AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Draft Format and Validation for Energy, FCAS, and MNSP Bids and Offers

3.09 Draft

August 2019

Describes the interface to submit and maintain file-based energy, frequency control ancillary services, and market network service provider bids

Important Notice

PURPOSE
This Draft Format and Validation for Energy, FCAS, and MNSP Bids and Offers (Guide), prepared by the Australian Energy Market Operator (AEMO), provides guidance for the Dispatch Bid/Offer Submission under the National Electricity Rules (NER) (Rules).

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The release of this document changes any previous versions of Draft 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.

Contents

Introduction

Purpose

This Guide describes 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.

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.

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 subschema of the Dispatch Bid/Offer Submission.

Chapter 5 FCAS Offers on page 18 explains the Frequency Control Ancillary Service (FCAS) bids subschema of the Dispatch Bid/Offer Submission.

Chapter 6 MNSP Offers on page 23 explains the Market Network Service Provider (MNSP) bids subschemaof the Dispatch Bid/Offer Submission.

Chapter 7 Submitting a Dispatch Bid/Offer by FTP on page 29 explains the Dispatch Bid/Offer Submission over FTP.

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 8 Dispatch Bid/Offer Submission Response on page 35 explains the response received after submission.

Chapter 9 Validation Messages on page 38 explains the validation messages received in a response.

Needing Help on page 54, provides a list of frequently asked questions about Dispatch Bid/Offer Submissions and how to contact AEMO's Support Hub.

Rules Terms on page 57, provides a list of National Electricity Rules (NER) terms used throughout this guide.

Glossary on page 58, provides the definition of the capitalised terms used throughout this guide.

References on page 64, provides a list of references used throughout this guide.

JSON Dispatch Bid/Offer Submission Example on page 65 provides and example of an entire JSON schema Dispatch Bid/Offer Submission.

Electricity Data Model on page 75explains 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 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.
- 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 theRules Terms on page 57 and Glossary on page 58.
- References to time are Australian Eastern Standard time (AEST) unless otherwise specified.

Chapter 1 Need to Know

Dispatch offers and bids explanation

This chapter provides and 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
MNSP Convexity Rule	AEMC website **NER Clause 3.8.6A (e)**.
Introduction to Market Rules	AEMC website > **NER Chapter 3**
Market Floor Price	AEMC website > **NER 3.9.6.**
Operating Procedure: Mandatory Restriction Offers	AEMO website > Security and Reliability > Power System Operating Procedures

Assumed knowledge

This guide assumes you have knowledge of:

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

User rights access

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

To submit a Dispatch Bid/Offer Submission , Participant Users must have the appropriate user rights access. The access right determines the functionalities and transactions you can use to access the Markets Portal, batch interfaces, FTP, and API interfaces.

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.

The entity required to access Dispatch Bid/Offer Submission is: EMMS – Offers and Submissions – Energy FCAS MNSP Bids

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.

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 (, and Market Network Service Provider Bid/Offers 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 User rights access on page 5.

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

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.

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.

Chapter 3 Dispatch Bid/Offer Submission Explained

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 MR Capacity.
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. Schema validation based on Service Type.
6. Easier validation and support between AEMO and participant systems.
7. Less costly and easier to test building of Bid/Offer systems, enabling leverage of modern technologies natively supporting JSON.

For an example of a Dispatch Bid/Offer Submission, see JSON Dispatch Bid/Offer Submission Example on page 65

For more details about Mandatory Restrictions, see Operating Procedure: Mandatory Restriction Offers.

8. Future changes, such as better support for batteries, impacting one or more of the Service Types.
9. Clearer and easier to understand technical specification, avoiding format misunderstandings.

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 (zipped or unzipped) for FTP, API, and web upload.

Bid/offer types

- Daily: Submitted **before** the Bid/Offer Cut-off Time.
- Rebid: Submitted **after** the Bid/Offer Cut-off Time.

The Bid/Offer Type depends on the Bid/Offer Cut-off Time: 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.

Submission level information

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

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

```
{
 "submissionTimeStamp": [date/time],
"referenceId": [string],
"comments": [string],
"authorisedBy": [string],
"energyBids": [array],
 "fcasBids": [array],
"mnspBids": [array]
}
```

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

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.

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

Field	Type	Option	Description/validation
submissionTimeStamp	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.
mnspBids	array	C	Collection of one or more MNSP bids.

Valid or invalid bid/offer submission

Valid bid/offer

For examples, see Response Examples.

If the entire Dispatch Bid/Offer Submission is valid, an acknowledgement ending in ACK.json is returned.

The data from valid and subsequent communications is processed and communicated in NEM reports, complying with the Electricity Data Model. For details, see Electricity Data Model on page 75.

Invalid bid/offer

If any of the Dispatch Bid/Offer Submission contains invalid data, the whole Bid/Offer is rejected and an acknowledgement ending in CPT.json (for corrupt) is returned. The acknowledgement includes error messages indicating all detected errors.

Chapter 4 Energy Bids/Offers

This chapter explains the Energy bids subschema of the Dispatch Bid/Offer Submission .

About energy bids/offers

The Dispatch Bid/Offer Submission example below is valid, even though it has no mention of Mandatory Restriction (MR) items. It is not compulsory for participants to bid for MR Capacity.

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

Energy bid/offer details

Provide this data in the energyBid subschema of the Dispatch Bid/Offer Submission. For an explanation of the fields, see energyBid subschema details on the next page.

```
{
"tradingDate": [date],
```

```
"duid": [string],
 "mrPriceScalingFactor": [number],
"dailyEnergyConstraint": [number],
 "rebidExplanation": {
    "reason": [string],
    "eventTime": [time],
    "awareTime": [string],
    "decisionTime": [string],
    "category": [string]
 },
 "fastStartProfile": {
    "minimumLoad": [number],
    "t1": [number],
    "t2": [number],
    "t3": [number],
    "t4": [number]
 },
 "prices": [array],
 "energyPeriods": [
    {
    "periodId": 1,
    "maxAvail": [number],
    "fixedLoad": [number],
    "rampRateUp": [number],
    "rampRateDown": [number],
    "bandAvail": [array]
    "pasaAvail": [number],
    "mrCapacity": [number]
    },
    ... (to 288)
 ]
}
```

Table 1 energyBid subschema details

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.

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

Field	Type	Option	Description/validation
tradingDate	date	M	The effective date for this Offer. 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	The dispatchable unit for this Offer
mrPriceScalingFactor	number	O	Mandatory restrictions offer price scaling factor. Not valid for scheduled loads.
dailyEnergyConstraint	number	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
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates
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	time	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 **AER Rebidding Guidelines** The time when the participant became aware of the event(s) / occurrence(s), prompting the rebid. Not validated by AEMO
decisionTime	string (8)	O	Supports the **AER Rebidding Guidelines** The time when the participant made the decision to rebid Not validated by AEMO

Field	Type	Option	Description/validation
category	string (1)	O	Supports the **AER Rebidding Guidelines** A provided rebid category Not validated by AEMO
fastStartProfile	object	O	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.
minimumLoad	number	M	Minimum MW load
t1	number	M	Time to synchronise, in minutes
t2	number	M	Time to reach minimum load, in minutes
t3	number	M	Time at minimum load, in minutes
t4	number	M	Time to shut down, in minutes
prices	array	M	An array of 10 prices e.g. [0.00, 0.00, 20.00, ...]
energyPeriods	array	M	An array of 288 period objects
periodId	number	M	The 5-minute interval, starting from the interval starting at 0400 (and ending at 0405) Must be between 1 and 288
maxAvail	number	M	Maximum MW availability in this period
fixedLoad	number	O	Fixes unit output, in MW. Must be 1 MW or greater. A rebid reason must be provided if this field is populated
rampRateUp	number	M	Rate of Change Up - The maximum rate of increase for the unit in MW/min
rampRateDown	number	M	Rate of Change Down - The maximum rate of decrease for the unit in MW/min

Field	Type	Option	Description/validation
bandAvail	array	M	An availability for each of the 10 price bands must be provided e.g. [0, 0, 100, 200, 0, 0, ...]
pasaAvail	number	M	The unit's capability including any capability potentially available in 24 hours
mrCapacity	number	O	Required if offering under MR. 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. **MR Capacity Rebids** 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.

Chapter 5 FCAS Offers

This chapter explains the Frequency Control Ancillary Service (FCAS) bids subschema of the Dispatch Bid/Offer Submission .

About FCAS offers

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

FCAS service types

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

FCAS bid example


```
"FcasBids": [
{
"Service": "RAISE6SEC",
"FcasPeriods": [
{
"EnablementMin": 165,
"LowBreakPoint": 165,
"HighBreakPoint": 360,
"EnablementMax": 360,
"PeriodId": 1,
"MaxAvail": 0,
"BandAvail": [
15,
0,
```

```
0,
0,
0,
0,
0,
0,
5,
3
]
},
"TradingDate": "2019-03-25",
"DUID": "CALL_B_1",
"Prices": [
0.01,
0.45,
1.49,
2.69,
4.99,
9.99,
17.99,
47.00,
1200.00,
14500.00
],
"RebidExplanation": {
"Reason": "0404P FCAS ENABLEMENT UPDATE-SL",
"EventTime": "13:10:22"
}
},
```

FCAS offer details

Provide this data in the fcasBids subschema of the Dispatch Bid/Offer Submission. For an explanation of the fields, see fcasBid subschema details on the next page.

```
{
 "tradingDate": [date],
 "duid": [string],
 "service": [string],
 "rebidExplanation": {
   "reason": [string],
   "eventTime": [time],
   "awareTime": [string],
```

```
  "decisionTime": [string],
  "category": [string]
   },
"price": [array],
"fcasPeriods": [
  {
  "periodId": 1,
  "maxAvail": [number],
  "enablementMin": [number],
  "enablementMax": [number],
  "lowBreakPoint": [number],
  "highBreakPoint": [number],
  "bandAvail": [array]
   },
... (to 288)
  ]
}
```

Table 2 fcasBid subschema details

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.

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

Field	Type	Option	Description
tradingDate	date	M	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	The dispatchable unit the Offer is for
service	string (10)	M	The FCAS service type, one of: RAISE6SEC, RAISE60SEC, RAISE5MIN, RAISEREG, LOWER6SEC, LOWER60SEC, LOWER5MIN
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates

Field	Type	Option	Description
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	time	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. 20:10:00
awareTime	string (8)	O	Intended to support the AER Rebidding Guidelines. The time at which the participant became aware of the event(s) / occurrence(s) that prompted the rebid. Not validated by AEMO
decisionTime	string (8)	O	Intended to support the AER Rebidding Guidelines. The time at which the participant made the decision to rebid. Not validated by AEMO
category	string (1)	O	Intended to support the AER Rebidding Guidelines. A provided rebid category. Not validated by AEMO
prices	array	M	An array of 10 prices e.g. [0.00, 0.00, 20.00, ...]
fcasPeriods	array	M	An array of 288 period objects
periodId	number (3)	M	The 5-minute interval, starting from the interval starting at 0400 Must be between 1 and 288
maxAvail	number (6)	M	Maximum MW availability for this service and period
enablementMin	number (6)	O	Minimum MW output at which this service can be supplied

Field	Type	Option	Description
enablementMax	number (6)	M	Maximum MW output at which this service can be supplied
lowBreakPoint	number (6)	M	Minimum MW output that this unit can provide the full-service availability (as per MaxAvail)
highBreakPoint	number (6)	M	Maximum MW output that this unit can provide the full-service availability (as per MaxAvail)
bandAvail	array	M	An availability for each of the 10 price bands must be provided e.g. [0, 0, 100, 200, 0, 0, ...]

Chapter 6 MNSP Offers

This chapter explains the Market Network Service Provider (MNSP) bids subschema of the Dispatch Bid/Offer Submission .

About MNSP offers

An MNSP Offer contains at least one MNSP Service Type, in the mnspBids subschema.

MNSP Offer example


```
"MnspBids": [
{
"InterconnectorId": "T-V-MNSP1",
"TradingDate": "2019-04-01",
"MnspBidImport": {
"LinkId": "BLNKVIC",
"Prices": [
-1000.00,
-300.00,
-50.00,
0.00,
50.00,
100.00,
300.00,
1000.00,
5000.00,
13500.00
],
"MnspPeriods": [
{
"RampUpRate": 200,
"PasaAvail": 478,
```

```
"PeriodId": 1,
"MaxAvail": 478,
"BandAvail": [
0,
0,
0,
478,
0,
0,
0,
0,
0,
0
]
},
{
"RampUpRate": 200,
"PasaAvail": 478,
"PeriodId": 2,
"MaxAvail": 478,
"BandAvail": [
0,
0,
0,
478,
0,
0,
0,
0,
0,
0
]
},
"MnspBidExport": {
"LinkId": "BLNKTAS",
"Prices": [
-968.40,
-299.99,
-49.99,
0.01,
50.01,
100.01,
300.01,
1000.01,
5000.01,
```

```
13500.00
],
},
"RebidExplanation": {
"Reason": "TEST BID",
"EventTime": "13:10:22"
}
```

MNSP offer details

Provide this data in the mnspBid subschema of the Dispatch Bid/Offer Submission. For an explanation of the fields, see mnspBid subschema details on the next page.

```
{
 "tradingDate": [date],
 "interconnector": [string],
 "mrPriceScalingFactor": [number],
 "prices": [array],
 "rebidExplanation": {
  "reason": [string],
  "eventTime": [time],
  "awareTime": [string],
  "decisionTime": [string],
  "category": [string]
 },
 "mnspBidImport": {
   "linkId": [string],
   "mnspPeriods": [
    {
     "periodId": 1,
   "maxAvail": [number],
   "fixedLoad": [number],
   "rampRateUp": [number],
   "bandAvail": [array],
   "pasaAvail": [number],
   "mrCapacity": [number]
   },
... (to 288)
   ]
 },
 "mnspBidExport": {
```

```
  "linkId": [string],
  "mnspPeriods": [
   {
   "periodId": 1,
   "maxAvail": [number],
   "fixedLoad": [number],
   "rampRateUp": [number],
   "bandAvail": [array],
   "pasaAvail": [number],
   "mrCapacity": [number]
   },
   ... (to 288)
  ]
 }
}
```

mnspBid subschema details

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.

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

Field	Type		Description
tradingDate	Date	M	The trading day the bid is for
interconnectorId	string (10)	M	The name of the registered interconnector.
mrPriceScalingFactor	number	O	Mandatory restrictions offer price scaling factor.
prices	array	M	An array of 10 prices e.g. [0.00, 0.00, 20.00, ...]
rebidExplanation	object	C	Required for rebids, fixed load, and low ramp rates
reason	string (500)	M	A brief, verifiable and specific reason for the rebid, fixed load or low ramp rate. Mandatory if RebidExplanation is provided.

Field	Type		Description
eventTime	string (8)	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.
awareTime	string (8)	O	Intended to support the AER Rebidding Guidelines. The time at which the participant became aware of the event(s) / occurrence(s) that prompted the rebid. Not validated by AEMO
decisionTime	string (8)	O	Intended to support the AER Rebidding Guidelines. The time at which the participant made the decision to rebid. Not validated by AEMO
category	string (1)	O	Intended to support the AER Rebidding Guidelines. A provided rebid category. Not validated by AEMO
mnspImportBid	object	M	The import bid for the interconnector
linkId	array	M	The import interconnector link
mnspPeriods	array	M	An array of 288 period objects
periodId	number	M	The 5-minute interval, starting from the interval starting at 0400 Must be between 1 and 288
maxAvail	number	M	Maximum MW availability for this service and period
fixedLoad	number	O	Fixes unit output in MW. Must be 1 MW or greater. A rebid reason must be provided if this field is populated
rampRateUp	number	M	Rate of change in MW/min for increasing this link
bandAvail	array	M	An availability for each of the 10 price bands must be provided e.g. [0, 0, 100, 200, 0, 0, ...]

Field	Type		Description
pasaAvail	number	M	The links capability including any capability potentially available in 24 hours
mrCapacity	number	O	Required if offering under Mandatory Restrictions.
mnspExportBid	object	M	The export bid for the interconnector
linkId	array	M	The export interconnector link
mnspPeriods	array	M	An array of 288 periods
periodId	number	M	The 5-minute interval, starting from the interval starting at 0400 Must be between 1 and 288
maxAvail	number	M	Maximum MW availability for this service and period
fixedLoad	number	O	Fixes unit output in MW. Must be 1 MW or greater. A rebid reason must be provided if this field is populated
rampRateUp	number	M	Rate of change in MW/min for increasing this link
bandAvail	array	M	An availability for each of the 10 price bands must be provided
pasaAvail	number	M	The links capability including any capability potentially available in 24 hours
mrCapacity	number	O	Required if offering under MR. 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. **MR Capacity Rebids** 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.

Chapter 7 Submitting a Dispatch Bid/Offer by FTP

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

FTP submission prerequisites

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 bidsfrom

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.

FTP participant file server addresses

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

FTP submission rules

- The Dispatch Bid/Offer Submission as a JSON schema submitted in zip file format. For help, see FTP zip 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

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

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.

FTP bid/offer filename example

```
PART1_BID_20180101.json
PART1_FCASBID_20180101231145.zip
PART1_BIDFCAS_20180701231145.json
```

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	A date reference for participants to relate to the settlement or offer date/time. 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). There is no validation of file contents with this date.

FTP zip file format

Zipped FTP files conform to the following rules:

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

```
PARTICIPANT_OFFER_20000918_001.zip.
```

Submitting an FTP bid/offer

1. Create your JSON schema Dispatch Bid/Offer Submission. For help, see:
   - Energy Bids/Offers on page 13.
   - FCAS Offers on page 18.
   - MNSP Offers on page 23.
2. Transfer your Dispatch Bid/Offer Submission zipped file with a .tmp extension to your ParticipantID\Export\Bids\ folder on the Participant File Server.

   FTP Dispatch Bid/Offer Submissions must comply with the file naming convention and format. For help, see FTP Bid/offer filename on page 30.

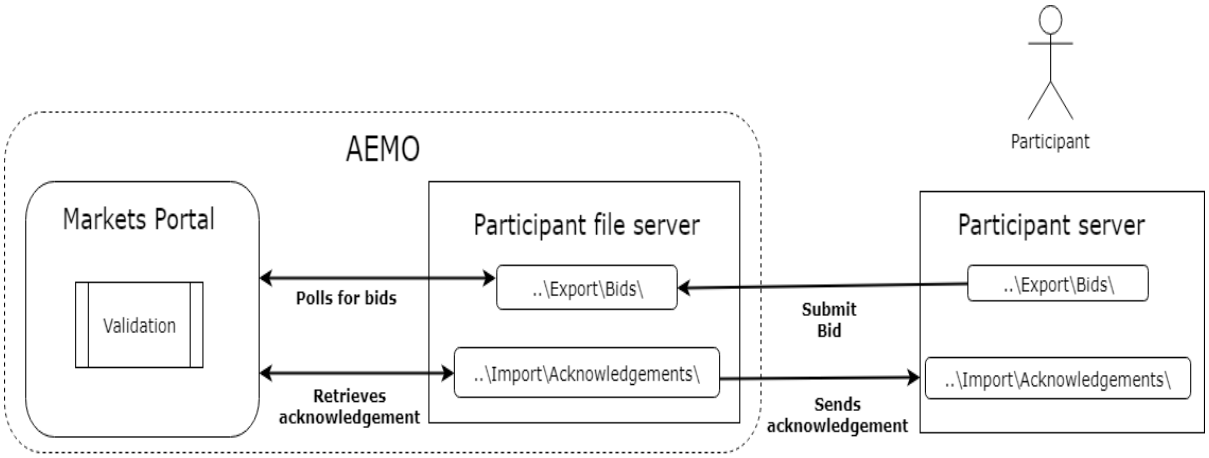
   You can use FTP software or Data Interchange to submit Dispatch Bid/Offer Submissions. For help see **Concise Guide to Data Interchange**.

   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.
3. Rename your zipped file with a .zip extension.

   AEMO constantly polls this folder looking for Dispatch Bid/Offer Submissions to process.
4. 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.
5. Check if your Dispatch Bid/Offer Submission is valid. For help, see Dispatch Bid/Offer Submission Response on page 35.

   AEMO processes each file only once. Validation of the file includes format checking and value comparisons with previously accepted Bid/Offers.
6. 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

For example acknowledgment files, see Dispatch Bid/Offer Submission Response on page 35.

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.

5-minute dispatch bids

Item	Description
Format	Zip 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.

30-minute dispatch bids

Item	Description
Format	csv file format
Download folder	/Import/Acknowledgements
Valid filenames	Accepted submission: <bid_file>_ACK.csv Rejected submission: <bid_file>_CPT.csv
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 the next page.

```
{
 "transactionId": [string],
 "data":{
  "referenceId": [string],
  "offerTimeStamp": [date/time],
  "submissionTimeStamp": [date/time],
  "comments": [string],
  "status": [string],
  "filename": [string],
  "method": [string],
  "authorisedBy": [string]
 },
 "errors": [
  {
   "code": [string],
   "title": [string],
   "detail": [string],
   "source": [string]
  },
  ...
```

```
],
"warnings": [
 {
  "code": [string],
  "title": [string],
  "detail": [string],
  "source": [string]
 },
 ...
]
}
```

Table 3 Response field details

Field	Type	Option	Description
transactionId	string (100)	M	A GUID that uniquely identifies this transaction in AEMO's systems
data	object	M	Holds returned data values
referenceId	string (100)	O	The reference id value provided by the participant in the submission.
offerTimeStamp	date/time	M	The date/time the submission was processed by AEMO
submissionTimeStamp	date/time	O	The participant specified timestamp for this submission
comments	string (1000)	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

Field	Type	Option	Description
errors	array	C	An array of any validation errors. Mandatory when validation has failed.
code	number (6)	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
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 Validation Messages

#	Area	Attribute	Validation	Message
1	File	Filename	Filename must not exceed filename size.	Filename length (including extension) exceeds limit of {0}. Actual is {1}
2	Bid Price	Price	If 'rebid', band prices cannot be changed.	Band prices cannot be changed for a rebid.
4	Bid	Trading Date	Bid for trading day, TD, cannot be processed after 04:00 on the next day (TD+1).	The trading day for this bid has ended
7	Bid	Bid Unit	Must be registered to provide services specified in the bid header (as at the proposed trading date)	DUID {0} is not registered for {1}
12	File	Filename	Filename must comply with mask: <PID>_<*BID*>_ <YYYYMMDD|YYYYMMDDhhmmss>.zip	Filename must comply with the mask: <PID>_<*BID*> _ <YYYYMMDD|YYYYMMDDhhmmss>.zip
13	Filename	PID	PID in filename does not match the identified PID (folder for FTP, user association in Web).	Filename must comply with the mask: <PID>_<*BID*> _ <YYYYMMDD|YYYYMMDDhhmmss>.zip

#	Area	Attribute	Validation	Message
15	File	Filename	Must be unique across the NEM.	Unable to process the submission. Please contact AEMO for further support
28	Submission	Participant ID	Mandatory (supplied outside of JSON object)	This participant ID is not active
28	Submission	Participant ID	Must be 'active' (at time of TD), not suspended and not deregistered.	This participant ID is not active
36	Submission	Bid	No duplicate bid keys can be present in a submission.	Unable to process the submission. Please contact AEMO for further support
37	Bid	Bid Unit	Must be 'active' (as at the proposed trading date)	DUID {0} is invalid or not active
37	Bid	Bid Unit	Must match the case supplied (typically in upper case)	DUID {0} is invalid or not active
38	Bid	Bid Unit	Must match a DUID for this participant in the market operator's register.	"PID {0} is not authorised to submit bids for DUID {1}
38	BidUnit	Link Id	The ID must match a Link ID for this participant in the market operator's register. (for the stated interconnector)	"PID {0} is not authorised to submit bids for DUID {1}
49	EnergyBid	FSIP	Only valid if unit is FS. Reject otherwise.	Fast start details must not be provided for slow start units

#	Area	Attribute	Validation	Message
52	FSIP	T1	The sum of T1 + T2 must be ≤ 30 minutes.	Fast start T1 + T2 must be <= 30 minutes
53	FSIP	T1	The sum of T1 + T2 + T3 + T4 must be < 60 minutes.	Fast start T1 + T2 + T3 + T4 must be < 60 minutes
54	FSIP	FSML	FSML cannot exceed unit's maximum capacity.	Fast start minimum Load cannot exceed registered maximum capacity of unit.
66	Period	Max Avail	Must not exceed this unit's maximum capacity. i.e. Max Avail <= Max Cap	Band {0} availability cannot exceed the maximum capacity of the link ID/DUID {1}
79	Enablement limits	Low break point	Enablement Min. <= Low Break Pt	Low Break Point must be >= Enablement Min
80	Enablement limits	High break point	High Break Pt <= Enablement Max.	High Break Point must be <= Enablement Max
81	Enablement limits	Enablement Min.	Registered Enablement Min <= Enablement Min.	Enablement Min must be >= registered Enablement Min {0}
82	Enablement limits	Enablement Max.	Enablement Max. <= registered Max. Enablement Level.	Enablement Max must be <= registered Enablement Max {0}

#	Area	Attribute	Validation	Message
83	Enablement limits	Low break point	Lower angle <= Maximum Lower Angle.	Offered FCAS trapezium must not be outside the registered FCAS trapezium
84	Enablement limits	High break point	Upper angle <= Maximum Upper Angle.	Offered FCAS trapezium must not be outside the registered FCAS trapezium
88	Bid Price	Price	Prices must increase monotonically. I.e. P1 < P2 <... < P10	Band prices must increase monotonically
89	BidUnit	Bid Price	FCAS prices >= 0 (not referenced to RRN)	Band prices must be greater than or equal to zero
90	Bid Price	Price	Prices must be to nearest whole cent	Invalid input request (JSON Schema error)
91	Bid Price	Price	Prices cannot exceed the market price cap (MPC) at RRN (i.e. must scale with MLFs)	Band prices must be less than or equal to market price cap {0}
92	Bid Price	Price	Prices cannot be less than the MFP at RRN (i.e. must scale with MLFs)	Band prices must be greater than or equal to market floor price
96	EnergyPeriod	Ramp Rate Up	Must be <= Max Ramp Rate for this unit. (Case 5)	Ramp Rate must be <= registered max Ramp Rate {0}
96	EnergyPeriod	Ramp Rate Down	Must be <= Max Ramp Rate for this unit.	Ramp Rate must be <= registered max Ramp Rate {0}

#	Area	Attribute	Validation	Message
109	Period	Band availability	>=0	Band availability figures cannot be negative.
110	Period	Band availability	Must be <= Max Capacity	Band Availability must be <= Maximum Capacity {0}
113	Period	Band availability	The sum of the band availability values must be equal to or greater than the Maximum Capacity for the unit. I.e. Sum (avail [1-10]) >= Max Cap	Sum of Band Availabilities must be >= Maximum Capacity {0}
115	EnergyBid	Daily energy	< 1 million MW!	Daily energy constraint must be less than 1 million MWh
116	EnergyBid	MRO PSF	No more than four decimal places.	MR Offer Scaling Factor cannot be greater than 4 decimal places.
117	EnergyBid	MRO PSF	Reject if provided for SSGU, 'FCAS' or Loads.	System ignores this validation
118	EnergyBid	MRO PSF	≥ 0	MR Offer Scaling Factor must be between 0 and 9
119	EnergyBid	MRO PSF	If an initial MRO is received after the cut-off time (from the MR Schedule), it must be rejected.	Initial MR Offer is past the MR Offer Cut-off time.
125	Period	MR Capacity	After the initial MRO Acceptance Schedule (determined by the existence of an authorised stack for this event), a re-offer cannot lower the MR Capacity below the current accepted MR Capacity.	MR Factor cannot be changed past the MR Offer Cut-off time

#	Area	Attribute	Validation	Message
126	EnergyBid	MRO PSF	Mandatory for MROs.	MR Capacity must be offered for all periods when a MR Factor is submitted
126	Period	MR Capacity	At least one MR Capacity value must be provided if MR (i.e. MRO PSF is stated).	MR Capacity must be offered for all periods when a MR Factor is submitted
128	Period	MR Capacity	≤ Max. Avail	MR Capacity cannot be greater than MaxAvail
130	Period	MR Capacity	≤ 30 x ROC-Down	MR Capacity cannot be greater than 30 x ROC-DOWN
131	Period	MR Capacity	If present, 'Fixed Load' must be zero or null.	MR Capacity cannot be offered for fixed load periods
132	Period	MR Capacity	≤ 30 x ROC-Up	MR Capacity cannot be greater than 30 x ROC-UP for Opposite Link {0}
133	EnergyPeriod	Ramp Rate Up	If 0, rebid reason is mandatory	Reason required for zero Ramp Rate
133	EnergyPeriod	Ramp Rate Up	If MaxRate < MinRate and Ramp Rate Up < MaxRate, then rebidExplanation.Reason is mandatory.	Reason required for zero Ramp Rate
133	EnergyPeriod	Ramp Rate Down	If 0, rebid reason is mandatory	Reason required for zero Ramp Rate

#	Area	Attribute	Validation	Message
133	Rebid	Reason	Reason is mandatory if ramp rate up or down is lower than minimum.	Reason required for zero Ramp Rate
136	Enablement limits	High break point	Low break point ≤ High break point	High Break Point must be >= Low Break Point
137	EnergyBid	MRO PSF	If a valid MRO has been received and the cut-off time has passed, the PSF cannot change.	Initial MR Offer is past the MR Offer Cut-off time.
138	Submission	File	Must only contain printable characters.	File is not well formed json or contains non-printable characters. Additional information = {0}
138	Submission	File	Must not be empty.	File is not well formed json or contains non-printable characters. Additional information = {0}
139	Submission	File	Must be compressed (Zip)	The file cannot be uncompressed
139	Submission	File	Must be able to reverse file compression.	The file cannot be uncompressed
140	Submission	File	Compressed file must only contain 1 file.	The zip file contains more than one entry
140	Submission	File	Compressed file must only contain a .JSON file.	The zip file contains more than one entry

#	Area	Attribute	Validation	Message
141	Submission	Submission Timestamp	Must be a valid date if provided. May be a future date.	Invalid input request
141	Submission	Authoriser	Must not exceed field size.	Invalid input request
141	Submission	Reference Id	Mandatory	Invalid input request
141	Submission	Reference Id	Must not exceed field size.	Invalid input request
141	Submission	Comment	Must not exceed field size.	Invalid input request
141	Submission	Bid	Rebid for MNSP must include both links.	Invalid input request
141	Bid	Bid Unit	Mandatory	Invalid input request
141	BidUnit	Link Id	MNSP bid must include both links.	Invalid input request
141	Bid	Bid Type	Mandatory	Invalid input request
141	Bid	Bid Type	Must be 'ENERGY', 'MNSP', or one of 8 FCAS. (all in upper case)	Invalid input request
141	Bid	Trading Date	Mandatory	Invalid input request
141	Rebid	Reason	Reason must not exceed field size.	Invalid input request

#	Area	Attribute	Validation	Message
141	Rebid	Time Of Event	Must be HH:MM:SS if supplied	Invalid input request
141	Rebid	Time Aware	Must not exceed field size.	Invalid input request
141	Rebid	Rebid Category	Must not exceed field size.	Invalid input request
141	Rebid	Time of Decision	Must not exceed field size.	Invalid input request
141	BidUnit	Bid Price	Must provide 10 (Restriction imposed by AEMO)	Invalid input request
141	Bid Price	Price	Band Prices must not be blank (or omitted)	Invalid input request
141	EnergyBid	Daily energy	≥ 0	Invalid input request
141	EnergyBid	Daily energy	Must be a whole number	Invalid input request
141	FSIP	FSML	≥ 0	Invalid input request
141	FSIP	FSML	If any FSIP value is supplied, all must be supplied.	Invalid input request
141	FSIP	FSML	Cannot be blank (i.e. does not default to 0)	Invalid input request

#	Area	Attribute	Validation	Message
141	FSIP	T1	≥ 0	Invalid input request
141	FSIP	T1	Cannot be blank (i.e. does not default to 0)	Invalid input request
141	FSIP	T1	Whole number	Invalid input request
141	FSIP	T2	Cannot be blank (i.e. does not default to 0)	Invalid input request
141	FSIP	T2	Whole number	Invalid input request
141	FSIP	T2	≥ 0	Invalid input request
141	FSIP	T3	Cannot be blank (i.e. does not default to 0)	Invalid input request
141	FSIP	T3	Whole number	Invalid input request
141	FSIP	T3	≥ 0	Invalid input request
141	FSIP	T4	Cannot be blank (i.e. does not default to 0)	Invalid input request
141	FSIP	T4	Whole number	Invalid input request
141	FSIP	T4	≥ 0	Invalid input request
141	BidUnit	Period	Mandatory	Invalid input request
141	Period	Period Id	1 <= period ID <= 288	Invalid input request

#	Area	Attribute	Validation	Message
141	Period	Max Avail	Whole number	Invalid input request
141	Period	Max Avail	≥ 0	Invalid input request
141	Period	Fixed Load	> 0	Invalid input request
141	Period	Fixed Load	Whole number	Invalid input request
141	FCASPeriod	Enablement limits	Mandatory if FCAS (i.e. all 4 values are mandatory)	Invalid input request
141	Enablement limits	Enablement Min.	Whole number	Invalid input request
141	Enablement limits	Low break point	Whole number	Invalid input request
141	Enablement limits	High break point	Whole number	Invalid input request
141	Enablement limits	Enablement Max.	Whole number	Invalid input request
141	EnergyPeriod	Ramp Rate Up	Must be a whole number	Invalid input request

#	Area	Attribute	Validation	Message
141	EnergyPeriod	Ramp Rate Up	≥ 0	Invalid input request
141	EnergyPeriod	Ramp Rate Up	Mandatory	Invalid input request
141	EnergyPeriod	Ramp Rate Down	Whole number	Invalid input request
141	EnergyPeriod	Ramp Rate Down	≥ 0	Invalid input request
141	EnergyPeriod	Ramp Rate Down	Mandatory	Invalid input request
141	EnergyPeriod	Ramp Rate Down	Not applicable to MNSP bids.	Invalid input request
141	Period	Band availability	Whole number	Invalid input request
141	Period	Band availability	Must have 10 quantities	Invalid input request
141	Period	PASA Availability	Must be >= 0	Invalid input request

#	Area	Attribute	Validation	Message
141	Period	PASA Availability	Whole number	Invalid input request
141	Period	PASA Availability	Mandatory for Energy bids.	Invalid input request
141	Period	PASA Availability	Mandatory for MNSP bids.	Invalid input request
141	Period	MR Capacity	Whole number	Invalid input request
141	Period	MR Capacity	≥ 0	Invalid input request
141	Filename	Object	Must not exceed field size.	Invalid input request
141	BidUnit	Bid Price	Must have 10 prices	Invalid input request
141	Submission	Authoriser	Mandatory	Invalid input request
142	Submission	Reference Id	Must be unique for that PID.	"Provided reference ID was not unique"
143	Submission	Bid	Submission must have at least 1 bid.	Submission does not contain a bid

#	Area	Attribute	Validation	Message
145	BidUnit	Bid Price	(1/k) * BPn (ImportLink) < -1 * BPm (ExportLink), where n is most negative price for import, m is most negative price for export and k is MNSP loss factor.	"Band prices violate MNSP convexity rule"
145	BidUnit	Bid Price	(1/k) * BPn (ExportLink) < -1 * BPm (ImportLink), where n is most negative price for export, m is most negative price for import and k is MNSP loss factor.	"Band prices violate MNSP convexity rule"
146	EnergyBid	MRO PSF	Unit's connection point must be within the region where MRs apply.	Failed to find expected MR Capacity
147	EnergyBid	MRO PSF	For service type 'Energy', the unit must be a generator.	MR Offer Scaling Factor found for non - generation unit
148	MNSPBid	IC	IC must be 'active'.	Interconnector{0} is invalid or not active
148	MNSPBid	IC	Must match the case this is stored in. Typically upper case.	Interconnector{0} is invalid or not active
149	Period	Period Id	All 288 period IDs must be present.	Bid must contain period ID 1 to 288
150	Period	PASA Availability	Must be >= Max Avail	PASA Availability must be >= Max Availability
152	BidUnit	Link Id	MNSP 'direction' ('MNSPImportLink' or MNSPExportLink') must match the link's direction. I.e. if the link's region 'from' matches the interconnectors ' region 'from' then this link should be in the 'Export' bid section.	The direction provided for this Link ID {0} is not correct

#	Area	Attribute	Validation	Message
153	Period	Fixed Load	If present, must be ≤ Max. Availability	Fixed Load cannot exceed maximum availability for the DUID {0}
154	Submission	Participant ID	The participant must be registered with the market operator.	This participant ID is not registered
155	MNSPBid	IC	IC must be valid for this PID.	PID {0} is not authorised to submit bids for interconnector {1}
156	Rebid	Reason	Mandatory if 'Fixed Load' is > 0 (i.e. if provided)	Reason required for fixed load
157	Bid	Rebid	If TD is today or next day, and processed date-time is >= 12:30, then this bid must be marked as a rebid.	Reason required for rebid
157	Rebid	Reason	Rebid reason and time of event must be supplied if rebid.	Reason required for rebid
158	Rebid	Time Of Event	Mandatory if rebid	Event time required for rebid
182	EnergyPeriod	Ramp Rate Up	If MinRate < MaxRate and ramp rate up is less than MinRate, then rebidExplanation.Reason is mandatory. (Case 8 & 9)	Reason required for low Ramp Rate
182	EnergyPeriod	Ramp Rate Up	If MinRate = MaxRate and ramp rate up is less than MinRate, then rebidExplanation.Reason is mandatory. (Case 10 & 11)	Reason required for low Ramp Rate

#	Area	Attribute	Validation	Message
182	EnergyPeriod	Ramp Rate Down	If MaxRate < MinRate and Ramp Rate Down < MaxRate, then rebidExplanation.Reason is mandatory.	Reason required for low Ramp Rate
182	EnergyPeriod	Ramp Rate Down	If MinRate < MaxRate and Ramp Rate Down is less than MinRate, then rebidExplanation.Reason is mandatory. (Case 8 & 9)	Reason required for low Ramp Rate
182	EnergyPeriod	#N/A	If MinRate = MaxRate and Ramp Rate Down is less than MinRate, then rebidExplanation.Reason is mandatory. (Case 10 & 11)	Reason required for low Ramp Rate

Needing Help

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 File again.

If all the issues are fixed, AEMO systems accept the Bid/Offer File 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 .Validation Messages on page 38.

AEMO's support hub

Contact Details

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.

Information to provide

Please provide the following information when requesting assistance from AEMO:

- Your contact details
- Company name
- Company ID
- System or application name
- Environment: production or pre-production
- Problem description
- Screenshots

For AEMO software-related issues please also provide:

- Participant ID (if Data Interchange (DI) problem)
- Version of software
- Properties or log files
- PDR Monitor support dump and DI instance name (if DI problem)

Information to provide

Please provide the following information when requesting assistance from AEMO:

- Your contact details
- Company name
- Company ID
- System or application name
- Environment: production or pre-production
- Problem description
- Screenshots

For AEMO software-related issues please also provide:

- Participant ID (if Data Interchange (DI) problem)
- Version of software
- Properties or log files
- PDR Monitor support dump and DI instance name (if DI problem)

Feedback

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

Rules Terms

Glossary

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.

AES
Advanced Encryption Standard

AEST
Australian Eastern Standard Time

API
Application Programming Interface; a set of clearly defined methods of communication between various software components.

API Gateway
Used to push or pull messages for delivery using RESTful APIs.

API Protocol
A B2B e-Hub and EMMS delivery method.

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.

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

DS
Dispatch

DUID
Generating Unit ID

DWGM
Declared Wholesale Gas Market (Victoria)

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.

GBB
Gas Bulletin Board

GSH
Gas Supply Hub

IPWAN
Internet protocol wide area network

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.

LAN
Local area network

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

MTPASA
Medium-term Projected Assessment of System Adequacy; 2 years worth of data

MW
Megawatt

MW/minute
Megawatts per minute

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

NGR
National Gas 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 48 periods from 4:30 am to 4:00 am.

POP
Point of presence (in network)

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

Registrable Capacities
Registered participant categories, such as customer, generator, network service provider, trader, reallocator, special participants, market participant, and intending participants.

RRP
Region reference price

SCADA
Supervisory Control and Data Acquisition

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.

SRA
Settlements Residue Auction

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

STTM
Gas short term trading market

Subschema
The schemas inside the Root Schema

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.

Appendix 1 JSON Dispatch Bid/Offer Submission Example

This example conforms to the JSON Schema version 7.0.

This appendix provides an example of the JSON Root Schema and Subschemas 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/.

```
{
"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 (24h 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": "Maximimum FCAS enablement limit in megawatts.",
"minimum": 0
},
"enablementMin": {
"type": "integer",
"description": "Minimimum 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
},
"mnspBid": {
"type": "object",
"properties": {
"interconnectorId": { "$ref": "#/definitions/interconnectorId" },
"tradingDate": { "$ref": "#/definitions/tradingDate" },
"mnspBidImport": { "$ref": "#/definitions/mnspBidLink" },
"mnspBidExport": { "$ref": "#/definitions/mnspBidLink" },
"rebidExplanation": { "$ref": "#/definitions/rebidExplanation" }
},
"required": [ "interconnectorId", "tradingDate", "mnspBidImport", "mnspBidExport" ]
},
"mnspBidLink": {
"type": "object",
"properties": {
"linkId": { "$ref": "#/definitions/linkId" },
"prices": { "$ref": "#/definitions/prices" },
"mrPriceScalingFactor": { "$ref": "#/definitions/mrPriceScalingFactor" },
"mnspPeriods": { "$ref": "#/definitions/mnspPeriods" }
},
"required": [ "linkId", "Prices", "mnspPeriods" ]
},
"mnspBids": {
"type": "array",
"items": { "$ref": "#/definitions/mnspBid" }
},
"mnspPeriods": {
"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": { "$ref": "#/definitions/price" },
"minItems": 10,
"maxItems": 10
},
"rebidExplanation": {
"type": "object",
"description": "Rebid Reason - expanded to 4 fields.",
"properties": {
"reason": { "$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": { "$ref": "#/definitions/fcasBids" },
"mnspBids": { "$ref": "#/definitions/mnspBids" }
},
"required": [ "referenceId" ]
}
```

Appendix 2 Electricity Data Model

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

Energy bid/offer tables

BidOfferFileTrk

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

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

BidDayOffer

Updated for every successful Energy Bid/Offer.

BidOfferPeriod

Updated with 5-minute Bid/Offer information. • During the transition period, 30-minute Bid/Offers are written to this table.

FCAS offer tables

BidOfferFileTrk

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

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

BidDayOffer

Updated for every successful FCAS Offer.

BidOfferPeriod

Updated with 5-minute Bid/Offer information. • During the transition period, 30-minute Bid/Offers are written to this table.

MNSP offer tables

BidOfferFileTrk

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

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

MNSP_DayOffer

Updated for every successful MNSP Offer.

MNSP_BidOfferPeriod

Updated with 5-minute Bid/Offer information. • During the transition period, 30-minute Bid/Offers are written to this table.

Index