Draft EMMS Release Schedule and Technical Specification – 5MS Reallocations

0.03 Draft July 2019

5MS Staging: November 2019

Pre-production: March 2020

Production: April 2020

Important Notice

PURPOSE & AUDIENCE

This document describes the technical changes required to participant's systems for the Five-Minute and Global Settlement 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, 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.
- **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 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.
- Glossary Terms are capitalised and have the meanings listed against them in the **Glossary**.
- Rules terms defined in the NER or the Procedure terms defined in the Reallocations Procedures are listed in the Rules and Procedures Terms section.

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VERSION HISTORY

0.03 First Draft of the 5MS Reallocations APIs

DOCUMENTS MADE OBSOLETE

The release of this document changes only the version of Draft EMMS Release Schedule and Technical Specification – 5MS Reallocations.

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Contents

Introduction

> **This Draft EMMS – Release Schedule and Technical Specification – 5MS Reallocations is a work in progress and is currently in review with the 5MS project team.**

The Draft EMMS Release Schedule and Technical Specification – 5MS Reallocations Release includes changes related to participants' IT systems. The release schedule and technical specification describe the projects planned by AEMO from a participant perspective.

Overview

This section details the 5MS changes to Settlements and AEMO's real-time operational systems.

Five Minute Settlement (5MS)

On 28 November 2017, the AEMC made a final rule to alter the settlement period for the wholesale electricity spot market from 30 minutes to five minutes to align with the dispatch period. The changes are effective from 1 July 2021.

The AEMC determined the five-minute settlement provides a better price signal for investment in fast response technologies, such as batteries, new gas peaking generation, and demand response. The alignment of the operational dispatch and financial settlement periods are expected to lead to more efficient bidding, operational decisions, and investment.

> **For more information, see the 5MS Systems High-Level Impact Assessment (HLIA) document.**

The 5MS updates are divided into different workstreams based on functionality as follows:

- Dispatch and Bidding
- Retail
- Settlements

Audience

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

Schedule

Scheduled for implementation in:

- 5MS Staging: November 2019
- Pre-production: March 2020
- Production: April 2020

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.

The following changes are under consultation and not definite at this stage.

Milestone	Date	Description
Approval required	TBA	Final date for participant approval of this Release.
Revised Technical Specification	October 2019	Further details of the changes to assist IT staff with their own technical implementation.
5MS Staging	November 2019	AEMO starts implementing components of the Release to the 5MS Staging environment for participant testing. Participant access is not restricted; however, the data content or system availability is not guaranteed. Functionality is expected to be released in stages to this environment.
Pre-production refresh	TBC	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.
Pre-production implementation	February 2020	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 Data Model release	February 2020	Participant Data Model scripts released.
Pre-production available	March 2020	Testing period begins for participants.

Milestone	Date	Description
User group meeting: pre-production review	March 2020	Market systems user group meeting to review the implementation of this pre-production release.
Production implementation	April 2020	AEMO implements the release to production.
Production systems available	April 2020	Go live. Production systems available to participants
User group meeting: post-implementation review	May 2020	Market systems user group meeting to review the implementation of the production release.

Summary

- From the implementation date, AEMO executes processes based on five-minute energy data volumes.
- First Settlement run with five-minute energy data volumes is scheduled to run on 2 July 2021 (wholesale settlement systems process always runs for the previous day).
- AEMO's Settlements systems go-live before 1 July 2021.
- AEMO supports both 30-minute and Systems 5-minute energy data volumes to allow for a smoother transition on 1 July 2021.

Approval to change

The changes are continually discussed and updated as a part of the 5MS Systems Working Group and other 5MS Consulting Forum meetings. There is no approval to change required from participant change controllers at this time.

Amendments to the Rules regarding 5-minute settlements are published on the AEMC website: National Electricity Amendment (Five-minute settlement rule) 2017.

Reallocations Systems

The Settlements system is part of the Electricity Market Management System that depends on information from registration and Dispatch systems and calculates amounts owing to each party, including AEMO.

The Settlements stream includes Settlements, Billing, Invoicing, Reallocations, and Prudentials.

Reallocations

Reallocations is a financial arrangement supported by the Rules in which two participants registered as 'reallocators' request AEMO to make matching debits and credits to their settlement position. Reallocations is responsible for calculating the debit and credit amounts based on the contracts.

The structure of a reallocation contract is common across different reallocation agreement types with a set of attributes against each contract and a profile of settlement values for each trading interval in a Settlement Day. This is repeated for each settlement day in the reallocation date range. The reallocation profile always contains a complete set of values for all trading intervals in a day (i.e. 48 or 288).

> **Participants cannot create reallocation requests between participant IDs owned by the same Company ID.**

The attributes in each profile entry include:

- PeriodId: An integer indicating the Trading Interval within the day.
- ReallocationValue: The Reallocation Profile Value (RPV) for the trading interval. This has different contexts, depending on the Agreement Type.
- NRP: The Nominated Reallocation Price or contract strike price in $/MWh. Used only in Swap, Cap, and Floor Agreement Types.

> **The following changes are under consultation and not definite at this stage.**

5MS Reallocations updates

The following section lists the changes detailed in this technical specification:

- Participants can enter five-minute reallocations six months before the implementation date for days post-July 2021 onwards.
- Participants can enter 30-minute reallocations from the implementation date for dates before July 2021.

- New APIs to make sure participants can submit, retrieve, authorise, cancel reallocations, and get reallocations, Calendars, Agreement Types, and Profile Types are available through the API Gateway. For more information, see Reallocations APIs.
- Notifications sent as email or SMS updates through Settlements Direct to participants based on their subscriptions. For more information, see Notifications.
- New web screens are available to support reallocation profiles with 48 or 288 intervals.

Reallocations web-based updates

The Reallocation Request Service include the following changes:

- Option to select a region (new)
- Option to select the Public Holiday Calendar (new)

> **The following changes are under consultation and not definite at this stage.**

Reallocation API updates

The APIs include functional calls to:

- Create, authorise, or cancel reallocations
- Search and retrieve reallocations
- Search and retrieve calendars
- Search and retrieve participants details, agreement types, profile types and VOLL price.

For more information, see Reallocations APIs.

Reallocations APIs
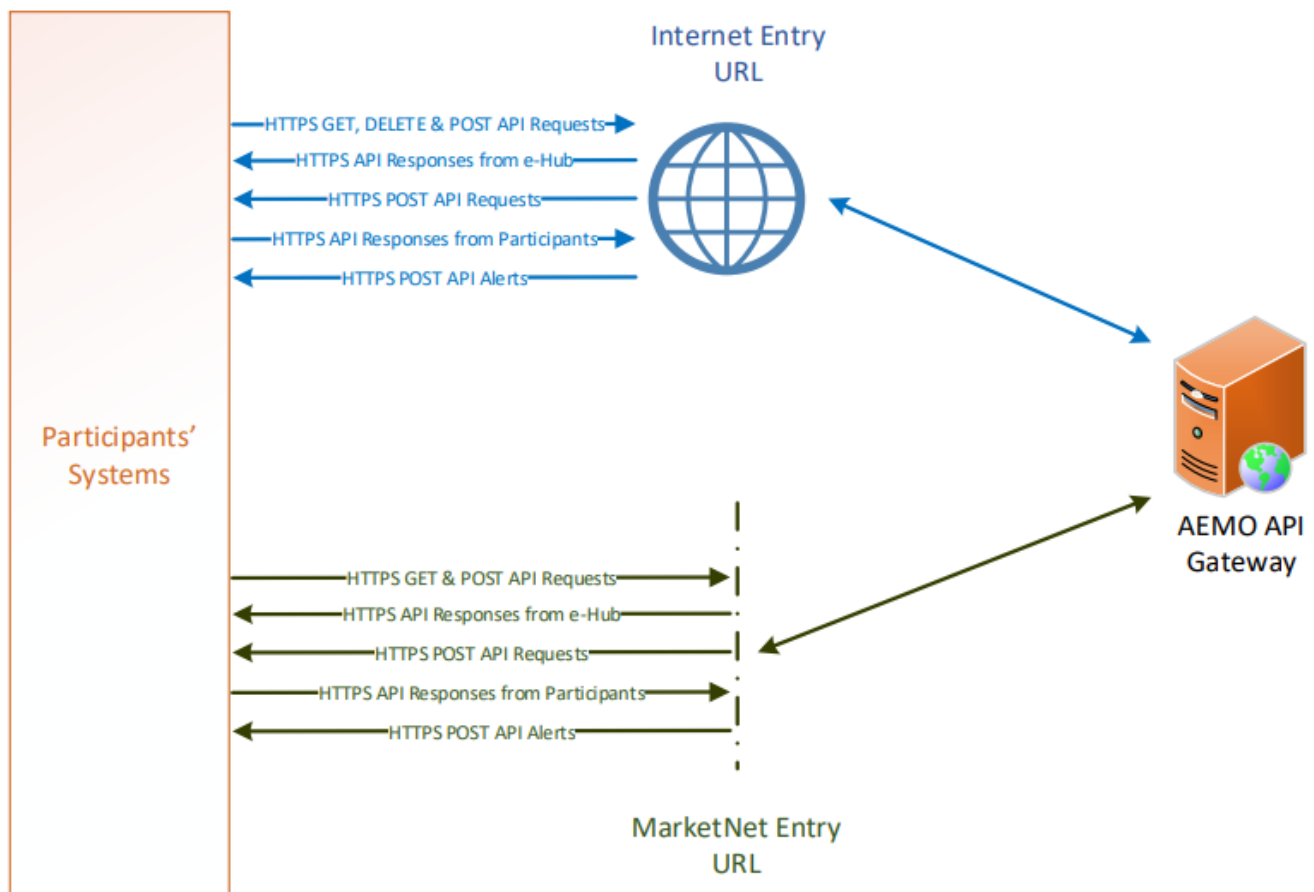
For information on accessing the APIs, see **Guide to AEMO's APIs.**

Access

AEMO's Reallocations APIs are accessible via MarketNet and the Internet.

> **The following changes are under consultation and not definite at this stage.**

API details, including Swagger files, are available via AEMO's API Portal. For more information about e-Hub APIs, see Guide to AEMO's e-Hub APIs.

The following AEMO API Gateways are available:

Table 1   API Gateway Addresses

Environment	Internet Address	MarketNet Address
5MS Staging	To be confirmed	To be confirmed
Pre-production	https://apiportal.preprod.aemo.com.au	https://apiportal.preprod.marketnet.net.au
Production	https://apiportal.prod.aemo.com.au	https://apiportal.prod.marketnet.net.au

More information is available in Guide to AEMO's APIs.

Authentication and authorisation

API connections use SSL certificates to secure the transport layer such as encrypted communication and secure interactions between participant and AEMO's systems. AEMO issues the SSL certificates to participants on request.

API calls are authorised by Basic HTTP authentication using a username and password assigned by the company's Participant Administrator.

For more information about user rights creating new Participant Users and assigning rights, see **Guide to User Rights Management (URM)**.

> **The following changes are under consultation and not definite at this stage.**

> **For details on the steps to obtain a certificate, see Guide to AEMO's APIs.**

API format

API URLs are in the following format:

```
https://<host>/ws/<business_function>/<APIversion>/<resource>?querystring
parameters
```

For example:

```
https://apis.prod.aemo.com.au:9319/ws/NemReallocations/v1/SubmitReallocations
```

Table 2   API Definition

Parameter	Description
<protocol>	HTTPS
<host>	Names the server hosting the service or an external proxy Internet web service host: apis.prod.aemo.com.au:9319 MarketNet web service host: apis.prod.marketnet.net.au:9319

Parameter	Description
<Business_function>	API Name - The AEMO system providing the services e.g. GeneratorRecall
<verb><resource>	Entities of a Business Function e.g. /SubmitReallocation
?querystring parameters	Query string parameters for GET method

API naming

The 5MS Reallocations APIs follow a verb and noun naming convention.

Response codes

Table 3   HTTP response codes

Data Condition	Value	Examples/Remarks
Successful response	200	200 OK
HTTP Technical Failure	Appropriate HTTP Response Code	HTTP response code of 400 Note: The e-Hub sends the exception details in the response payload

Invalid Credentials	401	401 Unauthorized. The e-Hub also sends the following payload
		{
		    "Exception": "Unauthorized:Invalid UserName or Password"
		}

No Username / Password details in HTTP request	401	401 Unauthorized
		{
		    "Exception": "Unauthorized:Invalid UserName or Password"
		}

Invalid resource used in the API URI	404	404 Not Found Note: The e-Hub sends the exception details in the response payload
Invalid Method used for calling the API URI (e.g. GET instead of POST)	405	405 Method Not Allowed Note: The e-Hub sends the exception details in the response payload

Data Condition	Value	Examples/Remarks
Business validation error	422	422 Unprocessable Entity The request was well formed but the submitted content failed business validation rules.
Application Unavailable (down)	500	500 Application Unavailable Note: The e-Hub sends the exception details in the response payload
Exceeds throttling Limits	503	Service invocation for API was rejected based on policy violation

Reallocations APIs - Summary

Function Name	Description
submitReallocation	Create a new reallocation and change status to Submit.
authoriseReallocation	As a reallocation counterparty, Authorise a submitted reallocation.
cancelReallocation	Cancel or reject a reallocation.
getReallocations	Retrieve a list of reallocations matching the specified criteria.
getReallocation	Retrieve details of a single reallocation.
getAgreementTypes	Retrieve a list of available reallocation agreement types.
getCalendars	Retrieve a list of supported calendars matching the specified criteria.
getCalendar	Retrieve details of a single calendar.
getParticipants	Retrieve a list of NEM participants.
getProfileTypes	Retrieve a list of available reallocation profile types.
getReallocationSteps	Retrieve a list of available reallocation step IDs.
getRegions	Retrieve a list of NEM regions.
getMarketPriceCap	Retrieve the NEM Value of Lost Load (VoLL) price at a given effective date.

Reallocations API Design

The following chapter list the new reallocations APIs, the validation rules, and the request and response structure for the reallocation APIs.

> **The following changes are under consultation and not definite at this stage.**

submitReallocation API

The submitReallocation API creates a reallocation and sets the status to SUBMIT. The API creates an ID in the format "<YYYYMMDD>.RS<NNNN>" where:

- <YYYYMMDD> is the current system date
- <NNNN> is the monotonically-increasing sequence number for reallocations created on the specific date including leading zeros.

For example, the first reallocation submitted on April 24, 2019, would be 20190424.RS001, and so on.

> **Participants cannot submit a Reallocations request for 30-minute data after the 5MS implementation date.**

Validation Rules

The submitted reallocation must pass the following validation:

- The request must pass the JSON schema validation for the request type.
- The company IDs associated with the submitting participant and the counterparty must be different, meaning a participant cannot reallocate between the participants within their company profile.
- The submitting participant must pass the prudential check.
- The submitting participant must be registered for reallocations.
- The agreement type must be a valid Reallocation Agreement Type.
- The profile type must be a valid Reallocation Profile Type.
- The credit/debit indicator must be a valid Reallocation Credit or Debit indicator.
- The region identifier must be a valid NEM region identifier for all days between the start and end dates (inclusive) of the reallocation.
- The number of trading intervals in the reallocation profile must be equal to (1440 / intervalLength).
- The period identifiers in the reallocation profile must start at 1 and consistently increase.
- The trading interval in the reallocation must be equal to the settlement interval length for all days between the start and end dates (inclusive) of the reallocation.
- The start date of the reallocation must be less than or equal to the end date of the reallocation.

- The start date of the reallocation must be greater than or equal to the start date cut-off (see Prudential checks).
- The Calendar ID must be a valid calendar.

If any of these validation rules fail, an error (422) response is returned.

API request/response structure

API	submitReallocation
Method	POST
URL	/api/NEMReallocations/v1/submitReallocation
Authorization	Participant specific

API	submitReallocation	
Parameters	**Name**	**Description**
	startDate	First day of the reallocation agreement
	endDate	Last day of the reallocation agreement
	submittingParticipantId	Unique identifier of the participant submitting the reallocation request
	counterpartyParticipantId	Unique identifier of the counterparty participant in the reallocation request
	agreementType	$ (price), MWh (Quantity), SWAP, CAP, or FLOOR.
	profileTypeId	The day type profile for which the reallocation applies over the start and end date range. Valid entries are BUSINESS, NON-BUSINESS, or FLAT.
	regionId	Region identifier, being the spot price reference node for this reallocation.
	creditDebitIndicator	Denotes a Credit or Debit reallocation with a value of "C" or "D" respectively.
	intervalLength	Either 30 or 5
	submittingParticipantReference	Optional reference detail for the initiating party
	reallocationProfile	
	periodId	Period identifier (Before 5MS implementation - 1....48) (After 5MS implementation -1....288)
	reallocationValue	Reallocations value in units of the agreement type
	nrp	Nominated Reallocations Price, only used in agreement types of SWAP, CAP and FLOOR, being the contract strike price in $/MWh

API	submitReallocation

Request Content	Content Body:
	
	``json
	{
	  "reallocation":
	  {
	    "startDate": [datetime],
	    "endDate": [datetime],
	    "submittingParticipantId": [string],
	    "counterpartyParticipantId": [string],
	    "agreementTypeId": [string],
	    "profileTypeId": [string],
	    "regionId": [string],
	    "creditDebitIndicator": [string],
	    "intervalLength": [integer],
	    "submittingParticipantReference": [string],
	    "reallocationProfile":
	    [
	      {
	        "periodId": [integer],
	        "reallocationValue": [decimal],
	        "nrp": [decimal, optional]
	      }
	    ]
	  }
	}
	``

Success response	Content Body:
	
	``json
	{
	  "transactionId": [string]
	  "data":
	  {
	    "reallocationId": [string]
	  }
	}
	``

In the Request content, the submitting and counterparty participant IDs to the credit and debit participant IDs are mapped as follows:

- If creditDebitIndicator is set to C, then the creditParticipantId is the submittingParticipantId and the debitParticipantId is the counterpartyParticipantId.
- If creditDebitIndicator is set to D, then debitParticipantId is the submittingParticipantId and the creditParticipantId is the counterpartyParticipantId

authoriseReallocation API

The authoriseReallocation API sets the state of the reallocation to AUTHORISE, signalling that both parties have agreed to the reallocation.

Validation Rules

- The request must pass JSON schema validation for the request type.
- The reallocationId parameter must be a valid reallocation ID.
- The participant ID of the Counterparty in the reallocation must match the ID of the request participantId.
- The counterparty must be registered for reallocations.
- The reallocation must be in the SUBMIT state.
- The Credit and Debit participants must both pass a prudential check at the time of authorisation (see Prudential checks).

If any of the request validations fail, an error (422) response is returned.

API request/response structure

API	authoriseReallocation	
Method	PUT	
URL	/api/NEMReallocations/v1/authoriseReallocation	
Authorization	Participant specific	
Parameters	**Name**	**Description**
	reallocationId	Unique reallocation identifier
	counterPartyReference	Optional reference detail for the counterparty.
Request content	Content Body:	

```
{
  "reallocationId": [string],
  "counterpartyReference": [string]
}
```

Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
  }
}
```

cancelReallocation API

The cancelReallocation API sets the state of a reallocation to CANCEL, signalling to the Prudential systems to exclude the reallocation from processing further.

Validation rules

- The request must pass JSON schema validation for the request type.
- The reallocationId parameter must be a valid reallocation ID.
- Either the submittingParticipantId or counterpartyParticipantId property of the reallocation must match the ID of the request participantId.
- The reallocation must be in the SUBMIT state.

If any of the request validations fail, an error (422) response is returned.

API request/response structure

API	cancelReallocation
Method	POST
URL	/api/NEMReallocations/v1/cancelReallocation
Authorization	Participant specific
Parameters	

Name	Description
reallocationId	Unique reallocation identifier
counterPartyReference	Optional reference detail for the counterparty.

Request content

Content Body:

```
{
  "reallocationId": [string],
  "counterpartyReference": [string]
}
```

Success response

Content Body:

```
{
  "transactionId": [string]
  "data":
  {
  }
}
```

getReallocation API

The getReallocation API retrieves a single reallocation along with its associated properties and reallocation profile data. The reallocationId request parameter is used to retrieve the reallocation matching the supplied ID.

The request is subject to the following validation:

- The reallocationId parameter must be a valid reallocation ID.
- Either the submittingParticipantId or counterpartyParticipantId property of the reallocation must match the ID of the request participantId.

If either of the request validations fail, an error (422) response is returned.

API request/response structure

API	getReallocation
Method	GET
URL	/api/NEMReallocations/v1/getReallocation
Authorization	Participant specific
Request content	

Query Parameters	Description
reallocationId	[Mandatory] Unique ID of the reallocation requesting data.

API	getReallocation
Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "reallocation":
    {
      "reallocationId": [string],
      "startDate": [datetime],
      "endDate": [datetime],
      "submittingParticipantId": [string],
      "counterpartyParticipantId": [string],
      "agreementTypeId": [string],
      "profileTypeId": [string],
      "regionId": [string],
      "currentStepId": [string],
      "creditDebitIndicator": [string],
      "submittingParticipantReference": [string],
      "counterpartyReference": [string],
      "intervalLength": [integer],
      "reallocationProfile":
      [
        {
          "periodId": [integer],
          "reallocationValue": [decimal],
          "nrp": [decimal]
        }
      ]
    }
  }
}
```

getReallocations API

The getReallocations API retrieves a list of reallocations and associated properties that fulfil all the following criteria:

- Either the submittingParticipantId or counterpartyParticipantId property of the reallocation must match the ID of the request participantId.
- If the regionId filter parameter is in the request, the regionId property of the reallocation must match the value.
- If the startDate filter parameter is in the request, the endDate property of the reallocation must be greater than or equal to the value.
- If the endDate filter parameter is in the request, the startDate property of the reallocation must be less than or equal to the value.
- If the agreementType filter parameter is in the request, the agreementType property of the reallocation must match one of the comma-separated values.

- If the steps filter parameter is in the request, the current_StepId property of the reallocation must match one of the comma-separated values.

All filter criteria are additive, that is they collectively represent a series of AND operations on the filter.

API request/response structure

API	getReallocations
Method	GET
URL	/api/NEMReallocations/v1/getReallocations
Authorization	Participant specific

Request content	Query Parameters	Description
	startDate	[Optional] Start date parameter of the reallocation filter.
	endDate	[Optional] End date parameter of the reallocation filter.
	agreementType	[Optional] Agreement types parameter of the reallocation filter, containing a comma-separate listed of agreement type IDs.
	steps	[Optional] Steps parameter of the reallocation filter, containing a comma-separated list of reallocation step IDs.
	regionId	[Optional] Region ID parameter of the reallocation filter.
	calendarId	[Optional] Calendar ID parameter of the reallocation filter.

API	getReallocations

Success response	Content Body:
	
	``
	{
	  "transactionId": [string]
	  "data":
	  {
	    "reallocations":
	    [
	      {
	        "reallocationId": [string],
	        "startDate": [datetime],
	        "endDate": [datetime],
	        "submittingParticipantId": [string],
	        "counterpartyParticipantId": [string],
	        "agreementTypeId": [string],
	        "profileTypeId": [string],
	        "regionId": [string],
	        "currentStepId": [string],
	        "creditDebitIndicator": [string],
	        "submittingParticipantReference": [string],
	        "counterpartyReference": [string],
	        "intervalLength": [integer]
	      }
	    ]
	  }
	}
	``

getProfileTypes API

The getProfileTypes API retrieves a list of reallocation Day Types and associated descriptions. Possible values are:

- Flat – everyday including Business and Non-Business days
- Business – Business days do not include weekends or public holidays (based on the chosen PH calendar).
- Non-business – Any day that is not a business day.

API request/response structure

API	getProfileTypes
Method	GET
URL	/api/NEMReallocations/v1/getProfileTypes

API	getProfileTypes
Authorization	Not authenticated
Request content	None
Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "participants":
    [
      {
        "profileTypeId": [string],
        "description": [string]
      }
    ]
  }
}
```

getReallocationSteps API

The getReallocationSteps API retrieves a list of reallocation step IDs and associated descriptions.

API request/response structure

API	getReallocationSteps
Method	GET
URL	/api/NEMReallocations/v1/getReallocationSteps
Authorization	Not authenticated
Request content	None

API	getReallocationSteps

Success response	Content Body:
	
	``
	{
	  "transactionId": [string]
	  "data":
	  {
	    "reallocationSteps":
	    [
	      {
	        "stepId": [string],
	        "description": [string]
	      }
	    ]
	  }
	}
	``

getRegions API

The getRegions API retrieves a list of regions and associated descriptive names. Possible values are as follows:

- New South Wales
- Queensland
- South Australia
- Tasmania
- Victoria

API request/response structure

API	getRegions
Method	GET
URL	/api/NEMReallocations/v1/getRegions
Authorization	Not authenticated
Request content	None

API	getRegions
Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "regions":
    [
      {
        "regionId": [string],
        "name": [string]
      }
    ]
  }
}
```

getCalendars API

The getCalendars API retrieves a list of Calendar IDs and associated descriptive names fulfilling the following criteria:

- The Calendar is configured for reallocations.
- If the regionId filter parameter is in the request, there must be at least one calendar entry matching the given region.
- If the startDate filter parameter is in the request, there must be at least one calendar entry with a calendar date greater than or equal to the start date.
- If the endDate filter parameter is in the request, there must be at least one calendar entry with a calendar date less than or equal to the end date.

All filter criteria are additive, that is they collectively represent a series of AND operations on the filter.

The list of calendars is taken from the NEM database.

API request/response structure

API	getCalendars
Method	GET
URL	/api/NEMReallocations/v1/getCalendars
Authorization	No authorisation

API	getCalendars

Request content	Query Parameters	Description
	regionId	[Optional] Region ID parameter of the reallocation filter.
	startDate	[Optional] Start date parameter of the reallocation filter.
	endDate	[Optional] End date parameter of the reallocation filter.

Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "calendars":
    [
      {
        "calendarId": [string],
        "description": [string]
      }
    ]
  }
}
```

getCalendar API

The getCalendar API retrieves a list of non-business days from a given calendar.

The calendar non-business days are taken from the NEM database.

Weekends are implicitly assumed to be non-business days and are not explicitly included in the calendar information returned.

API request/response structure

API	getCalendar
Method	GET
URL	/api/NEMReallocations/v1/getCalendar
Authorization	Not authenticated

API	getCalendar
Request content	**Query Parameters** — **Description**
	calendarId — [Mandatory] Unique ID of the calendar for which data is requested.
Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "calendarId": [string],
    "regions":
    [
      {
        "regionId": [string],
        "nonBusinessDays":
        [
          [datetime],
          [datetime],
          [datetime],
          [datetime],
          [datetime]
        ]
      }
    ]
  }
}
```

getParticipants API

The getParticipants API retrieves a list of NEM Participant IDs and associated descriptive names fulfilling the following criteria:

- Have a participant class of Market Participant.
- Participants cannot create reallocation requests between participant IDs owned by the same Company ID.

API request/response structure

API	getParticipants
Method	GET
URL	/api/NEMReallocations/v1/getParticipants

API	getParticipants
Authorization	Not authenticated
Request content	None
Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "participants":
    [
      {
        "participantId": [string],
        "name": [string]
      }
    ]
  }
}
```

getAgreementTypes API

The getAgreementTypes API retrieves a list of reallocation agreement types and associated descriptions. Possible values are:

- $ - Dollar offset, a set dollar value for each interval
- MWh – Energy Offset, a set energy quantity for each interval, values at that interval's RRP.
- Swap – Swap offset, a quantity and price.
- Cap – Cap offset, a quantity and price.
- Floor – Floor offset, a quantity and price.

API request/response structure

API	getAgreementTypes
Method	GET
URL	/api/NEMReallocations/v1/getAgreementTypes
Authorization	Not authenticated
Request content	None

API	getAgreementTypes

Success response	Content Body:
	
	``
	{
	  "transactionId": [string]
	  "data":
	  {
	    "agreementTypes":
	    [
	      {
	        "agreementTypeId": [string],
	        "description": [string]
	      }
	    ]
	  }
	}
	``

getMarketPriceCap API

The getMarketPriceCap API retrieves the VOLL (Value of Lost Load) price at the given effective date in the request.

The specific value retrieved is the one that:

- Has an effectiveDate value that is the greatest effectiveDate value, less than or equal to the supplied effective date in the request, where the record is authorised.
- Has a versionNo value that is greater than the versionNo value, for the corresponding effectiveDate value, where the record is authorised.

API request/response structure

API	getMarketPriceCap
Method	GET
URL	/api/NEMReallocations/v1/getMarketPriceCap
Authorization	Not authenticated
Request content	<table><tr><td>Query Parameters</td><td>Description</td></tr><tr><td>effectiveDate</td><td>[Mandatory] The date for which to retrieve the VOLL price in yyyy-mm-dd format</td></tr></table>

API	getMarketPriceCap
Success response	Content Body:

```
{
  "transactionId": [string]
  "data":
  {
    "vollPrice": [number]
  }
}
```

Prudential checks

AEMO validates the ex post reallocations to determine whether a reallocation results in either party breaching their Prudential Requirements. AEMO rejects any reallocation that results in a breach at the submission and authorisation steps.

AEMO performed these checks before 5MS project and there will be no change to this.

Notifications

This Release includes three new notifications implemented in NEM Reports and Settlements Direct. Participants can subscribe separately to each notification in the Settlements Direct system.

> **For details on accessing information on Settlements Direct, see the EMMS Settlements Direct User Interface Guide.**

- Due date reminder notification: A notification is triggered listing all submitted reallocations that are about to reach the ex ante or ex post due date.
- New or changed reallocation notification:
  - A notification is triggered when a reallocation involving the participant is created or changes its status.
  - A notification is triggered when a reallocation involving the participant is created or changed by the counterparty.

Participants receive two notifications if subscribed to both notifications under new or changed reallocations.

Setup notification messages

To configure Reallocations notification messages:

1. In the **EMMS Markets Portal** > **MMS** > **Settlements Direct** > **Subscriptions**, under **Category**, select **NEM Alerts, Reminders and Notifications**.

2. Under **Type**, select the notification type to enable.

3. Select **SMS**, **Email**, or **Notify by Email**. Note that **Email** and **Notify by Email** perform the same function by sending notifications to the nominated email address.

4. Click **Submit**.

Sample notification messages

The sample notification emails and text messages for reallocations use the following field IDs:

- RRID: Reallocation ID
- PID1: Submitting participant ID
- Ref1: Submitting participant's reference
- EADD: Ex ante due date (format: DD/MM/YYYY)
- EADD WD: EADD warning date. This date is configurable and currently set at two business days prior to the EADD.
- EPDD: Ex post due date (format: DD/MM/YYYY)
- EPDD WD: EPDD warning date. This date is configurable and currently set at 2 business days prior to the EPDD.
- Status: Reallocation status - SUBMITTED, AUTHORISED, CANCELLED, EXPIRED

Due date reminder notification

This notification includes all reallocations where:

- The participant is either submitter or counterparty
- The reallocation is at the SUBMIT step
- The number of days between the current system date and the ex ante due-date or ex post due-date is greater than 0 and less than or equal to 2.

The alert is configured to run each day at 9 am, using the event scheduling feature already provided by NEM Reports.

Sample email

Subject: NEM Reallocations Pending Authorisation

Content: The following reallocations are pending authorisation on <EADD or EPDD(1)>:

Reason	Role	Reallocation ID	Counterparty	Ref
<"Ex ante" |	<'Submitter' |	<RRID>	<counterparty	<Reference
'Ex post"(2)>	Authoriser'>		PID(3)>	ID(4)>

> Sample text message
>
> NEM reminder: <number of RRs affected> reallocations pending authorisation.

New or changed reallocation notification

Participants can subscribe to a notification that is triggered when a Reallocations Request is created or changes status. This involves the following options:

- A notification is triggered when a reallocation involving the participant is created or changes its status.
- A notification is triggered when a reallocation involving the participant is created or changed by the counterparty.

Participants receive two notifications if subscribed to both.

> Sample email
>
> Subject: NEM Reallocations <RRID> changed to <Status>
>
> Content:
>
> Reallocation ID: <RRID>
>
> Counterparty: <counterparty PID(1)>
>
> Ref: < Party reference ID(2)>
>
> Is now: <Status>
>
> Actioned by <PID(3)>

> Sample text message
>
> NEM Reallocation <RRID> changed to <status>

Electricity Data Model 4.30

This Release contains a new version of the Electricity Data Model 4.30. This section describes the affected packages, tables, files, reports, and interfaces.

The Release has changes to the following packages:

- SETTLEMENT_CONFIG

Data Model changes summary

Package	Table name	Change	Details
SETTLEMENT_CONFIG	REALLOCATION	Adds new columns	CALENDARID and INTERVALLENGTH

The following changes are under consultation and not definite at this stage.

Participant systems incorrectly configured and not compliant with the Baseline Assumptions in the Data Interchange Framework and Glossary may suffer data loss.

Package: SETTLEMENT_CONFIG

Configuration and input data for the Settlements Process

Modified table: REALLOCATION

Comment	The REALLOCATION table shows the financial transactions agreed between two participants that are settled through the AEMO pool settlements process.
Visibility	Private
Trigger	
Participant file share location	<#INTRFACE>\<#PARTICIPANTID>\IMPORT\CSV\REPORTS
Primary key (in order)	REALLOCATIONID

New columns

Field Name	Data type	Comment	Primary Key
CALENDARID	VARCHAR2 (30)	The last changed data of the record	N
INTERVALLENGTH	INTEGER	The length of settlement intervals (in minutes) in the reallocation profile	N

Participant interfaces changes

The Data Model design is still in progress and AEMO will provide more information in the future document revision.

"MMS Data Model Table" = NEMReports.Files.Data_Model_Table

"File ID" = NEMReports.Files.Data_Model_File_ID (if null then NEMReports.Files.File_ID)

"CSV report type" = NEMReports.Reports.Report_Type + ',' + NEMReports.Reports.Data_Model_Table + ',' + NEMReports.Reports.Report_Version

Package Name	MMS Data Model table	File ID	CSV report type	Change
SETTLEMENT_CONFIG	REALLOCATION	REALLOCATION	REALLOCATION,REALLOCATION,2	Modified

File interface changes

Package ID	File ID	Description	Batcher file masks	Frequency	Modification	Auto-subscription
SETTLEMENT_CONFIG	REALLOCATION	The column REALLOCATION_TYPE is used in conjunction with CREDITPARTICIPANT or DEBITPARTICIPANT to determine who submitted a reallocation.	*_REALLOCATION_*.CSV		Modified	No

Discontinued

No discontinued reports.

Non-functional changes

Table 4   MMS Data Model 4.30 non-functional changes

MMS Data Model table	Change detail
MMS Data Model Upgrade Report MMS Data Model Report MMS Data Model Package Summary MMS Data Model Table to File to Report Relationships workbook	Updated for new Data model version and AEMO branding

Implementation

Transition

> **This section is a draft and subject to the 5MS Readiness Workstream transition and cutover forums.**

Data Interchange reports

Participants are required to upgrade their Data Model versions to 4.30 to receive the new 5MS Reallocations information. For details, see Electricity Data Model 4.30.

Implications

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

- Review the changes implemented as part of this Release and assess the impact on their market systems.
- 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.

Risks

- Participants not subscribed to the latest versions of files using the Data Subscriptions web application will not receive the new data.

Upgrade options

From a wholesale energy market system's focus, participants need to:

- Review the changes implemented as part of this Release and assess the impact on their market systems.
- Plan to upgrade their Data Interchange installations to the latest versions to utilise benefits from the new functionality, operate against newly supported platforms, and to maintain ongoing support from AEMO.
- Schedule staff and resources to upgrade their market systems from the implementation of this Release. To maintain systems in line with AEMO's market systems, AEMO recommends upgrading within six months of the implementation date.

- Change their systems prior to the deployment of this Release to ensure they are current. AEMO recommends participants' wholesale market systems are compliant with the latest Data Interchange software versions, see **Data Interchange Framework and Glossary**.

> **AEMO encourages participants to make use of the four-week pre-production period, to assess and test any impact to their market systems and business processes.**
> **Participants using data replication products critical to their business are strongly advised to participate in the pre-production rollout and testing period.**

What happens if I do not upgrade?

If participants' systems are compliant with AEMO's supported configuration defined in DI Framework and Glossary, this Release does not impact MMS Data Model systems immediately. Depending on participants' systems, not upgrading may result in the following issues:

- Participant's database does not receive the new fields or tables because the Data Model elements are not created.

- Participants not subscribed to the latest versions of files using the Data Subscriptions web application will not receive the new data.

- Content in legacy files may change after deployment of this Release.

If participants have a system dependency on the formats of the non-MMS Data Model reports, they need to manage these dependencies using the detail provided in this technical specification. Participants need to review and assess the impact on their market systems with respect to the changes implemented as part of this Release.

Related Resources

You can find the following resources on AEMO's website:

National Electricity Rules (The Rules): Provides details on the national electricity rules that govern all system and process and procedural changes.

5MS Factsheet: Provides an overview of what 5 Minute Settlement (5MS) is, and how AEMO will implement the change.

5MS High Level Design: Provides information about the potential design of AEMO processes and systems to support the proposed introduction of five-minute settlement'.

NER Amendment – 5MS: Explains the amendments to the Rules regarding 5-minute settlements. See 'National Electricity Amendment (Five-minute settlement rule) 2017'.

NER Amendment – GS: Explains the amendments to the Rules regarding Global settlements. See 'National Electricity Amendment (Global Settlement and Market Reconciliation) Rule 2018.

Data Interchange Framework and Glossary: provides important information about upgrading your Data Interchange (DI) environment, explains DI terms, and DI related resources. Please read this guide in conjunction with this technical specification.

EMMS Settlements Direct User Interface Guide: Explains how to use the Settlements Direct web application providing participants with access to reports and statements published by AEMO.

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

Guide to Electricity Reallocations: Provides instructions for *Registered Participants* to use the Reallocations Request Service (Reallocations) in the Energy Market Systems Web Portal.

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

Reallocation Procedure: Energy and Dollar Offset Reallocations: Provides information on how to create reallocation requests and record the reallocation transactions for energy offsets or dollar offsets.

Reallocation Procedure: Swap and Option Offset Reallocations: Provides information on how to create reallocation requests and record the reallocation transactions for Swap offsets, Cap offsets, or Floor offsets.

Rules and Procedures Terms

This section lists the terms defined in the National Electricity Rules (NER) and the following Reallocations procedures:

Reallocation Procedure: Energy and Dollar Offset Reallocations

Reallocation Procedure: Swap and Option Offset Reallocations

The next version of this document will list all the Rules and Procedures terms.

Term
AEMO
Agreement Type
Calendar
Cap Offset
Day Type
Dollar Offset
Energy Offset
Ex Ante Reallocation
Ex Post Reallocation
Floor Offset
Participant ID
Period ID
Reallocation Request Service
Region ID
Swap Offset

Glossary

Abbreviation	Explanation
30-min period	New term to replace 'trading interval', where the period remains as 30 minutes
5MS	Five-Minute Settlement Program
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AEST	Australian Eastern Standard Time
API	Application Program Interface
Authorise	Reallocation status when a counterparty accepts a Reallocations Request.
Billing Period	7 days from the first trading interval on a Sunday to the last trading interval on the next Saturday.
Cancel	Reallocation status when either the Credit or the Debit participant cancels a Reallocation Request that is currently in the Submit state.
Company ID	Participant ID sits under a Company ID. A Company ID can have multiple Participant IDs. AEMO IT system currently identifies Market Participant as a Participant ID, except for FCAS recovery calculation was changed in 2015. However, as part of the 5MS project, it is required that AEMO system identifies Company ID as Market Participant in accordance with the rules.
CSV files	Files containing data in comma separated values format.
Data Interchange	Data Interchange (DI) is a set of cooperating applications to replicate data between AEMO's systems and a participant's RDBMS conforming to the MMS or Gas Data Model.
Dispatch Interval	Obsolete term. Was a 30-min period. See Trading Interval.
Electricity Data Model	Data published to participants by AEMO from NEM systems.
EST	Eastern Standard Time

Abbreviation	Explanation
EMMS	(Wholesale) Electricity Market Management System. Single web portal interface to access AEMO's IT systems; software, hardware, network and related processes used to operate the energy market.
FTP	File transfer protocol. A mechanism to securely exchange files between two computer systems.
GS	Global Settlement
JSON	Java Standard Object Notation. An agreed format for text files and data exchange. AEMO will use this to receive bids and offers and provide responses.
Market Customer	AEMO's registration category. Market Customers are typically retailers or large users who draw energy from the transmission grid.
Market Participant	AEMO IT system currently identifies Market Participant as a Participant ID, except for FCAS recovery calculation was changed in 2015. However, as part of the 5MS project, it is required that AEMO system identifies Market Participant as a Company ID. Note: In AEMO IT system, Participant ID sits under a Company ID. A Company ID can have multiple Participant IDs.
NEM	National Electricity Market.
NER	National Electricity Rules. **https://www.aemc.gov.au/regulation/energy-rules/national-electricity-rules/current**. Often just called 'the Rules'.
Outstandings period	A period that starts from the first day of the Billing Period up to the day before the final statement date (inclusive). E.g. Week 18/2019 has a billing period from 28/4 to 4/5. The final statement date is 29/5 so the outstandings period is from 28/4 to 28/5. - If the current date is less than the final statement date, the outstandings period is from the start of the billing period to the day before today. - These date ranges are adjusted for public holidays. Week 52 (22/12-28/12/19) has a final statement date of Thursday 23/1/2020, rather than Wednesday 22/1/2020.
Registered Participant	A registered organisation participating in the NEM.
Participant ID	Registered participant identifier; A company can have more than one Participant ID.

Abbreviation	Explanation
Settlement day	Calendar day starting at 12am. Where 'day' unless otherwise specified, the 24-hour period beginning and ending at midnight Eastern Standard Time (EST).
Submit	Reallocation status when a party submits a Reallocation Request.
Trading Day	"The 24-hour period commencing at 4.00 am and finishing at 4.00 am on the following day." (NER) Where 'day' "Unless otherwise specified, the 24-hour period beginning and ending at midnight Eastern Standard Time (EST).
Trading Interval	Replaces the dispatch interval as a five-min period.
UFE	Unaccounted for Energy.
Value of Load Lost (VoLL)	Defined as the value attributed by energy consumers to unsupplied energy.

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