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# **Format and Validation for Energy, FCAS, and MNSP Bids and Offers**

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**4.01 Final  
January 2020**

Describes the interface to submit file-based energy, FCAS, and MNSP dispatch bids and offers

# Important Notice

## **PURPOSE**

This Format and Validation for Energy, FCAS, and MNSP Bids and Offers (Guide), prepared by the Australian Energy Market Operator (AEMO), provides guidance for the Settlements Residue Auction under the NER or Auction Rules(Rules).

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## **DOCUMENT IDENTIFICATION**

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IT custodian: Team Lead, NEM Scheduling and Operations Forecasting Systems  
Prepared by: Technology, Technical Writers

## **VERSION HISTORY**

Version 4.01 Changes for the 5MS - Dispatch project with explanation of the JSON Bid/Offer File. Changes to properties in the JSON schema. Updated validation messages.  
Last update: Monday, 20 January 2020 3:14 PM

## **DOCUMENTS MADE OBSOLETE**

The release of this document changes any previous versions of Format and Validation for Energy, FCAS, and MNSP Bids and Offers and Participant Input Interface Energy - MNSP-FCAS Bid File Submission.

## **FEEDBACK**

Your feedback is important and helps us improve our services and products. To suggest improvements, please contact AEMO's support hub.

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# Introduction

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## Purpose

This Guide describes:

1. The JSON Dispatch Bid/Offer Submission and validations used by participants to submit and maintain Energy, Frequency Controlled Ancillary Services (FCAS), and Market Network Service Provider (MNSP) bids in the NEM.
2. How to submit your JSON Dispatch Bid/Offer Submission by FTP.

## Audience

The primary audience is:

- Developers of systems handling Energy, FCAS, and MNSP Bids/Offers.
- Market Participants submitting and maintaining Energy, FCAS, and MNSP Bids/Offers.

The secondary audience is business users requiring an understanding of the Dispatch Bid/Offer Submission.

## What's in this guide

This guide explains the JSON schema for submitting Bids/Offers and how to submit Bids/Offers over FTP.

For help submitting web-based Bids/Offers, see [Guide to Energy and FCAS Bids](#).

For help submitting Bid/Offer APIs, see [Guide to Dispatch Bid/Offer APIs](#).

For help submitting Network Control Ancillary Services (NCAS) re-offers or system restart ancillary services (SRAS) re-offers, see [AS Re-Offer Bid Format and Validation](#).

[Chapter 1 Need to Know on page 4](#) explains how the terms Dispatch Bids and Offers are used throughout this guide, the skills required to complete and submit bids, lists the related Rules and procedures, and provides the entity required for Participant User access.

[Chapter 2 About the Dispatch Bid/Offer Submission on page 7](#) explains what the Dispatch Bid/Offer Submission is for, who can use it, how to use it, the submission rules.

[Chapter 3 Dispatch Bid/Offer Submission Explained on page 9](#) explains the design, format, processing order, submission level information, valid, and invalid Dispatch Bid/Offer Submissions.

[Chapter 4 Energy Bids/Offers on page 13](#) explains the Energy bids element of the Dispatch Bid/Offer Submission.

[Chapter 5 FCAS Offers on page 21](#) explains the Frequency Control Ancillary Service (FCAS) bids element of the Dispatch Bid/Offer Submission.

[Chapter 6 MNSP Offers on page 26](#) explains the Market Network Service Provider (MNSP) bids element of the Dispatch Bid/Offer Submission.

[Rebid Explanation on page 32](#) explains the Rebids explanation element of the Dispatch Bid/Offer Submission.

[Chapter 7 Submitting a Dispatch Bid/Offer by FTP on page 35](#) explains the Dispatch Bid/Offer Submission over FTP.

[Chapter 8 Dispatch Bid/Offer Submission Response on page 40](#) explains the response received after submission.

[Chapter 9 Schema Validation Messages on page 44](#) explains the validation messages received in a response.

[Needing Help on page 50](#) provides a list of frequently asked questions about Dispatch Bid/Offer Submissions and how to contact AEMO's Support Hub.

[Rules terms on page 52](#) provides a list of National Electricity Rules (NER) terms used throughout this guide.

[Glossary on page 53](#) provides the definition of the capitalised terms used throughout this guide.

[References on page 58](#) provides a list of references used throughout this guide.

[Appendix 1 JSON Dispatch Bid/Offer Submission Schema on page 59](#) provides an example of an entire JSON schema Dispatch Bid/Offer Submission.

[Appendix 2 Electricity Data Model on page 72](#) explains the Dispatch Bid/Offer Submission related Electricity Data Model tables.

## How to use this guide

- For an explanation of the terms Offer and Bid used throughout this Guide, read [Dispatch offers and bids explanation on page 4](#).
- This guide 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.
- Where there is a discrepancy between the relevant Procedures and information or a term in this document, the Procedures take precedence.
- The references listed throughout this document are primary resources and take precedence over this document.
- **Text in this format** indicates a resource on AEMO's website.
- **Text in this format** indicates a direct link to a section in this guide.
- **Text in this format** is an action to complete in the Markets Portal interface.
- Glossary and Rules terms are capitalised and have the meanings listed against them in the [Rules terms on page 52](#) and [Glossary on page 53](#).
- The numbers on the example screenshots throughout this guide refer to the numbered explanations in the topic.
- References to time are Australian Eastern Standard time (AEST) unless otherwise specified.

# Chapter 1 Need to Know

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## Dispatch offers and bids explanation

This chapter provides an explanation of the terms Offer and Bid and how they are used throughout this Guide.

### Bid explanation

In this Guide the term Dispatch Bid (Bid) relates to the Dispatch of a Scheduled Load and has the meaning given to it in the National Electricity Rules (NER).

The term Bid relates to the following Dispatch Bids:

1. Energy (Scheduled Loads)

### Offer explanation

In this Guide the term Dispatch Offer (Offer) means a Generation Dispatch Offer, a Network (MNSP) Dispatch Offer, or a Market Ancillary Service (FCAS) Offer. These terms have the meaning given to them in the National Electricity Rules (NER).

The term Offer relates to the following Dispatch Offers:

1. Energy (Generation Dispatch Offer)
2. Frequency Control Ancillary Service (FCAS)
3. Market Network Service Provider (MNSP - Network Dispatch Offer)



## Related rules and procedures

Item	Location
Dispatch inflexibilities	AEMC website > <b>NER clause 3.8.19(b)(2)</b>
<b>Introduction to Market Rules</b>	AEMC website > <b>NER Chapter 3</b>
Market Floor Price	AEMC website > <b>NER 3.9.6.</b>
<b>MNSP Convexity Rule</b>	AEMC website <b>NER Clause 3.8.6A (e).</b>
<b>Operating Procedure: Mandatory Restriction Offers</b>	AEMO website > Security and Reliability > Power System Operating Procedures
Provision of ramp rates	AEMC website > <b>NER clauses 3.8.3A(f) and (g)</b>
Rebidding	AEMC website > <b>NER clause 3.8.22(c)(3)</b>
<b>Rebidding and Technical Parameters Guideline</b>	<a href="https://www.aer.gov.au/wholesale-markets/market-guidelines-reviews/rebidding-and-technical-parameters-guideline-amendments-for-5-minute-settlement-2019">https://www.aer.gov.au/wholesale-markets/market-guidelines-reviews/rebidding-and-technical-parameters-guideline-amendments-for-5-minute-settlement-2019</a>

## Assumed knowledge

This guide assumes you have knowledge of:

- JSON basics
- REST API standards
- Web-based technologies
- The operating system you are using
- **Connecting to AEMO's Electricity IT systems**

## Format and Validation for Energy, FCAS, and MNSP Bids and Offers user rights access

Participant Administrators (PAs) authorise Participant User access in MSATS. The initial PA is set up by the AEMO system administrator as part of the registration process.

Participant Users submitting Dispatch Bid/Offer Submission via FTP require access to AEMO's private network, MarketNet. For help, see **Guide to Electricity Information Systems**.

Participant Users submitting Dispatch Bid/Offer Submission via APIs and web require credentials provided by their company's Participant Administrator.

The entity required to access Dispatch Bid/Offer Submission is:

EMMS - Offers and Submissions - Energy FCAS MNSP Bids.

For more details about participant administration and user rights access, see **Guide to User Rights Management**.

# Chapter 2 About the Dispatch Bid/Offer Submission

This chapter explains what the Dispatch Bid/Offer Submission is for, who can use it, and how to submit it.

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## What the Dispatch Bid/Offer Submission is for

Effective Dispatch Bid/Offer Submissions are used in the Dispatch process.

Use the JSON Dispatch Bid/Offer Submission format to submit and maintain Energy, Frequency Controlled Ancillary Services (FCAS), and Market Network Service Provider (MNSP) Bid/Offer to your chosen interface.

## Who can use the Dispatch Bid/Offer Submission

Authorised Market Participants can use Dispatch Bid/Offer Submission in accordance with the National Electricity Rules (NER).

Access to submit Dispatch Bid/Offer Submissions requires credentials provided by your company's Participant Administrator. For help, see [Format and Validation for Energy, FCAS, and MNSP Bids and Offers user rights access on page 6](#).

## How to use the Dispatch Bid/Offer Submission

The 5-minute JSON Dispatch Bid/Offer Submission format is available from 1 April 2021. The current 30-minute csv format is not supported from 1 July 2021. Participants choosing to use FTP as their primary protocol must convert to the JSON Dispatch Bid/Offer Submission by 1 July 2021.

### Interfaces for submitting bids/offers

Before attempting any changes or operations on production systems, AEMO encourages participants to use the pre-production environment to test procedures and to train Participant Users.

You can submit a Dispatch Bid/Offer Submission using the following interfaces:

1. API to AEMO's e-Hub for all Offer Types. You can access APIs over the internet and MarketNet. See [Guide to AEMO's e-Hub APIs](#).
2. FTP to your participant folders on the Participant File Server for all Bid/Offer Types.  
To automate submission of the Dispatch Bid/Offer Submission, participants can set up Data Interchange. For help, see [Concise Guide to Data Interchange](#).
3. For Energy and FCAS Bid/Offer Types only:
  - a. Manual entry to the Markets Portal. For help, see [Guide to Web-based Energy and FCAS bids](#).
  - b. File upload to the Markets Portal. For help, see this guide for the JSON schema layout and for help uploading the Dispatch Bid/Offer Submission, see [Guide to Web-based Energy and FCAS bids](#).

# Chapter 3 Dispatch Bid/Offer Submission Explained

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## Dispatch Bid/Offer Submission design

The Dispatch Bid/Offer Submission is a JSON format, supporting:

1. Multiple Trading Days and DUIDs.
2. A mix of DUIDs bidding or offering with and without a Mandatory Restriction Offer.
3. Separate formats for different Service Types so you don't need to include unrequired fields.
4. Provision of all Service Types in the same Dispatch Bid/Offer Submission.
5. JSON schema validation based on Service Type.
6. Modern technologies natively supporting JSON.

For details of the JSON schema, see [Appendix 1 JSON Dispatch Bid/Offer Submission Schema](#) on page 59.

For more details about Mandatory Restrictions, see [Operating Procedure: Mandatory Restriction Offers](#).

## JSON syntax

- Data is in name and value pairs.  
The name in double quotes is followed by a colon and then a value.
- Data is separated by commas.
- Curly braces hold objects.
- Square brackets hold arrays.

For an example, see [Submission level information on the next page](#). For more details about the JSON schema, see <https://json-schema.org/>

## Bid/offer format

Participants can submit 5-minute Dispatch Bids in a JSON format (compressed or uncompressed) for FTP, API, and web upload.

## Bid/Offer Cut-off time

- A Daily Bid/Offer is one submitted **before** the Bid/Offer Cut-off Time.
- A Rebid is a Bid/Offer submitted **after** the Bid/Offer Cut-off Time.

The Bid/Offer Cut-off Time is 12:30 pm the day before the Trading Day.

## Service types

1. Energy
2. Frequency Controlled Ancillary Services (FCAS)
3. Market Network Service Provider (MNSP)

## Bid/offer processing order

Dispatch Bid/Offer Submissions are processed by AEMO in the order they are received. You must ensure the correct submission order so your latest Dispatch Bid/Offer Submission is the Effective Dispatch Bid/Offer Submission acknowledged by AEMO's systems.

For a Dispatch Bid/Offer Submission to become Effective you must receive an Acknowledgement from AEMO's systems. For an example, see [Dispatch Bid/Offer Submission Response on page 40](#).

## Submission level information

You supply the Bid/Offer Service Type information in the relevant element: energyBids, fcasBids, mnspsBids.

To support multiple bids for different Service Types, every Dispatch Bid/Offer Submission can supply the following submission level information.

```

},
"properties": {
  "submissionTimeStamp": { "$ref": "#/definitions/submissionTimeStamp" },
  "referenceId": { "$ref": "#/definitions/referenceId" },
  "comments": { "$ref": "#/definitions/comments" },
  "authorisedBy": { "$ref": "#/definitions/authorisedBy" },
  "energyBids": { "$ref": "#/definitions/energyBids" },
  "fcasBids": { "$ref": "#/definitions/fcasBids" },
  "mnspsBids": { "$ref": "#/definitions/mnspsBids" }
},
"required": [ "referenceId" ]
}

```

The Participant ID is not required in the submission. AEMO determines it in the identity management layer, validating authorisation to submit for the respective DUIDs.

## Submission level fields explained

Rule legend:

**M:** Mandatory - You must provide the field if providing the parent field.

**O:** Optional - You may provide the field, if not provided a default is assumed. To indicate no value, you must remove the entire attribute.

**C:** Conditional - The field is normally optional but may be mandatory under certain conditions.

Field	Type	Rule	Validation
submissionTimeStamp	string format: date-time	O	Participant provided timestamp for the submission. Expected in the format: yyyy-mm-ddThh:MM:ss[+10:00] e.g. 2021-04-23T20:20:39, 2021-04-23T20:20:39+10:00
referenceId	string(100)	M	A participant provided reference. Must be unique for each submission
comment	string(100)	O	Participant provided comment or description for this submission
authorisedBy	String(20)	O	Person authorising this submission. Used for participant's reference, not validated
energyBids	array	C	Collection of one or more Energy bids
fcasBids	array	C	Collection of one or more FCAS bids.
mnspsBids	array	C	Collection of one or more MNSP bids.

## Valid or invalid bid/offer submission

### Valid bid/offer

For FTP submissions, if the entire Dispatch Bid/Offer Submission is valid, an acknowledgement returns. The acknowledgement is a compressed file called ACK.zip containing an ACK.json file.

For examples, see [Response Examples](#).

The data from valid and subsequent communications is processed and communicated in NEM reports, complying with the Electricity Data Model. For details, see [Appendix 2 Electricity Data Model on page 72](#).

### Invalid bid/offer

For FTP submissions, if any of the Dispatch Bid/Offer Submission contains invalid data, the whole Bid/Offer is rejected and an acknowledgement returns. The acknowledgement is a compressed file called CPT.zip (for corrupt) containing a CPT.json file indicating all detected errors.



# Chapter 4 Energy Bids/Offers

This chapter explains the Energy bids elements of the Dispatch Bid/Offer Submission. For details about the whole schema, see [Appendix 1 JSON Dispatch Bid/Offer Submission Schema on page 59](#).

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## About energy bids/offers

An Energy Bid/Offer contains at least one Energy Service Type, in the energyBids element.

The Dispatch Bid/Offer Submission in [Energy bid/offer details on page 17](#) is valid, even though it has no mention of Mandatory Restriction (MR) items because it is not compulsory for participants to bid for Mandatory Restriction Offers.

## Energy bid element

```

    },
    "avail": {
      "type": "integer",
      "description": "The availability (or required level) of energy for each price band, in whole megawatts.",
      "minimum": 0
    },
    "bandAvail": {
      "type": "array",
      "description": "The set of 10 band availabilities (see 'Avail').",
      "items": { "$ref": "#/definitions/avail" },
      "minItems": 10,
      "maxItems": 10
    },
    "comments": {
      "type": "string",
      "description": "Participant's free-form field for information",
      "maxLength": 500
    },
    "dailyEnergyConstraint": {
      "type": "integer",
      "description": "The maximum output this unit can offer in a day, in whole megawatts.",
      "minimum": 0,
      "maximum": 999999
    },
    "duid": {
      "type": "string",
      "description": "Dispatchable Unit identifier as recorded in AEMO's systems, must be upper-case.",
      "maxLength": 10
    },
    "enablementMax": {
      "type": "integer",
      "description": "Maximum FCAS enablement limit in megawatts.",
      "minimum": 0
    },
    "enablementMin": {
      "type": "integer",
      "description": "Minimum FCAS enablement limit in megawatts.",
      "minimum": 0
    },
    "energyBid": {
      "type": "object",
      "properties": {
        "tradingDate": { "$ref": "#/definitions/tradingDate" },
        "duid": { "$ref": "#/definitions/duid" },
        "prices": { "$ref": "#/definitions/prices" },
        "fastStartProfile": { "$ref": "#/definitions/fastStartProfile" },
        "dailyEnergyConstraint": { "$ref": "#/definitions/dailyEnergyConstraint" },
        "rebidExplanation": { "$ref": "#/definitions/rebidExplanation" },
        "mrPriceScalingFactor": { "$ref": "#/definitions/mrPriceScalingFactor" },
        "energyPeriods": { "$ref": "#/definitions/energyPeriods" }
      },
      "required": [ "tradingDate", "duid", "prices", "energyPeriods" ]
    },
    "energyBids": {
      "type": "array",
      "items": { "$ref": "#/definitions/energyBid" }
    },
    "energyPeriods": {
      "type": "array",
      "items": {
        "type": "object",
        "properties": {
          "periodId": { "$ref": "#/definitions/periodId" },
          "maxAvail": { "$ref": "#/definitions/maxAvail" },
          "rampUpRate": { "$ref": "#/definitions/rampUpRate" },
          "rampDownRate": { "$ref": "#/definitions/rampDownRate" },
          "bandAvail": { "$ref": "#/definitions/bandAvail" },
          "pasaAvail": { "$ref": "#/definitions/pasaAvail" },
          "mrCapacity": { "$ref": "#/definitions/mrCapacity" },
          "fixedLoad": { "$ref": "#/definitions/fixedLoad" }
        },
        "required": [ "periodId", "bandAvail", "maxAvail", "pasaAvail", "rampUpRate", "rampDownRate" ]
      },
      "minItems": 288,
      "maxItems": 288
    },
  },

```

```

},
"highBreakPoint": {
  "type": "integer",
  "description": "FCAS high break point, in megawatts.",
  "minimum": 0
},
},
"lowBreakPoint": {
  "type": "integer",
  "description": "FCAS low break point, in megawatts.",
  "minimum": 0
},
},
"maxAvail": {
  "type": "integer",
  "description": "Maximum availability loading for a period, in whole megawatts.",
  "minimum": 0
},
},
"periodId": {
  "type": "integer",
  "description": "Trading interval identifier",
  "minimum": 1,
  "maximum": 288
},
},
"price": {
  "type": "number",
  "multipleOf": 0.01,
  "description": "Band price"
},
},
"prices": {
  "type": "array",
  "description": "10 price bands must be supplied.",
  "items": { "$ref": "#/definitions/price" },
  "minItems": 10,
  "maxItems": 10
},
},
"service": {
  "type": "string",
  "description": "FCAS service type",
  "enum": [
    "RAISE6SEC",
    "RAISE60SEC",
    "RAISE5MIN",
    "RAISEREG",
    "LOWER6SEC",
    "LOWER60SEC",
    "LOWER5MIN",
    "LOWERREG"
  ]
},
},
"tradingDate": {
  "type": "string",
  "description": "Target trading day"
}
}

```

## Energy bid/offer details

Provide this data in the energyBid element of the Dispatch Bid/Offer Submission. For an explanation of the fields, see [energyBid element details below](#).

Table 1 energyBid element details

Rule legend:

**M:** Mandatory - You must provide the field if providing the parent field.

**O:** Optional - You may provide the field, if not provided a default is assumed. To indicate no value, you must remove the entire attribute.

**C:** Conditional - The field is normally optional but may be mandatory under certain conditions.

Element	Type	Rule	Description/validation
energyBid	object	M	Mandatory for energy bids only properties: tradingDate, duid, prices, fastStartProfile, dailyEnergyConstraint, rebidExplanation, mrPriceScalingFactor, energyPeriods Required: tradingDate, duid, prices, energyPeriods
tradingDate	string	M	String in date format Must be a valid date. The effective date for this bid. Expected in the format: yyyy-mm-dd or yyyy-mm-dd 00:00:00 e.g. 2021-04-23 2021-04-23 00:00:00
duid	string (10)	M	Dispatchable Unit identifier recorded in AEMO's systems Must be upper case maxLength: 10
prices	array	M	An array of 10 prices - Items:price minItems: 10 maxItems: 10 e.g. [0.00, 0.00, 20.00, ...]
items:price	number	M	Band prices multipleOf: 0.01 e.g. 0.01, etc.
fastStartProfile	object	O	Fast-Start Inflexibility Profile Properties: minimumLoad, t1, t2, t3, t4 Required: minimumLoad, t1, t2, t3, t4

Element	Type	Rule	Description/validation
			Only valid for fast-start units. If not provided, the unit is treated as slow start, and all values in the data model will default to null.
mrPriceScalingFactor	number	O	Mandatory restrictions offer price scaling factor. multipleOf: 0.0001 minimum: 0 Not valid for scheduled loads.
dailyEnergyConstraint	integer	O	Represents the maximum energy available from a constrained Plant in the Trading Day Only relevant to the Energy Service Type Cannot be negative Expressed in MWh/day minimum: 0 maximum: 999999
mrPriceScalingFactor	number	O	Mandatory restrictions offer price scaling factor. multipleOf: 0.0001 minimum: 0 Not valid for scheduled loads.
energyPeriods	array	M	An array of 288 period objects: periodID, maxAvail, rampUpRate, rampDownRate, bandAvail, pasaAvail, mrCapacity, fixedLoad Items:EnergyBid Required: periodId, bandAvail, maxAvail, pasaAvail, rampUpRate, rampDownRate
Items:EnergyBid	object	M	EnergyBid Properties: tradingDate, duid, prices, fastStartProfile, dailyEnergyConstraint, rebidExplanation, mrPriceScalingFactor, energyPeriods Required: tradingDate, duid, prices, energyPeriods
periodId	integer	M	The 5-minute trading interval, starting from the interval starting at 0400 (and ending at 0405) Must be between 1 and 288
maxAvail	integer	M	Maximum availability loading for a period, in whole megawatts minimum: 0

Element	Type	Rule	Description/validation
rampUpRate	integer	M	Rate of change up - The maximum rate of increase for the unit in MW/min minimum: 0
rampDownRate	integer	M	Rate of change down - The maximum rate of decrease for the unit in MW/min minimum: 0
bandAvail	array	M	An availability for each of the 10 price bands must be provided - items:avail Min Items: 10 Max Items: 10 e.g. [0, 0, 100, 200, 0, 0, ...]
items:avail	integer	M	The availability (or required level) of energy for each price band, in whole megawatts minimum: 0
pasaAvail	integer	M	The unit's capability including any capability potentially available in 24 hours minimum: 0
mrCapacity	integer	O	Required if offering under Mandatory Restrictions. minimum: 0 Must be the same for each 5-minute period in a 30-minute Trading Interval. Must have a Price Scaling Factor and all 288 periods. Not valid for a Scheduled Load DUID must be a Generating Unit The initial MR Bid for a Mandatory Restriction Period declared in the relevant Region for a particular Trading Day must be made before the MR Bid Cut-off Time for that MR Period, otherwise the MR Bid is rejected. An MR Bid for a Trading Day only applies for that day. <b>MR Capacity Rebids</b> The initial MR Bid must be valid. After the MR Bid Cut-Off Time, the factor must be the same as the last valid MR Bid.
fixedLoad	integer	O	Fixed unit output, in MW.

Element	Type	Rule	Description/validation
			Must be 1 MW or greater. A rebid reason must be provided if this field is populated. See <a href="#">Rebid Explanation on page 32</a>
minimumLoad	number	M	Minimum MW load minimum: 0
t1	number	M	Time to synchronise, in minutes minimum: 0 maximum: 30
t2	number	M	Time to reach minimum load, in minutes minimum: 0 maximum: 30
t3	number	M	Time at minimum load, in minutes minimum: 0 maximum: 59
t4	number	M	Time to shut down, in minutes minimum: 0 maximum: 59
comments	string	O	Participant's free form field maxLength: 500
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates Properties: reason, eventTime, awareTime, decisionTime, category Required: reason See <a href="#">Rebid Explanation on page 32</a>



# Chapter 5 FCAS Offers

This chapter explains the Frequency Control Ancillary Service (FCAS) bids element of the Dispatch Bid/Offer Submission. For details about the whole schema, see [Appendix 1 JSON Dispatch Bid/Offer Submission Schema on page 59](#).

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<b>FCAS offer details</b> .....	<b>23</b>
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## About FCAS offers

An FCAS Offer contains at least one FCAS Service Type, in the fcasBids element.

## FCAS service types

FCAS service types are: RAISE6SEC, RAISE60SEC, RAISE5MIN, RAISEREG, LOWER6SEC, LOWER60SEC, LOWER5MIN and LOWERREG).

## FCAS offer element

```

    },
    "bandAvail": {
      "type": "array",
      "description": "The set of 10 band availabilities (see 'Avail').",
      "items": { "$ref": "#/definitions/avail" },
      "minItems": 10,
      "maxItems": 10
    },
    "duid": {
      "type": "string",
      "description": "Dispatchable Unit identifier as recorded in AEMO's systems, must be upper-case.",
      "maxLength": 10
    },
    "enablementMax": {
      "type": "integer",
      "description": "Maximum FCAS enablement limit in megawatts.",
      "minimum": 0
    },
    "enablementMin": {
      "type": "integer",
      "description": "Minimum FCAS enablement limit in megawatts.",
      "minimum": 0
    },
    "fcasBid": {
      "type": "object",
      "properties": {
        "tradingDate": { "$ref": "#/definitions/tradingDate" },
        "duid": { "$ref": "#/definitions/duid" },
        "prices": { "$ref": "#/definitions/prices" },
        "service": { "$ref": "#/definitions/service" },
        "rebidExplanation": { "$ref": "#/definitions/rebidExplanation" },
        "fcasPeriods": { "$ref": "#/definitions/fcasPeriods" }
      },
      "required": [ "tradingDate", "duid", "prices", "service", "fcasPeriods" ]
    },
    "fcasBids": {
      "type": "array",
      "items": { "$ref": "#/definitions/fcasBid" }
    },
    "fcasPeriods": {
      "type": "array",
      "items": {
        "type": "object",
        "properties": {
          "periodId": { "$ref": "#/definitions/periodId" },
          "maxAvail": { "$ref": "#/definitions/maxAvail" },
          "bandAvail": { "$ref": "#/definitions/bandAvail" },
          "enablementMin": { "$ref": "#/definitions/enablementMin" },
          "lowBreakPoint": { "$ref": "#/definitions/lowBreakPoint" },
          "highBreakPoint": { "$ref": "#/definitions/highBreakPoint" },
          "enablementMax": { "$ref": "#/definitions/enablementMax" }
        },
        "required": [ "periodId", "bandAvail", "maxAvail", "enablementMin", "lowBreakPoint", "highBreakPoint", "enablementMax" ]
      },
      "minItems": 288,
      "maxItems": 288
    }
  }

```

```

},
"highBreakPoint": {
  "type": "integer",
  "description": "FCAS high break point, in megawatts.",
  "minimum": 0
},
"lowBreakPoint": {
  "type": "integer",
  "description": "FCAS low break point, in megawatts.",
  "minimum": 0
},
"maxAvail": {
  "type": "integer",
  "description": "Maximum availability loading for a period, in whole megawatts.",
  "minimum": 0
},
"periodId": {
  "type": "integer",
  "description": "Trading interval identifier",
  "minimum": 1,
  "maximum": 288
},
"price": {
  "type": "number",
  "multipleOf": 0.01,
  "description": "Band price"
},
"prices": {
  "type": "array",
  "description": "10 price bands must be supplied.",
  "items": { "$ref": "#/definitions/price" },
  "minItems": 10,
  "maxItems": 10
},
"service": {
  "type": "string",
  "description": "FCAS service type",
  "enum": [
    "RAISE6SEC",
    "RAISE60SEC",
    "RAISE5MIN",
    "RAISEREG",
    "LOWER6SEC",
    "LOWER60SEC",
    "LOWER5MIN",
    "LOWERREG"
  ]
},
"tradingDate": {
  "type": "string",
  "description": "Target trading day"
}
}

```

## FCAS offer details

Provide this data in the `fcasBids` element of the Dispatch Bid/Offer Submission. For an explanation of the fields, see [fcasBid element details below](#).

## FCAS offer details

Table 2 `fcasBid` element details

Rule legend:

**M:** Mandatory - You must provide the field if providing the parent field.

**O:** Optional - You may provide the field, if not provided a default is assumed. To indicate no value, you must remove the entire attribute.

**C:** Conditional - The field is normally optional but may be mandatory under certain conditions.

Field	Type	Rule	Description
fcasBid	object	M	Mandatory for FCAS bids Properties: tradingDate, duid, prices, service, rebidExplanation, fcasPeriods Required: tradingDate, duid, prices, service, fcasPeriods
fcasBids	array	M	items:fcasBid
tradingDate	string	M	String in date format. Must be a valid date. The Trading Day the Offer is for. Expected in the format: yyyy-mm-dd or yyyy-mm-dd 00:00:00 e.g. 2021-04-23 2021-04-23 00:00:00
duid	string (10)	M	Dispatchable Unit identifier recorded in AEMO's systems Must be upper case maxLength: 10
prices	array	M	An array of 10 prices - Items:price minItems: 10 maxItems: 10 e.g. [0.00, 0.00, 20.00, ...]
items:price	number	M	Band prices multipleOf: 0.01 e.g. 0.01, etc
service	string (10)	M	The FCAS service type, one of: RAISE6SEC, RAISE60SEC, RAISE5MIN, RAISEREG, LOWER6SEC, LOWER60SEC, LOWER5MIN
fcasPeriods	array	M	An array of 288 period objects: periodID, maxAvail, bandAvail, enablementMin, lowBreakPoint, highBreakPoint, enablementMax Items:fcasPeriods

Field	Type	Rule	Description
Items:fcasPeriods	object	M	fcasPeriods Properties: periodId, maxAvail, bandAvail, enablementMin, lowBreakPoint, highBreakPoint, enablementMax Required: periodId, bandAvail, maxAvail, enablementMin, lowBreakPoint, highBreakPoint, enablementMax
periodId	integer	M	The 5-minute trading interval, starting from the interval starting at 0400 Must be between 1 and 288
maxAvail	integer	M	Maximum availability loading for a period, in whole megawatts minimum: 0
bandAvail	array	M	An availability for each of the 10 price bands must be provided: items/avail e.g. [0, 0, 100, 200, 0, 0, ...] Min Items: 10 Max Items: 10
items:avail	integer	M	The availability (or required level) of energy for each price band, in whole megawatts minimum: 0
enablementMin	integer	M	Minimum MW output this service can supply minimum: 0
enablementMax	integer	M	FCAS low break point, in megawatts minimum: 0
lowBreakPoint	integer	M	FCAS high break point, in megawatts minimum: 0
highBreakPoint	integer	M	Maximum MW output that this unit can provide The full-service availability (as per MaxAvail) minimum: 0
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates properties: reason, eventTime, awareTime, decisionTime, category Required: reason See <a href="#">Rebid Explanation on page 32</a>

# Chapter 6 MNSP Offers

This chapter explains the Market Network Service Provider (MNSP) bids element of the Dispatch Bid/Offer Submission. For details about the whole schema, see [Appendix 1 JSON Dispatch Bid/Offer Submission Schema on page 59](#).

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<b>MNSP offer element</b> .....	<b>27</b>
<b>MNSP offer details</b> .....	<b>29</b>

## About MNSP offers

An MNSP Offer contains at least one MNSP Service Type, in the mnsdBids element. For help, see [MNSP offer details on page 29](#).

## MNSP offer element

```

"fixedLoad": {
  "type": "integer",
  "description": "Fixed unit output (MW)",
  "minimum": 1
},
"interconnectorId": {
  "type": "string",
  "description": "Identifies the relevant interconnector in AEMO's systems. This is case sensitive.",
  "maxLength": 10
},
"linkId": {
  "type": "string",
  "description": "Identifies the interconnector link in AEMO's systems. This is case sensitive.",
  "maxLength": 10
},
"maxAvail": {
  "type": "integer",
  "description": "Maximum availability loading for a period, in whole megawatts.",
  "minimum": 0
},
"mnsdBid": {
  "type": "object",
  "properties": {
    "interconnectorId": { "$ref": "#/definitions/interconnectorId" },
    "tradingDate": { "$ref": "#/definitions/tradingDate" },
    "mnsdBidImport": { "$ref": "#/definitions/mnsdBidLink" },
    "mnsdBidExport": { "$ref": "#/definitions/mnsdBidLink" },
    "rebidExplanation": { "$ref": "#/definitions/rebidExplanation" }
  },
  "required": [ "interconnectorId", "tradingDate", "mnsdBidImport", "mnsdBidExport" ]
},
"mnsdBidLink": {
  "type": "object",
  "properties": {
    "linkId": { "$ref": "#/definitions/linkId" },
    "prices": { "$ref": "#/definitions/prices" },
    "mrPriceScalingFactor": { "$ref": "#/definitions/mrPriceScalingFactor" },
    "mnsdPeriods": { "$ref": "#/definitions/mnsdPeriods" }
  },
  "required": [ "linkId", "prices", "mnsdPeriods" ]
},
"mnsdBids": {
  "type": "array",
  "items": { "$ref": "#/definitions/mnsdBid" }
},
"mnsdPeriods": {
  "type": "array",
  "items": {
    "type": "object",
    "properties": {
      "periodId": { "$ref": "#/definitions/periodId" },
      "maxAvail": { "$ref": "#/definitions/maxAvail" },
      "rampUpRate": { "$ref": "#/definitions/rampUpRate" },
      "bandAvail": { "$ref": "#/definitions/bandAvail" },
      "pasaAvail": { "$ref": "#/definitions/pasaAvail" },
      "mrCapacity": { "$ref": "#/definitions/mrCapacity" },
      "fixedLoad": { "$ref": "#/definitions/fixedLoad" }
    },
    "required": [ "periodId", "rampUpRate", "bandAvail", "maxAvail", "pasaAvail" ]
  },
  "minItems": 288,
  "maxItems": 288
},
"mrCapacity": {
  "type": "integer",
  "description": "Only required if offering under mandatory restrictions. (MW)",
  "minimum": 0
},
"mrPriceScalingFactor": {
  "type": "number",
  "multipleOf": 0.0001,
  "description": "Mandatory restrictions offer price scaling factor.",
  "minimum": 0
},
"pasaAvail": {
  "type": "integer",
  "description": "The unit's capability including any capability potentially available in 24 hours. (MW) - Includes the offered availability.",
  "minimum": 0
},
"periodId": {
  "type": "integer",
  "description": "Trading interval identifier",
  "minimum": 1,
  "maximum": 288
},
"price": {
  "type": "number",
  "multipleOf": 0.01,
  "description": "Band price"
},
"prices": {
  "type": "array",
  "description": "10 price bands must be supplied.",
  "items": { "$ref": "#/definitions/price" },
  "minItems": 10,
  "maxItems": 10
},
"rampUpRate": {
  "type": "integer",
  "description": "Maximum rate of increase in output, in megawatts per minute.",
  "minimum": 0
},
"tradingDate": {
  "type": "string",
  "description": "Target trading day"
}

```



## MNSP offer details

Provide this data in the `mnsxBid` element of the Dispatch Bid/Offer Submission. For an explanation of the fields, see [mnsxBid element details below](#).

Table 3 mnsxBid element details

Rule legend:

**M:** Mandatory - You must provide the field if providing the parent field.

**O:** Optional - You may provide the field, if not provided a default is assumed. To indicate no value, you must remove the entire attribute.

**C:** Conditional - The field is normally optional but may be mandatory under certain conditions.

Field	Type	Rule	Description
<code>mnsxBid</code>	object	M	Mandatory for MNSP bids Properties: <code>interconnectorId</code> , <code>tradingDate</code> , <code>mnsxBidImport</code> , <code>mnsxBidExport</code> , <code>rebidExplanation</code> Required: <code>interconnectorId</code> , <code>tradingDate</code> , <code>mnsxBidImport</code> , <code>mnsxBidExport</code>
<code>interconnectorId</code>	string (10)	M	The name of the registered interconnector maxLength: 10
<code>tradingDate</code>	String	M	String in date format Must be a valid date. The effective date for this bid. Expected in the format: yyyy-mm-dd or yyyy-mm-dd 00:00:00 e.g. 2021-04-23 2021-04-23 00:00:00
<code>mnsxBidImport</code>	object	M	The import bid for the interconnector: <code>mnsxBidLink</code>
<code>mnsxBidExport</code>	object	M	The export bid for the interconnector: <code>mnsxBidLink</code>
<code>mnsxBidLink</code>	object	M	Properties: <code>linkId</code> , <code>prices</code> , <code>mrPriceScalingFactor</code> , <code>mnsxPeriods</code> Required: <code>linkId</code> , <code>prices</code> , <code>mnsxPeriods</code>
<code>linkId</code>	string	M	Identifies the interconnector link in AEMO's systems case sensitive maxLength: 10
<code>prices</code>	array	M	An array of 10 prices- items: <code>price</code> minItems: 10 maxItems: 10

Field	Type	Rule	Description
			e.g. [0.00, 0.00, 20.00, ...]
items:price	number	M	Band prices multipleOf: 0.01 e.g. 0.01, etc.
mrPriceScalingFactor	number	O	Mandatory restrictions offer price scaling factor multipleOf: 0.0001 minimum: 0
mnsdBids	array	M	Items: mnsdBid
mnsdPeriods	array	M	An array of 288 period objects: periodID, maxAvail, rampUpRate, bandAvail, pasaAvail, mrCapacity, fixedLoad
items:mnsdPeriods	object	M	mnsdPeriods Properties: periodId, maxAvail, rampUpRate, bandAvail, pasaAvail, mrCapacity, fixedLoad Required: periodId, rampUpRate, bandAvail, maxAvail, pasaAvail
periodId	integer	M	The 5-minute trading interval, starting from the interval starting at 0400 Must be between 1 and 288
maxAvail	integer	M	Maximum availability loading for a period, in whole megawatts minimum: 0
rampUpRate	integer	M	Rate of change in MW/min for increasing this link minimum: 0
bandAvail	array	M	An availability for each of the 10 price bands must be provided - items:avail Min Items: 10 Max Items: 10 e.g. [0, 0, 100, 200, 0, 0, ...]
items:avail	integer	M	The availability (or required level) of energy for each price band, in whole megawatts

Field	Type	Rule	Description
			minimum: 0
pasaAvail	integer	M	The links capability including any capability potentially available in 24 hours minimum: 0
mrCapacity	integer	O	Required if offering under Mandatory Restrictions. minimum: 0 Must be the same for each 5-minute period in a 30-minute Trading Interval. Must have a Price Scaling Factor and all 288 periods. The initial MR Bid for a Mandatory Restriction Period declared in the relevant Region for a particular Trading Day must be made before the MR Bid Cut-off Time for that MR Period, otherwise the MR Bid is rejected. The initial MR Bid must be valid. After the MR Bid Cut-Off Time, the factor must be the same as the last valid MR Bid. An MR Bid for a Trading Day only applies for that day.
fixedLoad	integer	O	Fixes unit output in MW. Must be 1 MW or greater. A rebid reason must be provided if this field is populated
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates Properties: reason, eventTime, awareTime, decisionTime, category Required: reason See <a href="#">Rebid Explanation on the next page</a>

# Chapter 6 Rebid Explanation

This chapter explains the Rebids explanation element of the Dispatch Bid/Offer Submission. For details about the whole schema, see [Appendix 1 JSON Dispatch Bid/Offer Submission Schema on page 59](#).

## About rebid explanations

The Rebid explanation element outlines the detail required for a Rebid submitted to AEMO.

For details about rebidding and the process for requesting additional information to verify the rebid reasons, see [Rebidding and Technical Parameters Guideline](#).

## Rebid explanation element

```

},
"awareTime": {
  "type": "string",
  "description": "Expected to be the time at which the participant became aware of the event causing the need to rebid (24h clock, NEM time) - HH:MM:SS",
  "maxLength": 8
},
"category": {
  "type": "string",
  "description": "A Rebid category",
  "maxLength": 1
},
"comments": {
  "type": "string",
  "description": "Participant's free-form field for information",
  "maxLength": 500
},
"decisionTime": {
  "type": "string",
  "description": "Expected to be the time at which the participant decided to rebid (24h clock, NEM time) - HH:MM:SS",
  "maxLength": 8
},
"eventTime": {
  "type": "string",
  "format": "time",
  "description": "Time at which the event causing the rebid occurred (24h clock) - HH:MM:SS"
},
"reason": {
  "type": "string",
  "description": "Reason required by the Rules for rebids, inflexibility (fixed load) and/or low ramp rates. Additional characters are truncated.",
  "maxLength": 500
},
"rebidExplanation": {
  "type": "object",
  "description": "Rebid Reason - expanded to 5 fields.",
  "properties": {
    "reason": { "$ref": "#/definitions/reason" },
    "eventTime": { "$ref": "#/definitions/eventTime" },
    "awareTime": { "$ref": "#/definitions/awareTime" },
    "decisionTime": { "$ref": "#/definitions/decisionTime" },
    "category": { "$ref": "#/definitions/category" }
  },
  "required": [ "reason" ]

```

## Rebid explanation details

Provide this data for Rebidexplanations.

Table 4 Rebid element details

Rule legend:

**M:** Mandatory - You must provide the field if providing the parent field.

**O:** Optional - You may provide the field, if not provided a default is assumed. To indicate no value, you must remove the entire attribute.

**C:** Conditional - The field is normally optional but may be mandatory under certain conditions.

Element	Type	Rule	Description/validation
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates Properties: reason, eventTime, awareTime, decisionTime, category Required: reason
reason	string (500)	M	A brief, verifiable and specific reason for the rebid, fixed load or low ramp rate. Mandatory if RebidExplanation is provided.
eventTime	string	C	The time of the event(s) or other occurrence(s) cited/adduced as the reason for the rebid. Required for rebids, not required for fixed load or low ramp rates Expected in the format: HH:MM:SS e.g. 20:11:00
awareTime	string (8)	O	Supports the <b>Rebidding and technical parameters guideline</b> The time when the participant became aware of the event (s) / occurrence(s), prompting the rebid. Not validated by AEMO

Element	Type	Rule	Description/validation
decisionTime	string (8)	O	Supports the <b>Rebidding and technical parameters guideline</b> The time when the participant made the decision to rebid Not validated by AEMO
category	string (1)	O	Supports the <b>Rebidding and technical parameters guideline</b> A provided rebid category Not validated by AEMO
comments	string (500)	O	Participant's free-form field for information

# Chapter 7 Submitting a Dispatch Bid/Offer by FTP

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This chapter describes how to submit your Dispatch Bid/Offer Submission by FTP.

## FTP submission prerequisites

Before submitting Dispatch Bids, you need:

1. Access to MarketNet. If your company is a registered participant, you probably already have access because it is set up during the registration process. For more details, see [Guide to Electricity Information Systems](#).
2. A user ID and password provided by your company's participant administrator (PA) who controls access to AEMO's market systems. For more details see [Guide to User Rights Management](#).

PAs are set up during the registration process, if you don't know who your company's PA is, contact AEMO's support hub.

3. The Participant File Server address, see [FTP participant file server addresses on the next page](#).

For help submitting bids via API, web interface, or web upload, see [Guide to AEMO's e-Hub APIs](#) and [Guide to Web-Based Energy and FCAS Bids](#)

## FTP participant file server addresses

Environment	MarketNet Address
Pre-production	ftp://146.178.211.25
Production	ftp://146.178.211.25

## FTP submission rules

- The Dispatch Bid/Offer Submission as a JSON schema submitted in compressed file format. For help, see [FTP compressed file format on the next page](#).
- A filename must be unique. You can only submit a file with the same filename twice. Resubmission of a file with the same name results in an error.
- The ParticipantID must be valid.

## FTP processing order for multiple files

If there is more than one file in your Participant ID \Export\Bids\ folder, the Participant File Server processes files in ascending order according to the file modified date.

## FTP Bid/offer filename

The Dispatch Bid/Offer Submission filename identifies the participant, the date and time of Dispatch Bid/Offer Submission submission. Each Dispatch Bid/Offer Submission file has BID in the filename matching the windows search string BID.json or BID.zip.

An acceptable filename is less than or equal to 40 characters.

## FTP bid/offer filename example

PART1\_FCASBID\_20180101231145.zip



## FTP bid/offer filename components

Field	Description
PART1	An assigned ID for the participant submitting the Dispatch Bid/Offer Submission file.
BID	The fixed part of the filename identifying it as a Dispatch Bid/Offer Submission. It may have additional characters before or after this fixed part.
Date and time of Dispatch Bid/Offer Submission submission	<p>A date reference for participants to relate to the settlement or offer date/time.</p> <p>The date is in the form YYYYMMDD or YYYYMMDDhhmmss (4 digit year, 2 digit month, 2 digit day, 2 digit hour in 24-hour count, 2 digit minute and 2 digit second).</p> <p>There is no validation of file contents with this date.</p>

## FTP compressed file format

Compressed FTP files conform to the following rules:

- They must contain only one JSON schema.
- The compressed filename follows the same naming rules as specified for the text file except the file extension must be zip instead of .txt.

## Submitting an FTP bid/offer

**To ensure you have transferred the Dispatch Bid/Offer Submission before AEMO processes the file, transfer the file with a .tmp extension and rename it with a zip extension after successful transfer.**

For help with validation messages, see [Schema Validation Messages on page 44](#).

1. Create your JSON schema Dispatch Bid/Offer Submission. For help, see:
  - [Energy Bids/Offers on page 13](#).
  - [FCAS Offers on page 21](#).
  - [MNSP Offers on page 26](#).

- Transfer your Dispatch Bid/Offer Submission compressed file with a .tmp extension to your **ParticipantID\Export\Bids\** folder on the Participant File Server.

FTP Dispatch Bid/Offer Submission s must comply with the file naming convention and format. For help, see [FTP Bid/offer filename on page 36](#).

You can use FTP software or Data Interchange to submit Dispatch Bid/Offer Submissions. For help see [Concise Guide to Data Interchange](#).

- Rename your compressed file with a .zip extension.

AEMO constantly polls this folder looking for Dispatch Bid/Offer Submissions to process.

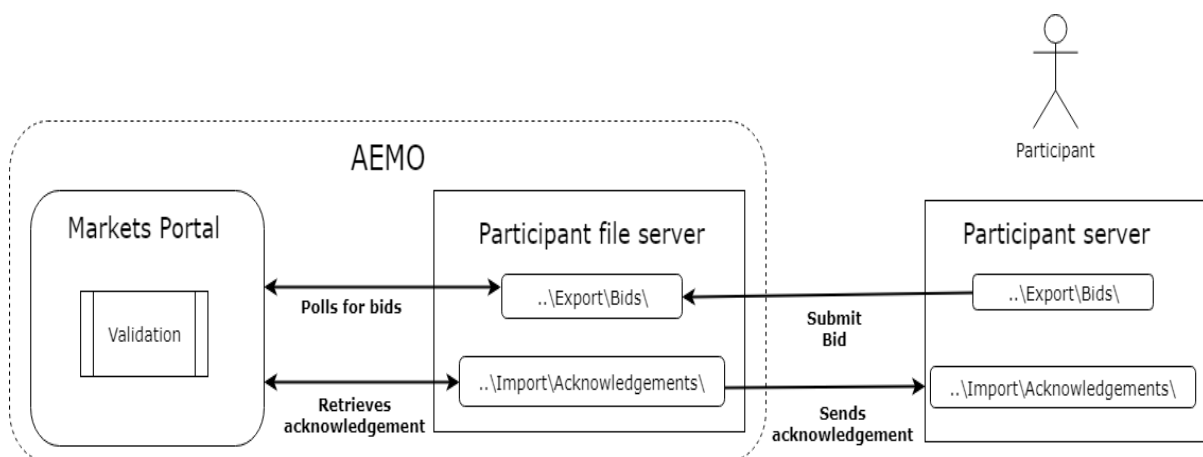
- Retrieve the ACK file from your **ParticipantID \Import\Acknowledgements** folder on the Participant File Server. For help, see [Receiving FTP bid/offer acknowledgements on the next page](#).

- Check if your Dispatch Bid/Offer Submission is valid. For help, see [Dispatch Bid/Offer Submission Response on page 40](#).

AEMO processes each file only once. Validation of the file includes format checking and value comparisons with previously accepted Bid/Offers.

- Delete the acknowledgement file (ACK) from your **Acknowledgements** folder.

Figure 1 submitting bid/offers using FTP or web



## FTP Throttling limit

When files are processed, AEMO's systems throttle processing to one submission per second per Participant ID.

This restriction is due to an existing legacy limit in the Data Model bidding tables. The bidding tables rely on the field OfferDate in the primary key, which is a date/time field supporting precision only to the second.

**If you submit multiple JSON files via the FTP interface you might observe queued files clearing slowly, this is the consequence of the FTP throttling limit.**

## Receiving FTP bid/offer acknowledgements

After you submit your Dispatch Bid/Offer Submission, you receive an acknowledgement (ACK) to your ParticipantID\Import\Acknowledgments folder on the Participant File Server and removes the original file from the Export folder.

For example acknowledgment files, see [Dispatch Bid/Offer Submission Response on page 40](#).

Item	Description
Format	Compressed file format containing a JSON file
Download folder	/Import/Acknowledgements
Valid filenames	Accepted submission: <bid_file>_ACK.zip Rejected submission: <bid_file>_CPT.zip
Download process	Retrieve then delete the acknowledgement file.

# Chapter 8 Dispatch Bid/Offer Submission Response

AEMO acknowledges all Dispatch Bid/Offer Submissions with a JSON response. This chapter provides details and a response example.

## Response details

The following response occurs when:

- A submission is successfully validated and accepted by AEMO (possibly with warnings).
- A submission fails validation and is not accepted.

For details, see  
[Response field  
details on page 42.](#)

```

submitBidsResponseData:
  properties:
    participantId:
      type: "string"
    offerTimeStamp:
      type: "string"
      format: "date-time"
    transactionId:
      type: "string"
    referenceId:
      type: "string"
    comments:
      type: "string"
    filename:
      type: "string"
    authorisedBy:
      type: "string"
    status:
      type: "string"
    method:
      type: "string"
submitBidsResponse:
  properties:
    transactionId:
      type: "string"
    data:
      $ref: "#/definitions/submitBidsResponseData"
    errors:
      type: "array"
      items:
        type: "object"
        $ref: "#/definitions/ResponseError"
ResponseError:
  type: "object"
  properties:
    code:
      type: "string"
    title:
      type: "string"
    detail:
      type: "string"
    source:
      type: "string"

```

Table 5 Response field details

Field	Type	Rule	Description
transactionId	string(100)	M	A GUID that uniquely identifies this transaction in AEMO's systems
data	object	M	Holds returned data values SubmitBidsResponseData
referenceId	string(100)	O	The reference id value provided by the participant in the submission.
offerTimeStamp	string format:date-time	M	The date/time the submission was processed by AEMO
submissionTimeStamp	string format:date-time	O	The participant specified timestamp for this submission
comments	string(500)	O	A participant supplied comment for the submission
status	Boolean	M	Whether the submission was accepted by AEMO as valid or not. Returns either "VALID" or "CORRUPT"
filename	string(40)	M	The filename of the submission. AEMO will construct a name for WEB and API submissions
method	string(3)	M	The method of the submission, FTP/WEB/API/REG.
authorisedBy	string(20)	O	Participant's provided authoriser
errors	array	C	An array of any validation errors. Mandatory when validation has failed.
code	string	M	A numeric code uniquely identifying the error
title	string(200)	M	A title for the error
detail	string(500)	M	The error details
source	string(200)	M	The source of the error

Field	Type	Rule	Description
warnings	array	O	An array of any validation warnings. Warnings do not cause validation to fail, only errors result in a failure.
code	number(6)	M	A numeric code uniquely identifying the warning
title	string(200)	M	A title for the warning
detail	string(500)	M	The warning details
source	string(200)	M	The source of the warning

# Chapter 9 Schema Validation Messages

The following validation messages return:

1. For API responses
2. In the Markets Portal interface
3. In the ack for FTP Bid/Offer submissions

Message	Issue
{0} cannot be negative	Value is negative
{0} cannot submit bid for link {1} as related interconnector participant cannot be found	MNSP registration issue
{0} cannot submit file for link {1}	Unauthorised submission
Band availability figures cannot be negative.	Negative band availabilities
Band Availability must be <= Maximum Capacity {1}	Band availability exceeds maximum capacity
Band Price {0} value {1} differs from last offer value {2}	Rebid price change
Band prices cannot be changed for a rebid.	Rebid price violation
Band prices must be greater than or equal to market floor price	Price violation
Band prices must be greater than or equal to zero	Price violation
Band prices must be less than or equal to market price cap {0}	Price validation error
Band prices must be less than or equal to market price cap {0}	Price violation
Band prices must increase monotonically	Price violation
Band prices must increase monotonically	Price violation error



Message	Issue
Band prices violate MNSP convexity rule	MNSP convex rule violation
Bid must contain period ID 1 to 288	Period data violation
Cannot correct Over Voll Rebid - Band Price 9 must monotonically decrease from artificial Effective Cap Price {0}	Band price beyond cap price
Cannot Process Participant Offer	REBID-TIME-1
Daily energy constraint must be less than 1 million MWh	Invalid daily energy constraint
DUID {0} has conflicting registration information (start type) and an energy offer cannot be accepted.	DUID registration issue
DUID {0} has conflicting registration information (start type) and an energy offer cannot be accepted.	Conflicting start type
DUID {0} is invalid or not active	Dispatchable unit invalid
DUID {0} is not registered for {1}	Registration validation error
DUID {0} is not registered for ENERGY	Registration type issue
Failed to find expected MR Capacity	Mandatory restriction capacity missing
Failed to find MR Offer Scaling Factor when an Accepted MR Offer exists	Mandatory restriction offer scaling factor value violation
Fast start details must be non-blank for fast start units	Invalid fast start details
Fast start details must not be provided for slow start units	Invalid fast start details
Fast start min. load must not be negative	Invalid fast start min load value
Fast start minimum Load cannot exceed registered maximum capacity of unit.	Invalid fast start details
Fast start T1 + T2 + T3 + T4 must be < 60 minutes	Invalid fast start details
Fast start T1 + T2 must be <= 30 minutes	Invalid fast start details

Message	Issue
Fixed Load cannot exceed maximum availability for the DUID {0}	Fixed load violation
Found offered MR Capacity with no MR Scaling Factor	Mandatory restriction capacity violation
Improper trading date format	Trading date format violation
Initial MR Offer is past the MR Offer Cut-off time.	Mandatory restriction offer cut-off time violation
Initial MR Offer is past the MR Offer Cut-off time.	Mandatory restriction offer past cut-off time
Initial Offer is past the BidCutOffTime.	Bid cut-off time violation
Interconnector {0} is invalid or not active	Interconnector registration violation
Invalid input request	Invalid request
Max Availability must be $\leq$ Maximum Capacity {0}	Maximum availability violation
Missing MNSP bid for {0}	MNSP bid missing
Missing registration bid details for {0}. Please contact the Support Hub.	Internal service error
MNSP Link {0} invalid or not active.	MNSP link inactive
MR Capacity cannot be greater than 30 x ROC-DOWN	Mandatory restriction capacity violation
MR Capacity cannot be greater than 30 x ROC-UP for Opposite Link {0}	Mandatory restriction capacity violation
MR Capacity cannot be greater than 999999	Mandatory restriction capacity violation
MR Capacity cannot be greater than MaxAvail	Mandatory restriction capacity violation
MR Capacity cannot be offered for fixed load periods	Mandatory restriction capacity violation
MR Capacity found for non-generation unit	Mandatory restriction capacity violation
MR Capacity must be offered for all periods when a MR Factor is submitted	Mandatory restriction capacity missing

Message	Issue
MR Factor cannot be changed past the MR Offer Cut-off time	Mandatory restriction factor value violation
MR Factor cannot be changed past the MR Offer Cut-off time.	Mandatory restriction factor change post cut-off time
MR Offer Scaling Factor cannot be greater than 4 decimal places.	Invalid mandatory restriction offer scaling factor
MR Offer Scaling Factor cannot be greater than 4 decimal places.	Mandatory restriction offer scaling factor value violation
MR Offer Scaling Factor found for non - generation unit	Mandatory restriction price scaling factor Issue
MR Offer Scaling Factor must be between 0 and 9	Invalid mandatory restriction scaling factor
MR Offer Scaling Factor must be between 0 and 9	Mandatory restriction offer scaling factor value violation
No periods defined in bid	Period information missing
Offered FCAS trapezium must not be outside the registered FCAS trapezium	Invalid high break point value
Offered FCAS trapezium must not be outside the registered FCAS trapezium	Invalid low break point value
ParticipantId cannot be null. Please provide a valid participantId	Invalid participant ID
PASA Availability must be >= Max Availability	PASA availability violation
PASA availability of {0} exceeds maximum capacity of {1}	PASA availability violation
PID {0} is not authorised to submit bids for DUID {2}	Unauthorised submission
PID {0} is not authorised to submit bids for interconnector {1}	Inactive participant ID
PID {0} is not authorised to submit bids for interconnector {2}	Unauthorised submission

Message	Issue
Price band value must be greater than -9999.99	Price violation
Price band value must be greater than or equal to market price floor ({0})	Price band value violation
Ramp Rate must be <= registered max Ramp Rate {0}	Invalid Ramp up rate
Ramp Rate must be <= registered max Ramp Rate {0}	Invalid Ramp up rate
Rate of change up or down beyond respective registered bounds of {0} and {1}	Ramp rate violation
Reason required for fixed load	Reason missing for Inflexibility
Reason required for low Ramp Rate	Reason missing for ramp down rate violation
Reason required for low Ramp Rate	Reason missing for ramp down rate violation
Reason required for low Ramp Rate	Reason missing for ramp up rate violation
Reason required for low Ramp Rate	Reason missing for ramp up rate violation
Reason required for rebid	Rebid reason missing
Sum of Band Availabilities must be >= Maximum Capacity {0}	Band availability violation
The direction provided for this Link ID {0} is not correct	Invalid link type
The direction provided for this Link ID {0} is not correct	Invalid link type
The first trading interval in the section must be period 1	Period data violation
The last trading interval in the section must be period 288	Period data violation
The rebid reason must be less than or equal to 500 characters in length	Rebid reason length violation

Message	Issue
The trading day for this bid has ended	Bid processing time violation
This participant ID is not active	Inactive participant ID
Trading interval cannot exceed 288. Trading interval mentioned is {0}	Period data violation
Unable to process the submission. Please contact AEMO for further support	Internal service error
Unit {0} is not registered as a recognised dispatchable type	Registration violation
Value for T1 parameter must not be negative	Invalid fast start T1 value
Value for T2 parameter must not be negative	Invalid fast start T2 value
Value for T3 parameter must not be negative	Invalid fast start T3 value
Value for T4 parameter must not be negative	Invalid fast start T4 value
You cannot submit 5-min Bids before the 5MS commencement date [{0}]. Revert to 30-min Bids.	You cannot have 5-minute Bids with trading dates before the 5MS commencement date

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## Frequently asked questions

### What do I do if the bid/offer file submission is invalid?

- You receive a response with the validation error messages. Each error message displays the source of error, which helps you identify the location of the issue.
- You can rectify these issues by updating the values appropriately, and submit the Bid/Offer again.

If all the issues are fixed, AEMO systems accept the Bid/Offer and provide a valid response with transaction ID and other metadata related to the Bid/Offer.

If there are further errors, you need to fix each error individually and retry the submission.

For help, see [Schema Validation Messages on page 44](#).

## AEMO's support hub

IT assistance is requested through one of the following methods:

- Phone: 1300 AEMO 00 (1300 236 600)

For non-urgent issues, normal coverage is 8:00 AM to 6:00 PM on weekdays, Australian Eastern Standard Time (AEST).

- The [Contact Us](#) form on AEMO's website.

**AEMO recommends participants call AEMO's support hub for all urgent issues, whether or not you have logged a call using the contact us form.**

## Feedback

Your feedback is important and helps us improve our services and products. To suggest improvements, please contact AEMO's support hub.

## Rules terms

You can find the following terms defined in the NER or Auction Rules.

AEMO .....	2
Rules .....	2
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Frequency .....	1
NEM .....	1
Network Control Ancillary Services .....	2
Dispatch Bid .....	4
Dispatch .....	4
Scheduled Load .....	4
Dispatch Offer .....	4
Generation Dispatch Offer .....	4
Network (MNSP) Dispatch Offer .....	4
Market Ancillary Service (FCAS) Offer .....	4
Market Floor Price .....	5
Frequency .....	7
Market Network Service Provider .....	7
Market Participants .....	7
Mandatory Restrictions .....	9
Plant .....	18
Trading Day .....	18
Mandatory Restriction Period .....	31
Region .....	31
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# Glossary

## Common terms

### **ACK**

An acknowledgement file from AEMO with a filename extension of .ACK. The file contains messages to acknowledge the success of another file.

### **AEMO Communication**

An email from AEMO to a distribution list of Registered Participant contacts broadcasting NEM-related information.

### **AEST**

Australian Eastern Standard Time

### **Band Availability**

The band availability for the period corresponding to the Price Band for the matching Period.

### **Bid**

Dispatch Bid

### **Bid/Offer**

Dispatch Bid or Offer

### **Bid/Offer Cut-off Time**

12:30 pm on the day before Trading Day of the Dispatch Offer

### **Bid/Offer File**

The JSON file submitted to AEMO's market systems for a Dispatch Offer or Bid.

### **Bid/Offer Type**

Daily or Rebid

### **CPT**

The extension of a corrupt acknowledgement file.

### **Daily**

Offer Type submitted before the Offer Cut-off Time (12:30 PM the day before the Trading Day

### **Data Interchange**

A set of cooperating applications used to replicate data between AEMO's energy market systems and a participant's DBMS conforming to the MMS Data Model.

### **Data Model**

The definition of the interface to participants of data published by AEMO for gas or electricity. A database conforming to the Data Model can contain a local copy of all current participant-specific data recorded in the main database. The Data Model includes database tables, indexes, and primary keys.

### **Dispatch Bids and Offers File**

The JSON schema used to provide Dispatch Bids and Offers into the NEM.

**DS**

Dispatch

**DUID**

Generating Unit ID

**e-Hub**

Consists of the API Web Portal and the API Gateway for both electricity and gas.

**Effective Bid/Offer**

The latest Bid/Offer File acknowledged by AEMO's systems.

**Effective Date**

The latest acknowledged Bid/Offer file date

**Electricity Data Model**

The Electricity Data Model is the definition of the interface to participants of data published by AEMO from National Electricity Market (NEM) systems.

**EMMS Markets Portal**

Wholesale Electricity Market Management System; software, hardware, network and related processes to implement the wholesale energy market.

**Energy Offer**

The unit must be a generator for the service type, Energy. Loads cannot Offer for mandatory restrictions capacity.

**FCAS**

Frequency Controlled Ancillary Services

**FS Min Load**

Fast start minimum load (MW). Only relevant to Service type, Energy.

**FSML**

Fast start minimum load

**FTP**

File transfer protocol

**FTP Gateway**

Uses FTP protocol to deliver communications.

**FTP Protocol**

A B2B e-Hub and EMMS delivery method.

**JSON**

JavaScript Object Notification

**JSON Root Schema**

The schema comprising the entire JSON Bid and Offer File

**JSON Schema**

A JSON document that is an object containing keywords or schema keywords. A JSON Schema can contain properties that are not schema keywords.

**MarketNet**

AEMO's private network available to participants having a participant ID

**Maximum Availability**

The maximum planned availability in MW for the matching period.

**Medium Term PASA**

**MFP**

Market Floor Price

**MLF**

Intra-regional marginal loss factor

**MR**

Mandatory Restrictions

**MR Bid**

Mandatory Restriction Bid consisting of the MR Price Scaling Factor and MR Capacity for each Trading Interval.

**MR Capacity**

Mandatory Restriction Capacity

**MR Period**

Mandatory Restriction Period

**MSATS**

Retail Market Settlement and Transfer Solution

**MSUG**

Market Systems User Group

**MW**

Megawatt

**MW/minute**

Megawatts per minute

**MWh**

Megawatt hour

**MWh/day**

Megawatt hours per day

**NCAS**

Network Control Ancillary Services

**NEL**

National Electricity Law

**NEMDE**

National Electricity Market Dispatch Engine

**NEMweb**

Public market data in csv file format:  
<http://www.nemweb.com.au/>

**NER**

National Electricity Rules

**NMAS**

Non-market Ancillary Service

**NMI**

[electricity] National Metering Identifier

**Offer**

Dispatch Offer

**PA**

participant administrator

**Participant Administrator**

Your company's PA set up by AEMO during registration

**Participant File Server**

The publishing point from AEMO systems to participant systems. Each participant is allocated an account and access to private and public areas. Participants are responsible for interfacing with the participant file server.

**Participant ID**

Registered participant identifier; A company can have more than one Participant ID.

**Participant User**

An end-user, using AEMO's participant energy market systems to view and retrieve information on behalf of a participant ID. The participant users access rights are created and maintained by the participant ID's Participant Administrator.

**Participant User ID**

The user ID you used to login to the system.

**PASA**

Projected Assessment of System Adequacy

**PD**

Pre-dispatch

**Period**

The 288 periods from 4:30 am to 4:00 am.

**Period ID**

The value for each trading interval (1-288)

**Pre-production**

AEMO's test system available to participants

**Production**

AEMO's live system

**Rebid**

Offer Type submitted after the Offer Cut-off Time (12:30 PM the day before the Trading Day)

**Service Types**

Energy, FCAS, and MNSP

**Service Types - FCAS**

RAISE6SEC, RAISE60SEC, RAISE5MIN, RAISEREG, LOWER6SEC, LOWER60SEC, LOWER5MIN and LOWERREG)

**Set Participant**

Where a Participant User has user rights assigned by more than one participant ID, the Participant User can select the participant ID they want to represent using the Set Participant option in the web portals.

**STPASA**

Short-term Projected Assessment of System Adequacy; 7 days worth of data

**T1**

Fast Start Time at Zero in minutes. Only relevant to Service type, Energy.

**T2**

Fast Start Time to Minimum Load in minutes. Only relevant to Service type, Energy.

**T3**

Fast Start Time at Minimum Load in minutes. Only relevant to Service type, Energy.

**T4**

Only relevant to Service type, Energy.  
Fast Start Time to Zero in minutes.

**TI**

Trading Interval

**TLF**

Transmission Loss Factor

**URM**

User Rights Management; see the Guide to URM on AEMO's website

**VPN**

Virtual Private Network

**XML**

eXtensible Mark-up Language.

**Zip**

A file containing business data with filename extensions of .zip, are compressed, and contain one file with a filename extension of .XML. The XML file contains the XML coded message data.

# References

You can find resources on AEMO's website.

Guide to Energy and FCAS Bids	2
Guide to Dispatch Bid/Offer APIs	2
AS Re-Offer Bid Format and Validation	2
NER clause 3.8.19(b)(2)	5
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MNSP Convexity Rule	5
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# Appendix 1 JSON Dispatch Bid/Offer Submission Schema

This appendix provides an example of the JSON Schema and its elements for the Dispatch Bid/Offer Submission.

You can use this example with the online schema validator to validate your Bids and Offers before sending them to AEMO's systems:

<https://www.jsonschemavalidator.net/>.

This example  
conforms to the  
JSON Schema  
version 7.0.

```

{
  "type": "object",
  "title": "NEM Energy, FCAS and MNSP bid submission schema",
  "description": "Data submitted to AEMO as an offer or bid for Energy, FCAS or MNSP",
  "$schema": "http://json-schema.org/draft-07/schema#",
  "$id": "http://nemweb.com.au/schemas/json/bidding_submission.json",
  "definitions": {
    "authorisedBy": {
      "type": "string",
      "description": "Participant's Authoriser",
      "maxLength": 20
    },
    "avail": {
      "type": "integer",
      "description": "The availability (or required level) of energy for each price band, in whole megawatts.",
      "minimum": 0
    },
    "awareTime": {
      "type": "string",
      "description": "Expected to be the time at which the participant became aware of the event causing the need to rebid
clock, NEM time) - HH:MM:SS",
      "maxLength": 8
    },
    "bandAvail": {
      "type": "array",
      "description": "The set of 10 band availabilities (see 'Avail').",
      "items": { "$ref": "#/definitions/avail" },
      "minItems": 10,
      "maxItems": 10
    },
    "category": {
      "type": "string",

```



```

        "description": "A Rebid category",
        "maxLength": 1
    },
    "comments": {
        "type": "string",
        "description": "Participant's free-form field for information",
        "maxLength": 500
    },
    "dailyEnergyConstraint": {
        "type": "integer",
        "description": "The maximum output this unit can offer in a day, in whole megawatts.",
        "minimum": 0,
        "maximum": 999999
    },
    "decisionTime": {
        "type": "string",
        "description": "Expected to be the time at which the participant decided to rebid (24h clock, NEM time) - HH:MM:SS",
        "maxLength": 8
    },
    "duid": {
        "type": "string",
        "description": "Dispatchable Unit identifier as recorded in AEMO's systems, must be upper-case.",
        "maxLength": 10
    },
    "enablementMax": {
        "type": "integer",
        "description": "Maximum FCAS enablement limit in megawatts.",
        "minimum": 0
    },
    "enablementMin": {
        "type": "integer",
        "description": "Minimum FCAS enablement limit in megawatts.",

```

```

        "minimum": 0
    },
    "energyBid": {
        "type": "object",
        "properties": {
            "tradingDate": { "$ref": "#/definitions/tradingDate" },
            "duid": { "$ref": "#/definitions/duid" },
            "prices": { "$ref": "#/definitions/prices" },
            "fastStartProfile": { "$ref": "#/definitions/fastStartProfile" },
            "dailyEnergyConstraint": { "$ref": "#/definitions/dailyEnergyConstraint" },
            "rebidExplanation": { "$ref": "#/definitions/rebidExplanation" },
            "mrPriceScalingFactor": { "$ref": "#/definitions/mrPriceScalingFactor" },
            "energyPeriods": { "$ref": "#/definitions/energyPeriods" }
        },
        "required": [ "tradingDate", "duid", "prices", "energyPeriods" ]
    },
    "energyBids": {
        "type": "array",
        "items": { "$ref": "#/definitions/energyBid" }
    },
    "energyPeriods": {
        "type": "array",
        "items": {
            "type": "object",
            "properties": {
                "periodId": { "$ref": "#/definitions/periodId" },
                "maxAvail": { "$ref": "#/definitions/maxAvail" },
                "rampUpRate": { "$ref": "#/definitions/rampUpRate" },
                "rampDownRate": { "$ref": "#/definitions/rampDownRate" },
                "bandAvail": { "$ref": "#/definitions/bandAvail" },
                "pasaAvail": { "$ref": "#/definitions/pasaAvail" },
                "mrCapacity": { "$ref": "#/definitions/mrCapacity" },
            }
        }
    }
}

```

```

        "fixedLoad": { "$ref": "#/definitions/fixedLoad" }
    },
    "required": [ "periodId", "bandAvail", "maxAvail", "pasaAvail", "rampUpRate", "rampDownRate" ]
},
"minItems": 288,
"maxItems": 288
},
"eventTime": {
    "type": "string",
    "format": "time",
    "description": "Time at which the event causing the rebid occurred (24h clock) - HH:MM:SS"
},
"reason": {
    "type": "string",
    "description": "Reason required by the Rules for rebids, inflexibility (fixed load) and/or low ramp rates. Additional
characters are truncated.",
    "maxLength": 500
},
"fcasBid": {
    "type": "object",
    "properties": {
        "tradingDate": { "$ref": "#/definitions/tradingDate" },
        "duid": { "$ref": "#/definitions/duid" },
        "prices": { "$ref": "#/definitions/prices" },
        "service": { "$ref": "#/definitions/service" },
        "rebidExplanation": { "$ref": "#/definitions/rebidExplanation" },
        "fcasPeriods": { "$ref": "#/definitions/fcasPeriods" }
    },
    "required": [ "tradingDate", "duid", "prices", "service", "fcasPeriods" ]
},
"fcasBids": {
    "type": "array",

```

```

        "items": { "$ref": "#/definitions/fcasBid" }
    },
    "fcasPeriods": {
        "type": "array",
        "items": {
            "type": "object",
            "properties": {
                "periodId": { "$ref": "#/definitions/periodId" },
                "maxAvail": { "$ref": "#/definitions/maxAvail" },
                "bandAvail": { "$ref": "#/definitions/bandAvail" },
                "enablementMin": { "$ref": "#/definitions/enablementMin" },
                "lowBreakPoint": { "$ref": "#/definitions/lowBreakPoint" },
                "highBreakPoint": { "$ref": "#/definitions/highBreakPoint" },
                "enablementMax": { "$ref": "#/definitions/enablementMax" }
            },
            "required": [ "periodId", "bandAvail", "maxAvail", "enablementMin", "lowBreakPoint", "highBreakPoint", "enablementMax" ]
        },
        "minItems": 288,
        "maxItems": 288
    },
    "fixedLoad": {
        "type": "integer",
        "description": "Fixed unit output (MW)",
        "minimum": 1
    },
    "fastStartProfile": {
        "type": "object",
        "description": "Fast-Start Inflexibility Profile",
        "properties": {
            "minimumLoad": { "$ref": "#/definitions/minimumLoad" },
            "t1": { "$ref": "#/definitions/t1" },
            "t2": { "$ref": "#/definitions/t2" },
        }
    }
}

```

```

        "t3": { "$ref": "#/definitions/t3" },
        "t4": { "$ref": "#/definitions/t4" }
    },
    "required": [ "minimumLoad", "t1", "t2", "t3", "t4" ]
},
"highBreakPoint": {
    "type": "integer",
    "description": "FCAS high break point, in megawatts.",
    "minimum": 0
},
"interconnectorId": {
    "type": "string",
    "description": "Identifies the relevant interconnector in AEMO's systems. This is case sensitive.",
    "maxLength": 10
},
"lowBreakPoint": {
    "type": "integer",
    "description": "FCAS low break point, in megawatts.",
    "minimum": 0
},
"linkId": {
    "type": "string",
    "description": "Identifies the interconnector link in AEMO's systems. This is case sensitive.",
    "maxLength": 10
},
"maxAvail": {
    "type": "integer",
    "description": "Maximum availability loading for a period, in whole megawatts.",
    "minimum": 0
},
"minimumLoad": {
    "type": "integer",

```

```

    "description": "Fast-Start minimum load level for inflexibility profile, in megawatts.",
    "minimum": 0
  },
  "mnsBid": {
    "type": "object",
    "properties": {
      "interconnectorId": { "$ref": "#/definitions/interconnectorId" },
      "tradingDate": { "$ref": "#/definitions/tradingDate" },
      "mnsBidImport": { "$ref": "#/definitions/mnsBidLink" },
      "mnsBidExport": { "$ref": "#/definitions/mnsBidLink" },
      "rebidExplanation": { "$ref": "#/definitions/rebidExplanation" }
    },
    "required": [ "interconnectorId", "tradingDate", "mnsBidImport", "mnsBidExport" ]
  },
  "mnsBidLink": {
    "type": "object",
    "properties": {
      "linkId": { "$ref": "#/definitions/linkId" },
      "prices": { "$ref": "#/definitions/prices" },
      "mrPriceScalingFactor": { "$ref": "#/definitions/mrPriceScalingFactor" },
      "mnsPeriods": { "$ref": "#/definitions/mnsPeriods" }
    },
    "required": [ "linkId", "prices", "mnsPeriods" ]
  },
  "mnsBids": {
    "type": "array",
    "items": {
      "$ref": "#/definitions/mnsBid"
    }
  },
  "mnsPeriods": {
    "type": "array",
    "items": {

```

```

    "type": "object",
    "properties": {
      "periodId": { "$ref": "#/definitions/periodId" },
      "maxAvail": { "$ref": "#/definitions/maxAvail" },
      "rampUpRate": { "$ref": "#/definitions/rampUpRate" },
      "bandAvail": { "$ref": "#/definitions/bandAvail" },
      "pasaAvail": { "$ref": "#/definitions/pasaAvail" },
      "mrCapacity": { "$ref": "#/definitions/mrCapacity" },
      "fixedLoad": { "$ref": "#/definitions/fixedLoad" }
    },
    "required": [ "periodId", "rampUpRate", "bandAvail", "maxAvail", "pasaAvail" ]
  },
  "minItems": 288,
  "maxItems": 288
},
"mrCapacity": {
  "type": "integer",
  "description": "Only required if offering under mandatory restrictions. (MW)",
  "minimum": 0
},
"mrPriceScalingFactor": {
  "type": "number",
  "multipleOf": 0.0001,
  "description": "Mandatory restrictions offer price scaling factor.",
  "minimum": 0
},
"pasaAvail": {
  "type": "integer",
  "description": "The unit's capability including any capability potentially available in 24 hours. (MW) - Includes the
offered availability.",
  "minimum": 0
},

```

```

"periodId": {
  "type": "integer",
  "description": "Trading interval identifier",
  "minimum": 1,
  "maximum": 288
},
"price": {
  "type": "number",
  "multipleOf": 0.01,
  "description": "Band price"
},
"prices": {
  "type": "array",
  "description": "10 price bands must be supplied.",
  "items": { "$ref": "#/definitions/price" },
  "minItems": 10,
  "maxItems": 10
},
"rebidExplanation": {
  "type": "object",
  "description": "Rebid Reason - expanded to 5 fields.",
  "properties": {
    "reason": { "$ref": "#/definitions/reason" },
    "eventTime": { "$ref": "#/definitions/eventTime" },
    "awareTime": { "$ref": "#/definitions/awareTime" },
    "decisionTime": { "$ref": "#/definitions/decisionTime" },
    "category": { "$ref": "#/definitions/category" }
  },
  "required": [ "reason" ]
},
"referenceId": {
  "type": "string",

```



```

        "description": "Participant's reference - must be unique.",
        "maxLength": 100
    },
    "rampDownRate": {
        "type": "integer",
        "description": "Maximum rate of decrease in output, in megawatts per minute.",
        "minimum": 0
    },
    "rampUpRate": {
        "type": "integer",
        "description": "Maximum rate of increase in output, in megawatts per minute.",
        "minimum": 0
    },
    "service": {
        "type": "string",
        "description": "FCAS service type",
        "enum": [
            "RAISE6SEC",
            "RAISE60SEC",
            "RAISE5MIN",
            "RAISEREG",
            "LOWER6SEC",
            "LOWER60SEC",
            "LOWER5MIN",
            "LOWERREG"
        ]
    },
    "submissionTimeStamp": {
        "type": "string",
        "format": "date-time",
        "description": "Date and time participant considers this bid as submitted (or approved this submission).",
    },

```

```
"t1": {
  "type": "integer",
  "description": "Time to synchronise (in minutes)",
  "minimum": 0,
  "maximum": 30
},
"t2": {
  "type": "integer",
  "description": "Time to minimum load (in minutes)",
  "minimum": 0,
  "maximum": 30
},
"t3": {
  "type": "integer",
  "description": "Time at minimum load (in minutes)",
  "minimum": 0,
  "maximum": 59
},
"t4": {
  "type": "integer",
  "description": "Time to shut down (in minutes)",
  "minimum": 0,
  "maximum": 59
},
"tradingDate": {
  "type": "string",
  "description": "Target trading day"
}
},
"properties": {
  "submissionTimeStamp": { "$ref": "#/definitions/submissionTimeStamp" },
  "referenceId": { "$ref": "#/definitions/referenceId" },
```

```
    "comments": { "$ref": "#/definitions/comments" },
    "authorisedBy": { "$ref": "#/definitions/authorisedBy" },
    "energyBids": { "$ref": "#/definitions/energyBids" },
    "fcasBids": { "$ref": "#/definitions/fcasBids" },
    "mnsdBids": { "$ref": "#/definitions/mnsdBids" }
  },
  "required": [ "referenceId" ]
}
```

# Appendix 2 Electricity Data Model

This appendix describes the Electricity Data Model tables related to the Dispatch Bid/Offer Submission.

<b>Energy bid/offer tables</b> .....	<b>72</b>
<b>FCAS offer tables</b> .....	<b>72</b>
<b>MNSP offer tables</b> .....	<b>73</b>

## Energy bid/offer tables

### BidOfferFileTrk

To see the relationships between tables, see the [MMS Data Model Report](#).

Entries are added to this table for each Energy Dispatch Bid/Offer Submission, whether it is valid or not.

### BidDayOffer

Updated for every successful Energy Bid/Offer.

### BidOfferPeriod

Updated with 5-minute Bid/Offer information.

## FCAS offer tables

### BidOfferFileTrk

Entries are added to this table for each FCAS Dispatch Bid/Offer Submission, whether it is valid or not.

## **BidDayOffer**

Updated for every successful FCAS Offer.

## **BidOfferPeriod**

Updated with 5-minute Bid/Offer information.

## **MNSP offer tables**

### **BidOfferFileTrk**

Entries are added to this table for each MNSP Dispatch Bid/Offer Submission, whether it is valid or not.

### **MNSP\_DayOffer**

Updated for every successful MNSP Offer.

### **MNSP\_BidOfferPeriod**

Updated with 5-minute Bid/Offer information.

To see the relationships between tables, see the **MMS Data Model Report**.

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