate":5,"rampDownRate":5,"pasaAvail":35,"maxAvail":35,"bandAvail": [0,0,0,0,0,0,0,0,0,0,50]}
        , {"periodId":2,"rampUpRate":5,"rampDownRate":5,"pasaAvail":35,"maxAvail":35,"bandAvail": [0,0,0,0,0,0,0,0,0,0,50]}
        , {"periodId":3,"rampUpRate":5,"rampDownRate":5,"pasaAvail":35,"maxAvail":35,"bandAvail": [0,0,0,0,0,0,0,0,0,0,50]}
        .....
        .....
        .....
        , {"periodId":286,"rampUpRate":5,"rampDownRate":5,"pasaAvail":35,"maxAvail":35,"bandAvail": [0,0,0,0,0,0,0,0,0,0,50]}
        , {"periodId":287,"rampUpRate":5,"rampDownRate":5,"pasaAvail":35,"maxAvail":35,"bandAvail": [0,0,0,0,0,0,0,0,0,0,50]}
        , {"periodId":288,"rampUpRate":5,"rampDownRate":5,"pasaAvail":35,"maxAvail":35,"bandAvail": [0,0,0,0,0,0,0,0,0,0,50]}
      ]
    }
  ],
  "fcasBids": [],
  "mnspBids": []
}
```

Response

```
{
  "transactionId": "{{transactionId}}",
  "data": {
    "participantId": {{participantId}},
    "offerTimeStamp": "2024-11-01T10:01:35",
    "transactionId": {{transactionId}},
    "referenceId": "{{referenceId}}",
    "comments": "{{comments}}",
    "filename": "{{filename}}",
    "authorisedBy": "{{authorisedBy}}",
  }
}
```

```
        "status": "CORRUPT",
        "method": "API"
    },
    "errors": [
        {
            "code": "NEM-BIDDING-VALIDATION-
DAILYENERGYCONSTRAINTERROR",
            "source": "$..energyBids[?(@.duid == '{{duid}}' &&
@.tradingDate == '{{tradingdate}})].dailyEnergyConstraint",
            "title": "Invalid DailyEnergyConstraint",
            "detail": "Daily energy constraint must be null or an
integer not less than 0 and less than 24 X DUID MaxCapacity."
        }
    ],
    "warnings": []
}
```

4.4 NEM reports

The NEM Reports publish the actual and calculated State of Charge.

For BDUs, the calculated State of Charge is published at a regional level.

5 Electricity Data Model 5.5

This project consists of some database changes in the upcoming version of the Electricity Data Model 5.5. For more details on these updates, see [EMMS Technical Specification – Data Model v5.5 – April 2025](#).

6 FAQs

This section is updated based on the participant queries from the MSUG meeting.

7 Implementation

7.1 Transition

TBD

7.2 Upgrading

You can upgrade your pre-production or production Data Model environments once you receive the Data Model scripts. Applying the scripts sets up the new Data Model structure on your local database. You receive the same data until the new versions of fields, files, and reports are released into pre-production or production and you update your subscriptions.

For help, see:

- [Upgrading your DI environments](#)
- [Updating your subscriptions:](#)

7.3 Implications

To maintain systems in-line with AEMO's market systems, participants need to:

- Review and assess the impact on their market systems with respect to the changes implemented as part of this Release.
- Change their systems prior to the implementation of this Release.
- Schedule staff and resources to upgrade their market systems for the production implementation of this Release.

7.4 Risks

TBD.

8 Terms

8.1 Rules Terms

You can find the following terms defined in the [National Electricity Rules \(NER\)](#) and the [Settlements Residue Auction Rules](#).

Term
AEMO
AEMO Markets Portal
Bid File
Market Participants
Maximum Units
NEM
Region

8.2 Glossary

You can find a full list of AEMO glossary terms in [Industry Terminology](#) on AEMO's website.

Abbreviation/Term	Explanation
AEST	Australian Eastern Standard Time
API	Application Programming Interface
B2B	Business-to-business
B2M	Business-to-market
BDU	Bi-directional Unit
CVP	Constraint Violation Penalties
DEC	Daily Energy Constraint
EMS	Energy Management System
EMMS	Electricity Market Management System; software, hardware, network and related processes to implement the wholesale energy market
ERI	Enhancing Reserve Information
FCAS	frequency control ancillary services
FTP	File transfer protocol
MSATS	Market Settlement and Transfer Solution for retail electricity
NER	National Electricity Rules
MW	Megawatt
MWh	Megawatt hour
Release	EMMS - Technical Specification - July 1 2025
Release Dates	Pre-production: Wednesday 21 May 2025 Production: Tuesday 1 July 2025
SOC	State Of Charge, energy availability of batteries (i.e. state of charge in MWh)
SOC (actual)	Initial Energy Storage at the start of a Trading Interval (TI)
SOC (calculated)	Calculated State Of Charge is the Energy Storage value at the end of a Trading Interval (TI)

Abbreviation/Term	Explanation
TBC	To be confirmed

9 References

Guide to AEMO's e-Hub APIs: Provides details about using AEMO's e-Hub as an interface to communicate information with AEMO. It assists Wholesale electricity and gas participants developing their own APIs.

Guide to Information Systems: Provides guidance for *Registered Participants* and interested parties about AEMO's participant electricity market systems.

Guide to User Rights Management: Assists participant administrators (PAs) to use the user rights management functions in the MSATS Web Portal.

Retail Electricity Market Glossary and Framework: assist participants of the Retail Electricity Market to understand the overall framework. It also contains a list of terms used in the Retail Electricity Market Procedures and a full list of NEM procedures, guidelines, and documents.

9.1 Data interchange and data model resources

9.1.1 About

Information about setting up a Data Interchange environment: Data Interchange Help > [About Data Interchange](#).

9.1.2 Help

- [Data interchange online help](#)

9.1.3 Software

You can find Data Interchange software in the following locations:

- Data Interchange Help > [Software Releases](#).
- Releases directory on the participant file share: FTP to 146.178.211.2 > Data Interchange, pdrBatcher, pdrLoader, or pdrMonitor.

9.1.4 Reports

- Data Interchange Help > [Data Model Reports](#).

9.1.5 Releases

- Data Interchange Help > [Release Documents](#).

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A1. Version history

10.1 V0.01

Initial draft