AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

MSATS - Technical Specification - June 2026

0.01 September 2025

Pre-production: Sunday 19 April 2026
Production: Sunday 21 June 2026
Rules effective: Monday 1 July 2026

Important notice

Purpose & audience

This document describes the technical changes required to participant's systems for the (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 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

Available to the public.

Document Identification

Prepared by: AEMO Digital

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Version History

0.01 Initial creation

Documents made obsolete

The release of this document changes only the version of MSATS - Technical Specification - June 2026.

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.

Contents

1 Introduction

1.1 Audience

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

The primary audiences are:

- LNSP – Recipients of Basic Power Quality Data (BPQD)
- Metering Coordinator – Responsible for sending BPQD
- Metering Data Providers – Send BPQD on behalf of the MC

1.2 Objective

The (Release) describes the projects planned by AEMO from a participant perspective and includes any system related changes for participants.

1.3 Status

Version	Status
0.01	 **Initial draft for review. The design is not ready for participants' builds** Presents the 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: Sunday 19 April 2026
- Production: Sunday 21 June 2026 (TBC)

1.5 Projects and enhancements

Changes and enhancements for this Release include:

No.	Functionality	Change	Affected interface	Reference
1	Power Quality Data (PQD)	New interface for managing Basic Power Quality Data (BPQD) and participant controls	Markets Portal	Markets Portal
2	PQD	API for BPQD submission and retrieval	API	Power Quality Data API
3	WebSockets	WebSockets for event notification and flow control events	IDX	IDX Technical Delivery Specification

1.6 Rule and procedure changes

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

Title	Version	Effective date
National Electricity Amendment (Accelerating smart meter deployment) Rule 2024 No. 20	2025/01	Final
Guide to the role of Metering Coordinator	1.41	1 July 2026
Basic Power Quality Data Procedure	1	1 July 2026
Retail Electricity Market Procedures- Glossary and Framework	4.4	1 December 2025
Metrology Procedure: Part A	7.9	1 July 2026
Metrology Procedure: Part B	7.9	1 July 2026
B2B Procedure: Data Posting Process	4.0	1 July 2026
B2B Procedure: Customer and Site Details Notification Process	4.0	1 July 2026
B2B Procedure: Service Order Process	4.0	1 July 2026
B2B Procedure: Meter Data Process	4.0	1 July 2026
B2B Procedure: One Way Notification Process	4.0	1 July 2026
B2B Procedure: Technical Delivery Specification Process	4.0	1 July 2026

1.7 Related technical specifications

None.

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
IDX Technical Delivery Specification	Describes the technical standards, protocols, and payloads for data exchange on the Industry Data Exchange (IDX) platform	Draft
API portal	Information about the PQD API	Not started
Basic Power Quality Data	Online help for submitting and managing BPQD	Not started
Retail Electricity Market Glossary and Framework	Assists Retail Electricity Market participants to understand the overall MSATS framework, NEM procedures, and procedure terms	Not started

1.9 Approval to change

No approval or agreement to change required from participant change controllers.

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 below.

1.12 Changes in this version

No changes, this is the initial version.

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	n/a	See **Approval to change**
Revised Technical Specification	October 2025	AEMO releases new versions of this document as the technical requirements are streamlined. During the project this document is the source of truth From the production release, the technical specification becomes final and the **related documents** become the source of truth **Technical Specification Portal**
Related Documents publication	20 April 2026	Release of guides and resources mentioned in Related on page 7
MSUG meeting	15 October 2025	Market Systems User Group Meeting (MSUG) to review the technical specification and ask AEMO technical SMEs questions This date is tentative. The Knowledge Management Team provides the invitation prior to the meeting
Pre-production refresh	TBC	Refresh of the retail pre-production system with data from the production system. For more information, **see Pre-production Refresh**
Pre-production implementation	Sunday 19 April 2026 (TBC)	AEMO implements components of the Release to pre-production for participant testing AEMO has full access to the system during this period Participant access is not restricted; however, the data content or system availability is not guaranteed
Pre-production available	Sunday 19 April 2026 (TBC)	Testing period begins for participants
Participant testing	20 April 2026 - 29 May 2026 (TBC)	Unstructured participant testing in the pre-production environment
Production implementation	19 June 2026 – Sunday 21 June 2026	AEMO implements the release to production
Production systems available	Sunday 21 June 2026	Production systems available to participants

3 Participant Impact

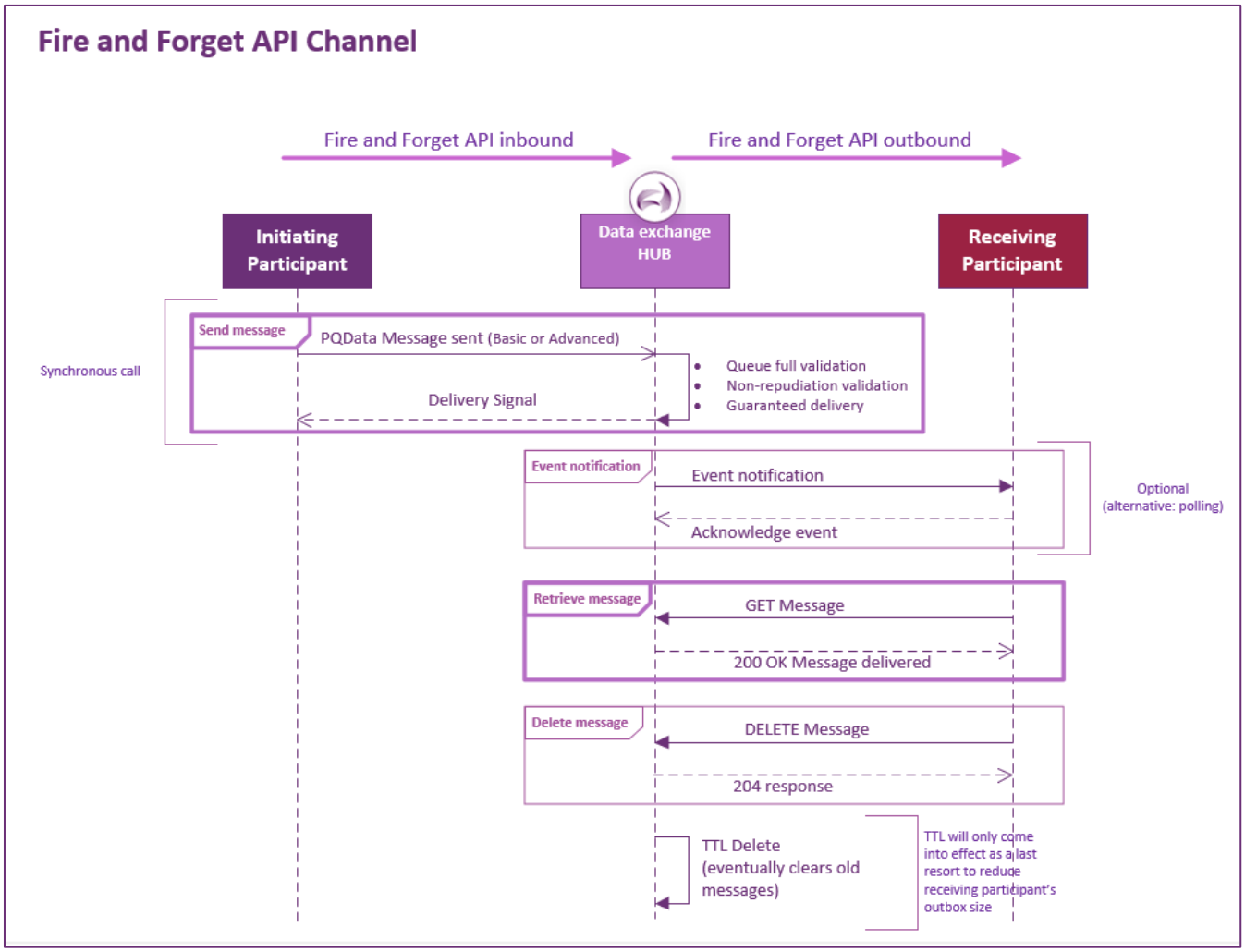
To comply with this Release, Metering Coordinators and Local Network Service Providers need to schedule staff and resources to accommodate the delivery and receipt of Basic Power Quality Data (BPQD).

4 Basic Power Quality Data

Basic Power Quality Data (BPQD) consists of voltage, current, and phase angle to assess power quality. From 1 July 2026, The National Electricity Amendment Rule 2024 No. 20, mandates the delivery of this data from smart meters (except Type 4A and Type 8B meters). BPQD is delivered by Metering Coordinators (MCs) to Local Network Service Providers (LNSPs) using AEMO's Industry Data Exchange (IDX), a data exchange hub for all markets.

4.1 Delivery mechanism

MCs deliver BPQD to Local Network Service Providers LNSPs using the Fire and Forget API Channel on the IDX platform. This asynchronous data delivery mechanism does not require formal acknowledgements from the receiving party.



The process flow is described below:

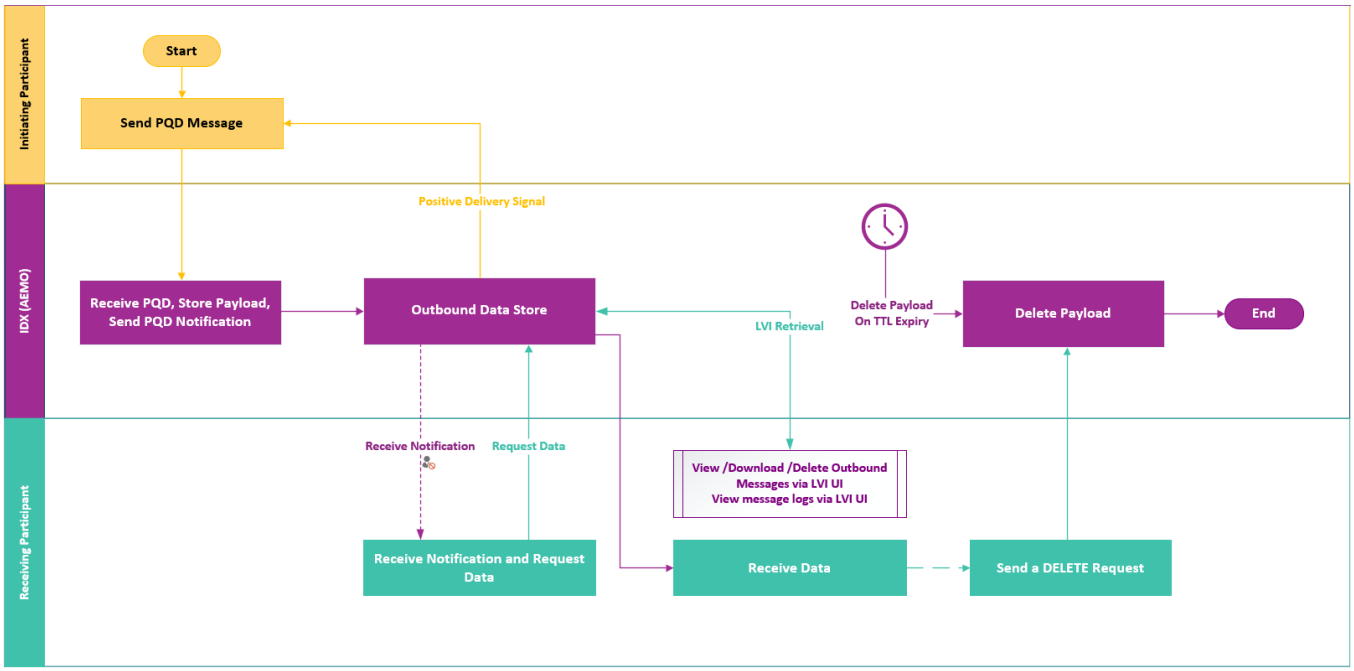
1. Submission by the metering party: The Metering Coordinator (MC) or their delegate (for example, Metering Data Provider) submits a BPQD payload according to the **PQD schema** using the POST /bpqd API endpoint. IDX only returns an HTTP 200 OK response. No MACK or TACK acknowledgements are issued.

2. Message queuing: Upon successful submission, IDX places the BPQD message into the recipient LNSP's queue. The message remains in the queue for up to 5 business days, unless deleted earlier by the LNSP.

3. Event notification with WebSockets: IDX sends a WebSocket event notification to the LNSP, indicating a new message is available.

4. Retrieval by LNSP: The LNSP uses the GET /bpqd API endpoint to retrieve metadata for all queued messages. To retrieve the full payload, GET /bpqd/{messageContextId} API endpoint is used. For troubleshooting purposes, messages can be downloaded from the IDX interface in the Markets Portal.

5. Message deletion: After successful retrieval, the LNSP sends a DELETE /bpqd/{messageContextId} API request to remove the message from IDX outbound queue. They can also delete the message in the IDX interface in the Markets Portal. If the message is not deleted, IDX automatically removes it after the TTL (Time to Live) expiry period of 5 business days.



4.2 High-level changes

Function	Description	Reference
PQD API	API for submitting and retrieving basic power quality data in the NEM	**Power Quality Data API**
IDX WebSocket	Websocket for receiving BPQD event notifications and flow control events	IDX Technical Delivery Specification
Markets Portal	New Markets Portal interface for LNSPs to assist troubleshooting PQD transactions, Participant accreditation and controls	**Markets Portal**

4.3 Access

TBC

5 Event Notifications

The IDX Hub uses WebSockets to establish a persistent, full-duplex communication channel between AEMO and Market Participants. This enables real time event notifications for messages used in the BPQD delivery.

An event notification includes metadata such as:

- messageContextId
- messageType
- priority
- initiatingParticipantId

IDX can also send Flow Control Events using WebSockets to inform participants of:

- Full recipient queues
- Insufficient delete rates
- Outage notifications

You can subscribe to WebSockets in the IDX interface in the Markets Portal.

For more information, see the IDX Technical Delivery Specification.

6 Power Quality Data Schema

The schema is designed to support AEMO's IDX Fire and Forget API pattern. It is a data object consisting of three main sections:

- **Header**: The header contains metadata about the message and its routing.
- **Transaction**: Transaction provides the transaction details and the associated NMI data.
- **NMI details**: Each transaction contains one or more NMI data objects containing metering and interval data. Each interval data object contains a timestamp and a Reads object with BPQD data.

BPQD payload example


```
{
  "data": {
    "header": {
      "initiatingParticipantId": "VLPJIRQALQ",
      "receivingParticipantId": [
        "WDFLPIIGUQ"
      ],
      "messageId": "XQYUEU8265RUVPVQGFMG-MSG-07092012797",
      "messageDateTime": "2025-08-26T05:29:43.778+10:00",
      "businessFunctionId": "PQD",
      "priority": "Low",
      "market": "NEM"
    },
    "transactions": [
      {
        "transactionId": "UBOXV5BKPOCZG6Q93OCH-TNS-1723075664114",
        "transactionType": "BasicPowerQualityData",
        "transactionDateTime": "2025-08-26T05:29:43.778+10:00",
        "nmiDetails": [
          {
            "nmi": "388DOUCRLR",
            "nmiChecksum": 9,
            "meterSerialNumber": "1M44G1B7FHUZ",
            "intervalLength": "300",
            "intervalData": [
              {
                "time": "2025-08-26T05:29:43.778+10:00",
                "reads": [
                  {
                    "V1": 9999999999999.99,
                    "C1": 9999999999999.99,
                    "A1": 999.99,
                    "V2": 9999999999999.99,
                    "C2": 9999999999999.99,
                    "A2": 999.99,
                    "V3": 9999999999999.99,
                    "C3": 9999999999999.99,
                    "A3": 999.99
                  }
                ]
              }
            ]
          },
          {
            "nmi": "123ABCXYZ9",
            "nmiChecksum": 5,
            "meterSerialNumber": "2N88H2C3JKLQ",
            "intervalLength": "300",
            "intervalData": [
              {
                "time": "2025-08-26T05:29:43.778+10:00",
```

```
                "reads": [
                  {
                    "V1": 8888888888888.88,
                    "C1": 8888888888888.88,
                    "A1": 888.88,
                    "V2": 8888888888888.88,
                    "C2": 8888888888888.88,
                    "A2": 888.88,
                    "V3": 8888888888888.88,
                    "C3": 8888888888888.88,
                    "A3": 888.88
                  }
                ]
              }
            ]
          }
        ]
      }
    ]
  }
}
```


6.1 Header

data.header object contains the message metadata.

Field	Type	Required	Requirements	Description
initiatingParticipantId	string	Yes	Maximum 10 characters	The ID of the participant sending the message
receivingParticipantId	string	Yes	Maximum 10 characters	The ID of the participant receiving the message
messageId	string	Yes	^[A-Z0-9]{20}-MSG-\d{13}$, len 1–36	A unique identifier for the message. For example, PARTICIPANT…-MSG-1234567890123
messageDateTime	string	Yes	YYYY-MM-DDTHH:mm:ss.SSS±hh:mm ±hh:mm is UTC offset (+ or -)	Date and time the message is created 2025-07-21T17:39:04.547+10:00
businessFunctionId	string	Yes	PQD	The business function or transaction group identifier
priority	string	Yes	high, medium, or low	The message priority level
market	string	Yes	Enum includes NEM, state ELEC/GAS variants; default NEM	The energy market that applies to the message

6.2 Transactions

data.transactions is a list of transaction objects.

Field	Type	Required	Requirements	Description
transactionId	string	Yes	Format: [A-Z0-9]{20}-TNS-\d{13}	A unique identifier for the transaction
transactionType	string	Yes	For BPQD, it must be BasicPowerQualityData	The type of transaction
transactionDateTime	string	Yes	ISO 8601 with UTC offset	Timestamp of the transaction
nmiDetails[]	array	Yes	NMI details	An array of NMI data objects. See NMI details

6.3 NMI details

Data.transactions.nmiDetails is a nested array of NMI objects in the transaction object containing meter and interval data.

Field	Type	Required	Requirements	Description
nmi	string	Yes	10 characters YYYY-MM-DDTHH:mm:ss.SSS±hh:mm ±hh:mm is UTC offset (+ or -)	National Metering Identifier
nmiChecksum	string	Yes	Integer 0-9	The checksum for the NMI
meterSerialNumber	String	Yes	≤ 12 chars	The meter serial number
intervalLength	intervalLength	No	300 for BPQD	Time in seconds for the length of the interval period
intervalData[]	array	Yes	intervalData	Interval data objects containing measurements for the time period

6.3.1 Interval data

data.transactions.nmiDetails.intervalData contains a timestamp and a set of readings for each interval.

Field	Type	Required	Requirements	Description
time	String	Yes	YYYY-MM-DDTHH:mm:ss.SSS±hh:mm ±hh:mm is UTC offset (+ or -)	Interval start date and time
reads	Array	Yes	basicReadItem objects	An array of basicReadItem objects for each interval element

Basic read item

A vector-style object containing voltage, current, and angle readings.

Schema object	Type	Required	Requirements	Description
basicReadItem	Vector-style named attributes	Yes	V1, V2, V3, C1, C2, C3 Minimum: -9999999999999.99 Maximum: 9999999999999.99 A1, A2, A3 minimum: -999.99 maximum: 999.99	anyOf: At least one of V1, C1, A1, V2, C2, A2, V3, C3, A3 must be present in each basicReadItem

7 Power Quality Data API

This API provides an interface for submitting and retrieving structured basic power quality data within the NEM.

7.1 Authentication

OAuth tokens. Details TBC.

7.2 API gateway

Participants can connect to the AEMO API Gateway through MarketNet.

All communications between AEMO's API gateway and participants' gateways use HTTPS. AEMO APIs do not support HTTP.

7.3 Compression

For details, see the IDX Technical Delivery Specification.

7.4 Submission size

A submission request or response has a payload limit of 10 MB uncompressed.

7.5 Throttling

The following throttling limits are applied by AEMO per Participant ID each day:

- High (file size 1 Mb) 180,000 messages.
- Medium (file size 5 Mb) 35,000 messages.
- Low (file size 10 Mb) 18,000 messages.

Participant systems must manage throttling limits. AEMO can also reject multiple API requests for the same participantId at the same time.

7.6 Validation

TBC

7.7 Submission processing

TBC

7.8 Base urls

Environment	Base URLs
MarketNet pre-production	TBC
MarketNet production	https://nem-apis-wgw.aemo.com.au

7.9 Endpoints

Endpoint	Method	Description	Success response
/pqd/v1/bpqd	POST	Submit BPQD. Payload contains data at the 5-minute trading resolution. For payload details, see **PQD payload format and structure**	200 (accepted)
/pqd/v1//bpqd	GET	A list of metadata for BPQD messages in the queue	200 (OK)
/pqd/v1//bpqd/{messageContextId}	GET	Retrieve a BPQD payload	200 (OK)
/pqd/v1//bpqd/{messageContextId}	DELETE	Delete a BPQD payload	200 (deleted)

7.10 PQD payload format

The PQD payload format is JSON. For schema details, see **PQD schema**.

A BPQD payload contains data at the 5-minute trading resolution.

7.11 Payload limit

The payload limit is 10 MB uncompressed.

7.12 HTTP response codes

The table below lists HTTP response codes when submitting PQD.

Scenario	Status code	Message
Success	201 Created	Success
Message Context ID Validation Failure	400 Bad Request	The message context ID in the header does not match the values in the payload. Please ensure both values are aligned and retry the request.
Schema Version Validation Error	400 Bad Request	The provided schema version is not a supported schema version for that business function.
Receiving Participant ID is invalid	400 Bad Request	The Receiving Participant ID does not exist or is not registered.
Schema payload validation errors	422 Unprocessable Entity	The payload is not in a valid schema format for the business function.
AEMO backend error	500 Internal Server Error	An unexpected error occurred while processing your request. Please try again later.
Message queue outbound error	503 Service Unavailable	The receiving participant's server cannot handle the request due to flow control restrictions or scheduled maintenance.

8 Markets Portal

The Markets Portal includes a IDX user interface for LNSPs to troubleshoot PQD transactions, Participant accreditation, and Participant controls. More details to follow.

9 FAQs

Populated after the next MSUG.

10 Implementation

10.1 Transition

TBC

10.2 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.

10.3 Risks

TBC

11 Terms

11.1 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

Term
AEMO Website
Market Participants
NEM

Term
Product

11.2 Glossary

You can find a full list of AEMO glossary terms in **Industry Terminology** on AEMO's website.

Abbreviation/Term	Explanation
API	Application Protocol Interface
AEST	Australian Eastern Standard Time
B2B	Business-to-business
BPQD	Basic Power Quality Data
IDX	Industry Data Exchange
NER	National Electricity Rules
NMI	National Metering Identifier
PQD	Power Quality Data
Release	MSATS - Technical Specification - June 2026
Release Dates	Pre-production: Sunday 19 April 2026 Production: Sunday 21 June 2026
TBC	To be confirmed

12 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.

A1. Version history

No version history, this is the initial draft release.