MSATS - Technical Specification – June 2024

V2.00 May 2024

Pre-production: Tuesday 12 March 2024

Production: Sunday 12 May 2024

Rules and procedures effective: Sunday 2 June 2024

Release series: MSATSIESS13524

Important notice

Purpose & audience

This document describes the technical changes required to participants' systems for the MSATS - Technical Specification – June 2024 (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 usually on **AEMO's website**.

- **Text in this format** is an action to perform in the MSATS Web 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.

- Rules and Glossary Terms are capitalised and have the meanings listed against them in **the National Electricity Rules (NER)** and **Retail Electricity Market Glossary and Framework**.

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Distribution

Available to the public.

Document identification

Prepared by: AEMO Digital

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Version history

V2.00 See **Changes in this version**.

Documents made obsolete

The release of this document changes only the version of MSATS - Technical Specification – June 2024.

Contact us

Support Hub: To contact AEMO's Support Hub use **Contact Us** on AEMO's website or Phone: 1300 AEMO 00 (1300 236 600) and follow the prompts.

Contents

1   Introduction

1.1   Audience

AEMO provides this information as a service targeting business analysts and IT staff in participants' organisations.

The primary audience for this technical specification is:

- Financially Responsible Market Participants (FRMP).
- Local Network Service Providers (LNSP) updating their CATS Standing Data.
- Embedded Network Child Connection Points with a different TNI Code than the Parent Connection Point.

1.2   Objective

The MSATS - Technical Specification – June 2024 describes AEMO's **projects and enhancements** from participants' perspective, including related changes to participants' IT systems.

For details about MSATS functionality, see Technical Guide to MSATS.

1.3   Status

Version	Status
V2.00	This technical specification is final
V1.03	The design continues to evolve. We expect further small changes as testing continues

Version	Status
V0.01	**Initial draft for review. The design is not ready for participants' builds** **Presents the MSATS - Technical Specification – June 2024 evolving design** Please send feedback to **techwriters@aemo.com.au**

1.4   Release dates

Scheduled for implementation in:

- Pre-production: Tuesday 12 March 2024

- Production: Sunday 12 May 2024

- Rules and Procedures effective: Sunday 2 June 2024

1.5   Projects and enhancements

Project	Description	Type
Integrating Energy Storage Systems (IESS)	- New FRMP registration category: **Integrated Resource Provider** - New NMI Classification Codes to support **Bidirectional Units**	Project

1.6   Forums and meetings

1.6.1 MSUG 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.

It is open to all interested parties, with invitations sent to all Registered Participants If you have a technical question for a project and want to attend the MSUG, so you get an invite, ask your company's support team to include your email address in their **AEMO Help Desk Bulletin (CRM)**.

1.6.2 NEM Reform program stakeholder engagement.

Details about the NEM Reform Forums, Working Groups, and related AEMO forums: **NEM Reform Stakeholder Engagement**.

1.6.3 Electricity Retail Consultative Forum

The **Electricity Retail Consultative Forum (ERCF)** provides a platform for participants operating in the NEM to participate in the enhancement of the Retail Electricity Market Procedures Framework (except B2B Procedures).

1.7 Rule and procedure changes

Project	Title	Version /status	Effective
Integrating Energy Storage Systems into the NEM: Retail Electricity Market Procedures consultation	- Retail Electricity Market Procedures – Glossary and Framework - Metrology Procedure: Part A National Electricity Market	4.1	Sunday 2 June 2024
	- MSATS Procedures: CATS Procedure Principles and Obligations	5.7	
	- MSATS Procedures: Procedure for the management of wholesale, interconnector, generator and sample (WIGS) NMIS	5.7	
	- MSATS Procedures: Metering Data Management Procedures	4.5	
	- MSATS Procedures: National Metering Identifier	7.2	
	- Metrology Procedure Part A: National Electricity Market	7.6	
	- Metrology Procedure: Part B Metering Data Validation, Substitution and Estimation	7.6	
	- Exemption Procedure: Metering Installation Data Storage Requirements	1.1	
	- Standing Data for MSATS	5.7	
	- Guide to the Role of the Metering Coordinator	1.3	
	- Service Level Procedure: Metering Data Provider Services	2.4	

1.8 Related technical specifications

Title	Description
EMMS - Technical Specification – June 2024	- Changes to NEM wholesale systems as part of the IESS project

1.9 Related software

No related software.

1.10 Related documents

Once published, these resources take precedence over this technical specification

These guides and resources are updated according to this technical specification.

Title	Description	Publish date
Technical Guide to MSATS	Supplement to MSATS B2M policies, procedures, and guides providing an understanding of MSATS functionality and business rules Contains information about the CATS History Model and NMI Discovery Questions and Answers	Sunday 2 June 2024
Guide to MSATS Reports	Details about CATS and MDM reports	Sunday 2 June 2024

1.11 Approval to change

No approval or agreement to change required from Participant change controllers. AEMO sought approval in the Integrating Energy Storage Systems into the NEM: Retail Electricity Market Procedures consultation.

1.12 Version numbers

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

Incremental version numbers such as 0.01, 1.01, 2.01 and so on mean a draft version or a small 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 the changes detailed in this Release.

1.13 Changes in this version

- Final version

- Updated Proposed Timeline with pre-production refresh dates and the next MSUG meeting

2   Proposed Timeline

Milestone	Date	Description
Approval required	n/a	No approval required. For details, see **Approval to change**
Revised technical specification	March 2024	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 pre-production release, the technical specification is no longer updated, the **related documents** become the source of truth **Release schedules and technical specifications**
MSATS pre-production refresh	1 July 2024 – 5 July 2024 Refreshed with production data from 1 July 2024 • eMDM data: 7am • CATS data: 9 am	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. For details, see **AEMO	Technical Specification Portal**.
Market trials and industry testing	3 April 2024 – 24 May 2024	Testing of IESS capability conducted in the pre-production environment. It is open to all participants to confirm their updated market processes, and it includes scheduled scenarios as agreed with Industry.
Pre-production implementation	Tuesday 12 March 2024 – Wednesday 13 March 2024	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 systems available	Tuesday 12 March 2024	Testing period begins for participants. AEMO assistance available if required
Related documents publication	Tuesday 12 March 2024	Release of guides and resources mentioned in Related documents on page 4

Proposed Timeline

Milestone	Date	Description
MSUG meeting	Wednesday 10 July 2024	MSUG to review the implementation of this production release and ask AEMO technical SMEs questions This date is tentative. The project manager will provide an invitation one week prior to the meeting
Production implementation	Sunday 12 May 2024	AEMO implements the release to production
Production systems available	Monday 13 May 2024	Production systems available
Procedures effective	Sunday 2 June 2024	Rules and procedures effective

3   Participant Impact

3.1   Market participant category

There is a new Market Participant category called Integrated Resource Provider(IRP), who operates as a FRMP.

The IRP can register to classify Retail Load and Integrated Resource Systems (IRS), which can include Bidirectional units (BDU), Market Generators, Market Loads, and Market Connection Points (previously Market Loads and Small Generating Connection Points) through AEMO registration processes and systems.

3.1.1   New MSATS Role Categories for IRPs and Small Resource Aggregators

As part of IESS, the existing Small Generation Aggregator (SGA) registration category is transferring to the new IRP registration category and will operate as a "Small Resource Aggregator" in relation to small resource connection points that it has classified.

To support identification of IRPs in MSATS, AEMO is introducing two new role categories:

- IRPNRL: Identifies an IRP that does not hold a retailer licence and may not classify SMALL, LARGE or NCONUML NMIs. This code will replace the existing SGA role category.

- IRP: IRP that holds a retailer licence and may classify SMALL, LARGE or NCONUML NMIs.

The Role Category field is maintained by AEMO and stored in the CATS_PARTICIPANT_ROLES table, which is accessible via C1 reports. To identify an IRP operating as a Small Resource Aggregator, participants can use the two new role categories in combination with the NREG NMI Classification Code. Other IRP labels can be identified in a similar manner.

The Role Category field was initially introduced to identify FRMPs registered as a Market Stand-Alone Power System (SAPS), Resource Provider (MSRP), and SGAs for the purpose of SAPS validations. However, the SGA value will be removed (as SGAs will no longer exist as a registration category after IESS) and replaced with the IRP and IRPNRL values.

The distinction between IRPs with and without a retailer licence is included to support AEMO validation processes. This will be implemented in a future release.

3.2   Bidirectional units

 (BDU) having a single NMI and Transmission Node Identifier (TNI), opposed to currently where storage units have separate NMIs classified as a Scheduled Generating Unit and a Scheduled Load.

3.3   Change request processing

Change Request (CR) configuration is updated to reference the new **NMI Classification Codes** (NCC).

Anyone requiring a list of their organisation's NMIs that will be updated for the NCC updates can request them from **NEMReform@aemo.com.au**

3.4   Reports

There are small changes to some MDM reports.

3.5   NMI Classification Codes (NCC)

There are new and amended NMI Classification Codes to accommodate integrated resource systems, distinguish between distribution and transmission connected generating systems for correct allocation of unaccounted for energy, and incorporate terminology changes. These NCCs were consulted on through the IESS retail procedure consultation and are defined in the CATS procedure.

Code	Description	Status
DGENRATR	Connection point associated with a generating system registered with AEMO and connected to a registered network other than a transmission network or embedded network. AEMO assigns this NMI Classification from the Generator registration approval date.	New
GENERATR	Connection point associated with a generating system registered with AEMO and connected to a transmission network. AEMO assigns this NMI Classification from the Generator registration approval date.	Amended
DIRS	Connection point associated with an integrated resource system (IRS) registered with AEMO and connected to a registered network other than a transmission network or embedded network. AEMO assigns this NMI Classification from the IRS registration approval date.	New

Code	Description	Status
NREG	A small resource connection point that is not a micro DER connection that connects one or more small generating units, or small bidirectional units (or any combination), to a distribution network where the only supply to the connection point is for use by a small bidirectional unit (e.g. charging load) or auxiliary load.	Amended
TIRS	Connection point associated with an integrated resource system (IRS) registered with AEMO and connected to a transmission network. AEMO assigns this NMI Classification from the IRS registration approval date.	New

AEMO will transition NMIs for distribution-connected generating systems (and the generation side of distribution-connected storage systems) from GENERATR to DGENRATR for IESS go-live using the Bulk Change Tool (BCT), in accordance with the **NMI Classification Code Transition Plan**. This occurs the day after the systems release with the start date backdated to the IESS go-live date. The BCT notification contains a BC01 code.

Where required, NMIs in a grid-scale Battery Energy Storage System (BESS) transitions from the two NMI model to a single NMI as part of IESS. For details, see the IESS Bidirectional Unit Transition and Cutover Plan in the **IESS participant toolbox**.

An NMI associated with a BESS is transitioned during a subset of BDU cutover activities from GENERATR to TIRS or DGENRATR to DIRS using 5101 or 5100 CR codes. AEMO has engaged BESS participants and Metering Service Providers with affected NMIs through IESS information sessions. Information is also available in the IESS participant toolbox. For further questions, contact **NEMReform@aemo.com.au**.

3.6   MDP Substitution Type 13 data

AEMO creates MDFF 5 and 15min files for consumption by Metering Data Providers (MDPs) to perform type 13 metering data substitution, if required.

MDPs utilise SCADA MDFF data for type 13 meter read substitutions to fulfil their obligations for both B2M and B2B Transactions in compliance with the **Metrology Procedure Part B**.

From the IESS rule commencement date Monday 3 June 2024, the csv file includes interval data for registered and effective BDUs. To support BDUs, the file format is the same, but it contains the following data changes:

- 200 line contains the BDU information. This information is populated based on the following rules:

- – The Dispatchable Unit ID

- – Left padded with 'Z' to complete the 10 characters for a NMI

- E1 300 line for kWh intervals when a BDU is consuming load

- B1 300 line when a BDU is generating

Figure 1   Sample SCADA MDFF

100	NEM12	202406031534	NEMMCO	NEMMCO																		
200	BDUDUIDZZZ	E1B1		E1			kWh	15														
300	20240225	0	0	0	0	0	0	0	0.17	512	402	500	984	1474		0	0	0	0	0 S13	0 Scada data	202406031534
200	BDUDUIDZZZ	E1B1		B1			kWh	15														
300	20240225	0	4.17		0.67	9.17	6.17	0	0	0	0	0	0	0		15.8	7.67	4.08	0.25	0 S13	0 Scada data	202406031534
900																						

3.6.1 Retrieving the files

MDPs can retrieve these files via FTP from the following EMMS participant file folders:

\<#PARTICIPANTID>\IMPORT\REPORTS\MDA_MDFF5

\<#PARTICIPANTID>\IMPORT\REPORTS\MDA_MDFF

3.6.2 Transitioning BESS

For BESS, the following data is observed when transitioning from two DUIDs to a single BDU.

Status	Pre-cutover	Cutover	Post-cutover
BDU DUID	DUID present in payloads with all intervals associated to E1 and B1 are 0	E1 and B1 are 0 until the cutover time (i.e., 1 pm interval), then the actual SCADA values for remainder of the day	Continuous actual SCADA values, E1 for load and B1 for generation
Existing two DUID BESS (load and generation pair)	No change	E1 and B1 are the actual SCADA values until the cutover time (i.e., 1 pm interval), then zero values for remainder of the day	DUID present in payloads with all intervals associated to E1 and B1 are 0 until the two DUID deregistered +5 day of cutover, then it is not present in payloads

3.7   AEMO MSATS configurable code fields

There are no changes to the MSATS configurable code fields. AEMO recommends participants do not hard code the MSATS configurable fields.

4   Change Request Processing

Change Requests (CRs) configuration include changes to reference the new **NMI Classification Codes** (NCC). Participants can update the CATS Standing Data accordingly.

CR code	CR name	Jurisdiction code
1000	Change Retailer	ALL
1020	Error Corrections	ALL
1500	Provide Actual Change Date	ALL
2000/2001	Create NMI	ALL
2020/2021	Create Child NMI	ALL
2500/2501	Create NMI, Meter Install and Data Stream	ALL
3000/3001	Create Metering Installation Details	ALL
3004/3005	Exchange of Metering Information	ALL
3050/3051	Change Metering Install Details	ALL
3100/3101	Change Network Tariff Code	ALL
4000/4001	Create NMI DataStream	ALL
4004/4005	Exchange of Datastream Information	ALL
4050/4051	Change NMI Datastream	ALL
5001/5021	Backdate an NMI	ALL
5050/5051	Change an NMI	ALL
5060/5061	Change NMI Embedded Network Child	ALL
5056/5057	Change NMI Details –Last Consumer Change Date	ALL
5080/5081	Change Parent Name	ALL

CR code	CR name	Jurisdiction code
5100/5101	Correct NMI Master Data (AEMO only)	ALL
6100/6110	Change LNSP	ALL
6200/6210	Change MDP	ALL
6300/6301	Change MC	ALL
6421	Change ENLR for a CHILD NMI	ALL
6500/6501	Change ROLR	ALL
6700/6701	Change MPB or MPC or BOTH	ALL

5 MDM Reports

5.1 RM16 - Level 1 Settlement Reconciliation Report

There are no structural changes to the report, but the data differs to include **NCC changes**, Parent and Child Connection Points where they are part of an Embedded Network:

Single Parent Embedded Network: the sum of net energy volumes for on-market child NMIs will be subtracted from the parent net energy (parent - child)

Multiple Parent Embedded Network: rules will be applied to subtract the sum of net child energy values for on-market NMIs from the parent netted energy:

- Match the Child TNI to Parent TNI for energy volume subtraction
- Match the Child Aggregation Flag to Parent Aggregation Flag for energy volume subtraction
- Apply the above segments first when subtracting on-market child NMIs will be subtracted from the parent net energy (parent - child)

Participants can still use the RM16 report to reconcile Settlement Statements but cannot easily reconcile against RM 21 and 27 without performing the Embedded Network parent calculations first.

Embedded Network Child Connection Points with a different TNI Code than the Parent Connection Point see a change in the altered energy volumes applying to each TNI.

5.2 RM37 - High Priority Missing Data

There are no structural changes to the report, and it includes the most current **NCC changes**.

5.3 RM43 - UFE Factor Values by Local Area

The UFE Factor is calculated using Adjusted Consumed Energy (ACE). See RM46 - UFE Validation Report for the calculation method.

5.4 RM46 - UFE Validation Report

This report uses UFE data where the calculation does not change. However, the following terminology is updated:

- ADME is the aggregate of the amounts represented by (ME- × DLF) and (ME+ × DLF)

- ADMELA is the aggregate of the amounts represented by (ME- × DLF)

Where:

- ME- is the amount of electrical energy, expressed as a negative value in MWh, flowing at the connection point in the trading interval. It is recorded in the metering data in respect of that connection point and that trading interval, where the flow is away from the transmission network connection point to which the connection point is assigned.

- ME+ is the amount of electrical energy, expressed as a positive value in MWh, flowing at the connection point in the trading interval. It is recorded in the metering data in respect of that connection point and that trading interval, where the flow is towards the transmission network connection point to which the connection point is assigned.

6   FAQs

Are NMI Classification Codes (NCC) updated for existing NMIs in MSATS?

Yes, the NCC updates to change distribution-connected generating systems (and the generation side of distribution-connected storage) from GENERATR to DGENRATR will be performed using the Bulk Change Tool (BCT) which sends BCT notifications to participants with affected NMIs. For example, BC01.

Is there a change to CATS participant roles?

There are no changes to the CATS Participant Roles since Integrated Resource Provider (IRP) is a FRMP role.

The Role Category field was introduced to identify FRMPs registered as a Market Stand-Alone Power System Resource Provider (MSRP) and Small Generator Aggregator (SGA). This will be updated to support identification of IRPs as described in section 3.1.

7 Implementation

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.

- Schedule staff and resources to upgrade their market systems for the production implementation of this Release.

7.1 Key considerations

See **Participant Impact**.

7.2 Upgrade options

7.2.1 Option 1

Update local processes and technical interfaces to suit the changes.

7.2.2 Option 2

If changes are irrelevant to participants' business processes and technical interfaces, ignore this release.

7.3 Risks

Risk is low as all changes are on AEMO's systems.

8   Terms

You can find the following terms defined in the **National Electricity Rules (NER)** or **Retail Electricity Market Glossary and Framework**

8.1   Rules and procedure terms

Term
AEMO
B2B
Bidirectional Unit (BDU)
CATS Procedures
Change Request
Child Connection Points
Connection Point
Embedded Network (EN)
Embedded Network Child
Embedded Network Parent
Energy
Financially Responsible Market Participants (FRMP)
Generating System
Integrated Resource Provider (IRP)
Integrated Resource System (IRS)

Term
Load
Local Network Service Providers (LNSP)
Market
Market Generator
Market Participant
Meter
Metered Energy (ME)
MSATS
MSATS Procedures
NEM
NER
NMI
NMI Standing Data
Non-scheduled Bidirectional Unit
Parent Connection Points
Participant Administrator (PA)

Term
Participant ID
Participant User
Registered Participant
Retail
Retail Load
Role
Scheduled Bidirectional Unit
Scheduled Generating Unit
Scheduled Load
Settlement Statements
Small Bidirectional Unit (Small BDU)
Small Generating Unit (SGU)
Standing Data Access Rules
TNI Code
Transmission Network
Validation

8.2 Glossary

Abbreviation/Term	Explanation
BESS	Battery Energy Storage System
NCC	NMI Classification Code
Release	MSATS - Technical Specification – June 2024
Release Dates	Pre-production: Tuesday 12 March 2024 Production: Sunday 12 May 2024
TBC	To be confirmed
TNI	Transmission Node Identifier

9 References

API Reference: 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.

Connecting to AEMO's Electricity IT systems: Explains the IT interfaces available for participants and how to connect to them.

Guide to CSV Data Format Standard: Describes the generic csv (comma-separated-variables) data format standard used in numerous interfaces in AEMO's energy market systems, including some csv payloads.

Guide to MSATS reports: Explains the purpose, attributes, request, and delivery methods for MSATS participants' retail reports.

Guide to MSATS Web Portal: Assists participants to use the MSATS web portal functions. Requires MarketNet access.

Guide to NEM Retail B2M APIs: Explains how to build B2M retail metering APIs.

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

Metering Installation Exemption Guideline: Application process and management of an application.

MSATS Procedures: Current and previous electricity retail procedure versions.

Standing Data for MSATS: Describes the data requirements for the CATS database elements stored for each NMI with relevant examples and definitions.

Technical Guide to MSATS: Supplement to the MSATS B2M policies, procedures, and guides providing an understanding of MSATS functionality and business rules.

10 Index

A1. Version History

v1.03

- Updated information in NMI Classification Codes (NCC)
- Updated Role Categories field information in New MSATS Role Categories for IRPs and Small Resource Aggregators
- Added changes about Substitution Type 13 data for BDUs

v1.02

- Additional information in New MSATS Role Categories for IRPs and Small Resource Aggregators
- Updated Change Request Processing table
- Additional information in NMI Classification Codes (NCC)

v1.01

- Added FAQs
- Additional information in NMI Classification Codes (NCC)
- Updated timeline dates

v1.00

- Included the Pre-production refresh information

v0.01

- Initial draft release