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# Guide to CSV Data Format Standard

**Version 2.00**  
**December 2021**

Describes the data format standard used in  
AEMO's csv payloads



# Important Notice

## PURPOSE

This Guide to CSV Data Format Standard (Guide), prepared by AEMO, provides guidance for CSV Data Format Standard under the National Electricity and Gas Rules (Rules).

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## DOCUMENTS MADE OBSOLETE

The release of this document changes any previous versions of Guide to CSV Data Format Standard.

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# Introduction

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## Purpose

This guide describes the **generic** csv (comma-separated-variables) data format standard used in numerous interfaces in AEMO's energy market systems, including some csv payloads.

Its primary function is to provide sufficient information to allow participants to understand the csv data format used for exchanging data with AEMO.

For details about the payload and record definitions for specific reports, see the guides and reports in [References on page 48](#).

# Audience

This guide is relevant to:

- Implementers and maintainers of interfaces to AEMO's systems.
- Parties with responsibility for using interfaces to AEMO's systems.

## What's in this guide?

[Need to Know on page 5](#) explains what you need to know to understand this guide.

[About CSV Data Format Standard on page 6](#) explains AEMO's generic csv payload format standard and rules.

[C - comment rows on page 13](#) explains the C rows in the csv payload.

[I - informational rows on page 25](#) explains the I rows in the csv payload.

[D - data rows on page 34](#) explains the D rows in the csv payload.

[Needing Help on page 42](#) explains how to contact AEMO's support hub and the information to provide to resolve your issue quickly.

[Terms on page 45](#) explains the rules and glossary terms used throughout this guide.

[References on page 48](#) provides a list of useful links and resources mentioned throughout this guide.

# How to use this guide

- This guide describes the **generic** csv (comma-separated-variables) data format standard for AEMO's csv payloads. For details about format and data types for specific payloads, such as **EMMS reports** and **Blind Update Tool (BUT)**, see the guides and reports in [References on page 48](#).
- Market Time refers to the related Market's csv payload.
- This help 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 hyperlink or glossary term. Only Registered Participants can access some hyperlinks. Non-Registered Participants can search for guides on [AEMO's website](#).
- **Text in this format** is an action to complete in the Markets Portal interface.
- Glossary terms are capitalised and have the meanings listed against them in the [Glossary](#).
- **Rules terms** used throughout this guide are defined in the [National Electricity Rules or National Gas Rules](#).
- The numbers on the example screenshots throughout this guide refer to the numbered explanations in the topic.
- Diagrams and screenshots are provided as examples. In case of ambiguity between a diagram and the text, the text prevails.

- References to time are Australian Eastern Standard time (AEST) unless otherwise specified.
- References to currency are to Australian dollars.

# Need To Know

## Assumed knowledge

This guide assumes you have knowledge of:

- Basic csv functionality.
- Using spreadsheets and text editors.

# About CSV Data Format Standard

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## csv overview

The AEMO csv data format standard uses a spreadsheet or text editor layout.

The payload format allows for:

- Different report records presented in the same file.
- A report record definition to change over time (hence the report version numbers). The nature of changes is designed to cause minimum disruption to existing processes and also allow for transition periods to new report record formats.

- Data in a report record to come from a number of different tables, for example, 5-minute data, 30-minute data, and daily data.
- Each data record is self-contained, for example, correct interpretation requires no other data records.

If you are preparing a payload for upload to AEMO's systems, the columns and spaces in each layout are vital placeholders and cannot be ignored. Without them, the system cannot read your payload.

## csv spreadsheet layout

This layout opens in a spreadsheet application such as Microsoft Excel. In the spreadsheet format, columns are separated by columns, so it is important to match the column headings (I records) and data records (D records), including any blank columns.

The spreadsheet format has the csv extension (not .XLS or .XLSX).

Microsoft Excel always removes leading zeros and spaces from fields before displaying them.

# csv text editor layout

This layout opens in a text editor application such as Microsoft Notepad. In the text editor layout, columns are separated with commas, so it is very important to match the column headings (**I** records) and commas to the data records (**D** records).

Text editor files have the .csv extension (not .TXT).

Spaces are considered part of a field, so you cannot ignore them. The last column in the record is not followed by a comma unless it is a column placeholder.

## csv generic format rules

This table describes some generic csv formatting rules.

For details about the payload and record definitions for specific reports, see the guides and reports in [References on page 48](#).

Table 1 generic csv formatting rules

Description	Explanation
Currency	<p>Currencies do not have a \$ sign, e.g.117.05 or 180</p> <p>Currency is in Australian dollars</p>
Date & time	<p>The recommended date &amp; time format is one of the following, in Market Time ( as appropriate for the application):</p> <ul style="list-style-type: none"> <li>Timestamp: YYYY/MM/DD HH24:MI:SS</li> <li>Date: YYYY/MM/DD</li> <li>Time with seconds: HH24:MI:SS</li> <li>Time without seconds: HH24:MI</li> </ul> <p>Include leading zeros in dates and times, e.g:</p> <ul style="list-style-type: none"> <li>2021/09/03</li> <li>04:43:09</li> </ul>
Double quotations inside a field	<p>Double quotations inside a field are escaped by preceding them with another double quote, e.g. aaa,"b""bb",ccc</p>
Empty data columns	<p>Null data columns require trailing commas</p>
Fraction representation	<p>AEMO systems support integers or real numbers only</p> <p>The exponent format is not supported</p>
Line terminator	<p>The ASCII carriage return is used to indicate the end of each line of csv data</p> <p>In Windows systems the line terminator is a carriage return (CR+LF)</p> <p>In Unix-like systems the line terminator is \C\n</p>

Description	Explanation
Numbers	Written as integers or real numbers e.g. 10000. Do not use commas
Records	Each record is one line, delimited by a line terminator, see <a href="#">Line terminator on the previous page</a>
Spaces - leading or trailing	Fields with leading or trailing spaces must be delimited with double-quote characters, e.g. John ," Doe "  Avoid unless absolutely necessary
Special characters	Special characters such as commas are enclosed in double quotation marks, e.g. aaa","b

# csv filename rules

This table describes the generic csv filenames rules. Check the guide for the application you are using for more detailed filenames information.

Table 2 csv filename rules

Description	Explanation
Ampersands (&)	Do not use ampersands in filenames
Case sensitive filenames	Filenames are case sensitive, check the relevant guide for the exact format of the filename for the AEMO application you are using
Filename delimiters	Filenames are made up of the file masks specific to each application and delimited by underscores, e.g. the EMMS system uses participant ID_SRBID_AUCTIONID
Filename prefix	In the EMMS system the filename prefix relates to data confidentiality, e.g. PUBLIC_ for public data and participant ID_ for private data
Unique filenames	Filenames are unique, i.e. the same filename is not used for different data
ZIP name and csv name	In most cases the ZIP filename corresponds with the csv filename

# csv compression (zip) format

The AEMO compression format supports:

- 256-bit Advanced Encryption Standard (AES).
- ZIP compression for numerous standard ZIP tools such as, WinZip and WinRAR and so on.
- One csv payload per ZIP file (this is true in the majority of cases but check the relevant AEMO application).
- In most cases the ZIP filename corresponds with the csv filename.
- All compressed payloads must have the ZIP extension.

## csv payload format

Each record in a csv payload starts with one of the following three characters:

- **C = comment (metadata)**
- **I = information**
- **D = data**

# C - Comment Rows

The first and last rows in a payload start with C. The columns and spaces in the first c row are part of the structure and cannot be ignored. Without them AEMO's systems cannot read your payload.

For examples, see:

- [EMMS C row format below](#)
- [Blind update submission C row format on the next page](#)
- [Blind update response C row format on the next page](#)
- [C - comment \(metadata\) column examples on page 15](#)
- [EMMS C row examples on page 19](#)
- [Blind update C row examples on page 21](#)
- [Last row in a payload is C on page 23](#)

## EMMS C row format

Figure 1 - EMMS C row format

```
C,SYSTEM,REPORT ID,FROM,TO,PUBLISH DATE,PUBLISH  
TIME,PAYLOAD DATA,PAYLOAD DATA,PAYLOAD DATA
```

# Blind update submission C row format

The commas represent the H, I, J columns used by other payloads and not used by a blind update submission. These are vital containers in the csv data format structure and cannot be ignored.

Figure 2 - Blind update submission C row format

```
C,PRODUCTION,BLIND_UPDATE_  
SUBMISSION,PARTICIPANTID,NEMMCO,2021/09/03,22:04:05,,,  
NEM,123ABC-002
```

# Blind update response C row format

Figure 3 - Blind update response C row format

```
C,PRODUCTION,BLIND_UPDATE_  
RESPONSE,NEMMCO,PARTICIPANTID,2021/09/04,06:03:15,,N  
EM,123ABC-002,324-BB321
```

# C - comment (metadata) column examples

If required, you can add further metadata columns after the M column.

Table 3 - C row metadata columns example

Column	Field	Description	Required?	Figure example	Format
A	RECORD TYPE	C metadata fields	Yes	<a href="#">Figure 4 &amp; Figure 6</a> C	UPPERCASE
B	System	The AEMO system, for example: USER TEST, PRODUCTION, ACCEPTANCE TEST, DEVELOPMENT	Yes	<a href="#">Figure 4</a> NEMP.WORLD <a href="#">Figure 6</a> PRODUCTION	UPPERCASE

Column	Field	Description	Required?	Figure example	Format
C	Report ID	One of the following: <ul style="list-style-type: none"> <li>◦ FILE ID (EMMS)</li> <li>◦ BLIND_UPDATE_SUBMISSION (BUT)</li> <li>◦ BLIND_UPDATE_RESPONSE (BUT)</li> </ul>	Yes	<a href="#">Figure 4</a> BIDMOVE_ SUMMARY  <a href="#">Figure 6</a> BLIND_UPDATE_ SUBMISSION	UPPERCASE
D	From	One of the following payload Initiators: <ul style="list-style-type: none"> <li>◦ AEMO</li> <li>◦ For <b>Blind Update Tool (BUT)</b> submission: PARTICIPANT ID</li> <li>◦ For <b>Blind Update Tool (BUT)</b> response: NEMMCO</li> <li>◦ Legacy systems: NEMMCO</li> </ul>	Yes	<a href="#">Figure 4</a> AEMO  <a href="#">Figure 6</a> NEMMCO	UPPERCASE
E	To	One of the following payload Recipients: <ul style="list-style-type: none"> <li>◦ PARTICIPANT ID</li> <li>◦ PUBLIC</li> <li>◦ For <b>Blind Update Tool (BUT)</b> submission: NEMMCO</li> <li>◦ For <b>Blind Update Tool (BUT)</b> response: PARTICIPANT ID</li> </ul>	Yes	<a href="#">Figure 4</a> PUBLIC  <a href="#">Figure 6</a> PARTICIPANTID	UPPERCASE

Column	Field	Description	Required?	Figure example	Format
F	Publish date	Payload creation date	Yes	<a href="#">Figure 4</a> 2021/04/01 <a href="#">Figure 4</a> 2021/09/03	YYYY/MM/DD
G	Publish time	Payload creation time	Yes	<a href="#">Figure 4</a> 04:03:09 <a href="#">Figure 6</a> 22:04:05	HH24:MI:SS (Market Time)
H	Specific payload information	e.g. EMMS file information: Event Queue ID	Yes for EMMS	<a href="#">Figure 4</a> 339145123	UPPERCASE or Positive integer
I	Specific payload information	e.g. EMMS file information Data Model File ID	Yes for EMMS	<a href="#">Figure 4</a> BIDMOVE_ SUMMARY	UPPERCASE Free text (50)

Column	Field	Description	Required?	Figure example	Format
J	Specific payload information	e.g. EMMS file information: Event Queue Group ID	Yes for EMMS	<a href="#">Figure 4</a> 339145118	UPPERCASE Free text (50)
K	Market	The AEMO energy Market acronym the payload relates to	Yes for BUT	<a href="#">Figure 6</a> NEM	UPPERCASE
L	Payload ID	Initiator (participant) provided payload reference for one of the following fields: <ul style="list-style-type: none"> <li>◦ BLIND_UPDATE_SUBMISSION (BUT)</li> <li>◦ BLIND_UPDATE_RESPONSE (BUT)</li> </ul>	Yes for BUT	<a href="#">Figure 6</a> 123ABC-002	UPPERCASE Free text (50)
M	Payload Response ID	Responder (AEMO) provided unique payload reference for the BLIND_UPDATE_RESPONSE (BUT)  Empty for a BLIND_UPDATE_SUBMISSION (BUT)  Also provided in the sync payload acknowledgement	Yes for BUT	<a href="#">Figure 6</a> 324-BB321	UPPERCASE Free text (50)

# EMMS C row examples

Columns K, L and M are not used for the EMMS c row payload format.

Figure 4 - EMMS C row spreadsheet example

	A	B	C	D	E	F	G	H	I	J	K	L	
1	C	NEMP.WORLD	BIDMOVE SUMMARY	AEMO	PUBLIC	2021/04/01	04:43:09	339145123	BIDMOVE SUMMARY	339145118			
2	I	BID	BIDDAYOFFER_D	2	SETTLEMENTDATE	DUID	BIDTYPE	BIDSETTLEMENTDATE	OFFERDATE	VERSIONNO	PARTICIPANTID	DAILYENERGYCONSTRAINT	REBIDEXPLANAT
3	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID1	ENERGY	2021/03/30 00:00	2021/03/30 12:19	1	PARTICIPANTID1	241	1054 F PB1 & PB
4	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID2	RAISE6SEC	2021/03/31 00:00	2021/03/31 01:07	1	PARTICIPANTID2		20210331010636
5	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID3	RAISE60SEC	2021/03/31 00:00	2021/03/30 20:05	1	PARTICIPANTID3		20210330200409
6	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID4	RAISE6SEC	2021/03/31 00:00	2021/03/30 20:05	1	PARTICIPANTID4		20210330200409
7	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID5	RAISE60SEC	2021/03/23 00:00	2021/03/23 17:00	1	PARTICIPANTID5		210211 R60sec
8	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID6	RAISE5MIN	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID6		0940~P~DEFAULT
9	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID7	RAISE6SEC	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID7		0940~P~DEFAULT
10	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID8	RAISEREG	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID8		0940~P~DEFAULT
11	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID9	ENERGY	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID9	60	0940~P~DEFAULT
12	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID10	LOWER6SEC	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID10		0940~P~DEFAULT
13	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID11	ENERGY	2021/03/26 00:00	2021/02/25 17:21	1	PARTICIPANTID11		1710P Restore i

Figure 5 - EMMS C row text editor example

	A	B	C	D	E	F	G	H	I	J
1	C	NEMP.WORLD	BIDMOVE SUMMARY	AEMO	PUBLIC	2021/04/01	04:43:09	339145123	BIDMOVE SUMMARY	339145118
2	I	BID	BIDDAYOFFER_D	2	SETTLEMENTDATE	DUID	BIDTYPE	BIDSETTLEMENTDATE	OFFERDATE	VERSIONNO
3	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID1	ENERGY	2021/03/30 00:00	2021/03/30 12:19	1
4	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID2	RAISE6SEC	2021/03/31 00:00	2021/03/31 01:07	1

# Blind update C row examples

The empty H, I, and J columns, represent the columns used by other payloads and not used by a blind update submission. These are vital containers in the csv data format structure and cannot be ignored.

Figure 6 - Blind update submission C row spreadsheet example

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	C	PRODUCTION	BLIND_UPDATE_SUBMISSION	PARTICIPANTID	NEMMCO	2021/09/03	22:04:05				NEM	123ABC-002	324-BB321	
2	I	BUS	METER_REGISTER	1	NMI	METER_SERIAL	FIELDID	VALUE						
3	D	BUT	METER_REGISTER	1	N123456789	123-AZ56	MANUFACTURER	EMAIL						
4	D	BUT	METER_REGISTER	1	N123456789	123-AZ56	MODEL	A200						
5														

Figure 7 - Blind update submission C row text editor example

```
1 C, PRODUCTION, BLIND UPDATE SUBMISSION, PARTICIPANTID, NEMMCO, 2021/09/03, 22:04:05, , , , NEM, 123ABC-002, 324-BB321
2 I, BUS, METER_REGISTER, 1, NMI, METER_SERIAL, FIELDID, VALUE,
3 D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MANUFACTURER, EMAIL,
4 D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MODEL, A200,
5 C, END OF REPORT, 5
```

# Last row in a payload is C

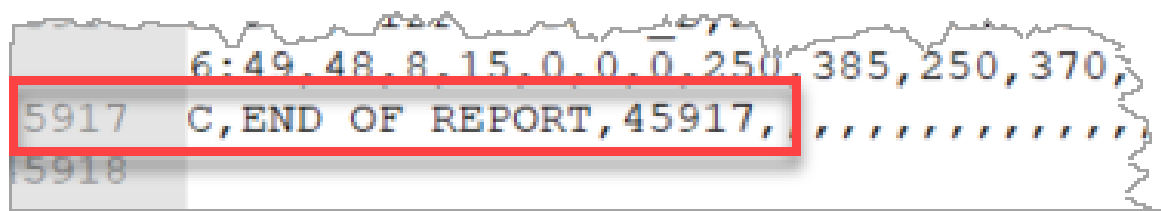
The last C row in a payload is another C row with the <count of records> to check all records are received. The record count includes all rows in the payload (C, I, and D). In some cases, the **END OF REPORT** string is enclosed by a set of double quotation marks ("...").

```
C,END OF REPORT,COUNT OF RECORDS
```

Figure 8 - Last C row spreadsheet example

45911	D	BID	BIDPEROFFER_D		1
45912	D	BID	BIDPEROFFER_D	2	1
45913	D	BID	BIDPEROFFER_D	2	1
45914	D	BID	BIDPEROFFER_D	2	1
45915	D	BID	BIDPEROFFER_D	2	1
45916	D	BID	BIDPEROFFER_D	2	1
45917	C	END OF REPORT	45917		
45918					

Figure 9 - Last C row text editor example



	6:49.48.8.15.0.0.0.250	385,250,370,
5917	C,END OF REPORT,45917,	,,,,,,,,,,,,,
5918		

# I - Informational Rows

Informational rows start with **I** and contain column headings specific for each payload definition. Each data (**D - record**) and matching **I - Information record** identifies the payload format it uses by the combination of report type, report subtype and report version. Some older version payloads included all the **I** records at the top.

For information about specific csv report fields, see [Market Data NEMWEB](#) and [Guide to MSATS Reports](#).

For each combination of the above, the column headings are fixed. If a report type or report subtype definition is altered (usually by adding columns) a new report or payload version is issued.

It is possible for the <report subtype> to be null represented by delimiting commas, for example:

```
I,DCONS,,2,RUNDATETIME,RUNNO,
```

```
D,DCONS,,2,"1998/05/29 13:30",1,
```

For examples, see:

- [EMMS I row format on the next page](#)
- [Blind update submission I row format on the next page](#)
- [I - informational column examples on page 27](#)

- [EMMS I row examples on page 30](#)
- [Blind update submission I row examples on page 32](#)

## EMMS I row format

Figure 10 - EMMS I row format

```
I,REPORT TYPE,REPORT SUBTYPE,REPORT  
VERSION,COLUMN HEADER,COLUMN HEADER,COLUMN  
HEADER,and so on...
```

## Blind update submission I row format

Figure 11 - Blind update submission I row format

The commas represent the columns used by other payloads and not used by a blind update submission. These are vital containers in the csv data format structure and cannot be ignored.

```
I,PAYLOAD TYPE,PAYLOAD SUBTYPE,PAYLOAD  
VERSION,NMI,METER SERIAL,FIELD ID,VALUE
```

# I - informational column examples

Table 4 - I - Informational row example

Column	Specific report column header	Figure example	Format
A	RECORD TYPE	<a href="#">Figure 12 &amp; Figure 14</a> I	UPPERCASE
B	REPORT TYPE	<a href="#">Figure 12</a> BID <a href="#">Figure 14</a> BUS	UPPERCASE
C	REPORT SUBTYPE	<a href="#">Figure 12</a> BIDDAYOFFER_D <a href="#">Figure 14</a> METER_REGISTER	UPPERCASE
D	REPORT VERSION	<a href="#">Figure 12</a> 2 <a href="#">Figure 14</a> 1	Positive integer

Column	Specific report column header	Figure example	Format
E	COLUMN HEADER	<a href="#">Figure 12</a> SETTLEMENTDATE <a href="#">Figure 14</a> NMI	UPPERCASE
F	COLUMN HEADER	<a href="#">Figure 12</a> DUID <a href="#">Figure 14</a> METER_SERIAL	UPPERCASE
G	COLUMN HEADER	<a href="#">Figure 12</a> BIDTYPE <a href="#">Figure 14</a> FIELDID	UPPERCASE
H	COLUMN HEADER	<a href="#">Figure 12</a> BIDSETTLEMENTDATE <a href="#">Figure 14</a> FIELD	UPPERCASE
I	COLUMN HEADER	<a href="#">Figure 12</a> OFFERDATE	UPPERCASE
J	COLUMN HEADER	<a href="#">Figure 12</a> VERSIONNO	UPPERCASE

Column	Specific report column header	Figure example	Format
K	COLUMN HEADER	<a href="#">Figure 12</a> PARTICIPANTID <a href="#">Figure 14</a> VALUE	UPPERCASE
L	COLUMN HEADER	<a href="#">Figure 12</a> DAILYENERGYCONSTRAINT	UPPERCASE
M	And so on for each specific report	...	...

# EMMS I row examples

Figure 12 - EMMS I row spreadsheet example

	A	B	C	D	E	F	G	H	I	J	K	L	
1	C	NEMP.WORLD	BIDMOVE_SUMMARY	AEMO	PUBLIC	2021/04/01	04:43:09	339145123	BIDMOVE_SUMMARY	339145118			
2	I	BID	BIDDAYOFFER_D	2	SETTLEMENTDATE	DUID	BIDTYPE	BIDSETTLEMENTDATE	OFFERDATE	VERSIONNO	PARTICIPANTID	DAILYENERGYCONSTRAINT	REBIDEXPLANAT
3	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID1	ENERGY	2021/03/30 00:00	2021/03/30 12:19	1	PARTICIPANTID1	241	1054 F PB1 & PE
4	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID2	RAISE6SEC	2021/03/31 00:00	2021/03/31 01:07	1	PARTICIPANTID2		20210331010636
5	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID3	RAISE60SEC	2021/03/31 00:00	2021/03/30 20:05	1	PARTICIPANTID3		20210330200405
6	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID4	RAISE6SEC	2021/03/31 00:00	2021/03/30 20:05	1	PARTICIPANTID4		20210330200409
7	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID5	RAISE60SEC	2021/03/23 00:00	2021/03/23 17:00	1	PARTICIPANTID5		210211 R60sec
8	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID6	RAISE5MIN	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID6		0940~P~DEFAULT
9	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID7	RAISE6SEC	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID7		0940~P~DEFAULT
10	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID8	RAISEREG	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID8		0940~P~DEFAULT
11	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID9	ENERGY	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID9	60	0940~P~DEFAULT
12	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID10	LOWER6SEC	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID10		0940~P~DEFAULT
13	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID11	ENERGY	2021/03/26 00:00	2021/02/25 17:21	1	PARTICIPANTID11		1710P Restore i

Figure 13 - EMMS I row text editor example

1	C,NEMP.WORLD,BIDMOVE SUMMARY,AEMO,PUBLIC,2021/04/01,04:43:09,339145123,BIDMOVE SUMMARY,339145118
2	I,BID,BIDDAYOFFER_D,2,SETTLEMENTDATE,DUID,BIDTYPE,BIDSETTLEMENTDATE,OFFERDATE,VERSIONNO,PARTICIPANTID,DAILYENERGYCONSTRAINT,REBIDEXPLANATION,PRICEBAND1,PRICEBAND2,PRICEBAND3,PRICEBAND4,PRICEBAND5,PRICEBAND6,PRICEBAND7,PRICEBAND8,PRICEBAND9,PRICEBAND10,MINIMUMLOAD,T1,T2,T3,T4,NORMALSTATUS,LASTCHANGED,MR_FACTOR,ENTRYPYTYPE,
3	D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID1,ENERGY,2021/03/30 00:00,2021/03/30 12:19,1,PARTICIPANTID1,241,1054 F PB1 & PB10 Loss Factor Update,-898.3,-157,2,4,8,16,32,64,128,13025.35,0,0,0,0,0,,12:19,,REBID,
4	D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID2,RAISE6SEC,2021/03/31 00:00,2021/03/31 01:07,1,PARTICIPANTID2,,20210331010636 P CHANGING PORTFOLIO

# Blind update submission I row examples

The empty H, I, and J columns, represent the columns used by other files and not used by a blind update submission. These are vital containers in the csv data format structure and cannot be ignored.

Figure 14 - Blind update submission spreadsheet example

1	C, PRODUCTION, BLIND_UPDATE_SUBMISSION, PARTICIPANTID, NEMMCO, 2021/09/03, 22:04:05, , , , NEM, 123ABC-002, 324-BB321
2	I, BUS, METER_REGISTER, 1, NMI, METER_SERIAL, FIELDID, VALUE, , , ,
3	D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MANUFACTURER, EMAIL, , , ,
4	D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MODEL, A200, , , ,
5	C, END OF REPORT, 5, , , , , , , ,
6	

Figure 15 - Blind update submission text editor example

```
1 C, PRODUCTION, BLIND UPDATE SUBMISSION, PARTICIPANTID, NEMMCO, 2021/09/03, 22:04:05, , , , NEM, 123ABC-002, 324-BB321
2 I, BUS, METER_REGISTER, 1, NMI, METER_SERIAL, FIELDID, VALUE, , , ,
3 D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MANUFACTURER, EMAIL, , , ,
4 D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MODEL, A200, , , ,
5 C, END OF REPORT, 5, , , , , , ,
6
```

# D - Data Rows

These rows start with **D**, and contain the specific payload data under the **I** - informational column headings. For each line of the report, there is a **D** - data row corresponding to the **I - Informational record** column heading.

For information about specific csv report fields, see [Market Data NEMWEB](#) and [Guide to MSATS Reports](#).

For examples, see:

- [EMMS D row format below](#)
- [Blind update submission D row format on the next page](#)
- [D - data column examples on page 36](#)
- [EMMS D row examples on page 39](#)
- [Blind update submission D row examples on page 41](#)

## EMMS D row format

Figure 16 - EMMS D row format

```
D,REPORT TYPE,REPORT SUBTYPE,REPORT  
VERSION,DATA,DATA,DATA
```

# Blind update submission D row format

The commas represent the columns used by other payloads and not used by Blind update submissions. These are vital containers in the csv data format structure and cannot be ignored.

Figure 17 - Blind update submission D row format

```
I,PAYLOAD TYPE DATA,PAYLOAD SUBTYPE DATA,PAYLOAD  
VERSION,NMI DATA,METER SERIAL DATA,FIELD ID  
DATA,,,VALUES
```

# D - data column examples

**Table 5** provides examples and suggestions only. For details about format and data types for specific payloads, such as **EMMS reports** and **Blind Update Tool (BUT)**, see the individual application guide.

Table 5 D row examples

Column	Field	Figure example	Format
A	RECORD TYPE	<a href="#">Figure 18 &amp; Figure 20</a> D	UPPERCASE
B	REPORT TYPE	<a href="#">Figure 18</a> BID <a href="#">Figure 20</a> BUT	UPPERCASE
C	REPORT SUBTYPE	<a href="#">Figure 18</a> BIDDAYOFFER_D <a href="#">Figure 20</a> METER_REGISTER	UPPERCASE
D	REPORT VERSION	<a href="#">Figure 18</a> 2 <a href="#">Figure 20</a> 1	Positive integer

Column	Field	Figure example	Format
E	DATA	<a href="#">Figure 18</a> 1/02/2017 12:00:00 AM <a href="#">Figure 20</a> N123456789	UPPERCASE
F	DATA	<a href="#">Figure 18</a> DUID1 <a href="#">Figure 20</a> 123-AZ56	UPPERCASE
G	DATA	<a href="#">Figure 18</a> ENERGY <a href="#">Figure 20</a> MANUFACTURER	UPPERCASE
H	DATA	<a href="#">Figure 18</a> 23/09/2016 12:00:00 AM	This is the preferred format, for recommendations see <a href="#">Date &amp; time on page 9</a>
I	DATA	<a href="#">Figure 18</a> 21/09/2016 14:14	This is the preferred format, for recommendations see <a href="#">Date &amp; time on page 9</a>
J	DATA	<a href="#">Figure 18</a> 1	UPPERCASE

Column	Field	Figure example	Format
K	DATA	<a href="#">Figure 18</a> PARTICIPANTID1 <a href="#">Figure 20</a> EMAIL	...
L	And so on for each specific report	...	...

# EMMS D row examples

Figure 18 - EMMS D row spreadsheet example

	A	B	C	D	E	F	G	H	I	J	K	L	
1	C	NEMP.WORLD	BIDMOVE_SUMMARY	AEMO	PUBLIC	2021/04/01	04:43:09	339145123	BIDMOVE_SUMMARY	339145118			
2	I	BID	BIDDAYOFFER_D	2	SETTLEMENTDATE	DUID	BIDTYPE	BIDSETTLEMENTDATE	OFFERDATE	VERSIONNO	PARTICIPANTID	DAILYENERGYCONSTRAINT	REBIDEXPLANAT
3	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID1	ENERGY	2021/03/30 00:00	2021/03/30 12:19	1	PARTICIPANTID1	241	1054 F PB1 & PB
4	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID2	RAISE6SEC	2021/03/31 00:00	2021/03/31 01:07	1	PARTICIPANTID2		20210331010636
5	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID3	RAISE60SEC	2021/03/31 00:00	2021/03/30 20:05	1	PARTICIPANTID3		20210330200409
6	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID4	RAISE6SEC	2021/03/31 00:00	2021/03/30 20:05	1	PARTICIPANTID4		20210330200409
7	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID5	RAISE60SEC	2021/03/23 00:00	2021/03/23 17:00	1	PARTICIPANTID5		210211 R60sec
8	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID6	RAISE5MIN	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID6		0940~P~DEFAULT
9	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID7	RAISE6SEC	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID7		0940~P~DEFAULT
10	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID8	RAISEREG	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID8		0940~P~DEFAULT
11	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID9	ENERGY	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID9	60	0940~P~DEFAULT
12	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID10	LOWER6SEC	2021/03/31 00:00	2021/03/01 09:53	1	PARTICIPANTID10		0940~P~DEFAULT
13	D	BID	BIDDAYOFFER_D	2	2021/03/31 00:00	DUID11	ENERGY	2021/03/26 00:00	2021/02/25 17:21	1	PARTICIPANTID11		1710P Restore i

Figure 19 - EMMS D row text editor example

```

1 C,NEMP.WORLD,BIDMOVE_SUMMARY,AEMO,PUBLIC,2021/04/01,04:43:09,339145123,BIDMOVE_SUMMARY,339145118
2 I,BID,BIDDAYOFFER_D,2,SETTLEMENTDATE,DUID,BIDTYPE,BIDSETTLEMENTDATE,OFFERDATE,VERSIONNO,PARTICIPANTID,DAILYENERGYCONSTRAINT,REBIDEXPLANATION,PRICEBAND1,PRICEBAND2,PRICEBAND3,PRICEBAND4,PRICEBAND5,PRICEBAND6,PRICEBAND7,PRICEBAND8,PRICEBAND9,PRICEBAND10,MINIMUMLOAD,T1,T2,T3,T4,NORMALSTATUS,LASTCHANGED,MR_FACTOR,ENTRYTYPE,
3 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID1,ENERGY,2021/03/30 00:00,2021/03/30 12:19,1,PARTICIPANTID1,241,1054 F PB1 & PB10 Loss Factor
  Update,-898.3,-157.2,4,8,16,32,64,128,13025.35,0,0,0,0,0,,202130/03/2021 12:19,,REBID,
4 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID2,RAISE6SEC,2021/03/31 00:00,2021/03/31 01:07,1,PARTICIPANTID2,,20210331010636 P CHANGING PORTFOLIO
  CONDITIONS,0.03,0.3,0.73,0.99,1.98,5.9,9.17,7.100,10000,0,,,,,31/03/2021 1:07,,REBID,
5 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID3,RAISE60SEC,2021/03/31 00:00,2021/03/30 20:05,1,PARTICIPANTID3,,20210330200409 P CHANGING PORTFOLIO
  CONDITIONS,0,1,2,4,8,16,32,64,128,256,0,,,,,2021/3/0330/03/2021 20:05,,REBID,
6 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID4,RAISE6SEC,2021/03/31 00:00,2021/03/30 20:05,1,PARTICIPANTID4,,20210330200409 P CHANGING PORTFOLIO CONDITIONS,0,1,2,4,8,16,32,64,128,256,0,,,,,2021/03/01/
  20:05,,REBID,
7 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID5,RAISE60SEC,2021/03/23 00:00,2021/03/23 17:00,1,PARTICIPANTID5,,210211 R60sec,0,1,2,4,8,16,32,64,128,256,0,,,,,23/03/2021 17:00,,REBID,
8 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID6,RAISE5MIN,2021/03/31 00:00,2021/03/01 09:53,1,PARTICIPANTID6,,0940~P~DEFAULT OFFER~~,0,0.89,1.41,1.85,2.45,5.89,50.89,100.89,200.89,14081.81,0,,,,,2021/03/01
  9:53,,DAILY,
9 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID7,RAISE6SEC,2021/03/31 00:00,2021/03/01 09:53,1,PARTICIPANTID7,,0940~P~DEFAULT OFFER~~,0,1.49,3.89,9.89,13.25,18.89,32.89,100.89,200.89,14081.81,0,,,,,2021/03/01
  9:53,,DAILY,
10 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID8,RAISEREG,2021/03/31 00:00,2021/03/01 09:53,1,PARTICIPANTID8,,0940~P~DEFAULT
  OFFER~~,0,7.89,13.35,28.89,61.89,92.89,140.89,265.89,1281.89,14007.89,0,,,,,2021/03/01 9:53,,DAILY,
11 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID9,ENERGY,2021/03/31 00:00,2021/03/01 09:53,1,PARTICIPANTID9,60,0940~P~DEFAULT
  OFFER~~,-47.08,-23.01,0,9.52,49.97,70.19,91.38,114.49,291.68,924.37,0,0,0,0,0,,2021/03/01 9:53,,DAILY,
12 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID10,LOWER6SEC,2021/03/31 00:00,2021/03/01 09:53,1,PARTICIPANTID10,,0940~P~DEFAULT
  OFFER~~,0,0.81,3.81,9.81,29.81,44.81,119.81,239.81,799.81,14081.81,0,,,,,2021/03/01 9:53,,DAILY,
13 D,BID,BIDDAYOFFER_D,2,2021/03/31 00:00,DUID11,ENERGY,2021/03/26 00:00,2021/03/25 17:24,1,PARTICIPANTID11,17127 Restore initial

```

# Blind update submission D row examples

Figure 20 - Blind update submission D row spreadsheet example

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	C	PRODUCTION	BLIND_UPDATE_SUBMISSION	PARTICIPANTID	NEMMCO	2021/09/03	22:04:05				NEM	123ABC-002	324-BB321	
2	I	BUS	METER_REGISTER	1	NMI	METER_SERIAL	FIELDID	VALUE						
3	D	BUT	METER_REGISTER	1	N123456789	123-AZ56	MANUFACTURER	EMAIL						
4	D	BUT	METER_REGISTER	1	N123456789	123-AZ56	MODEL	A200						
5	C	END OF REPORT		5										

Figure 21 - Blind update submission D row text editor example

```

1 C, PRODUCTION, BLIND_UPDATE_SUBMISSION, PARTICIPANTID, NEMMCO, 2021/09/03, 22:04:05, , , , NEM, 123ABC-002, 324-BB321
2 I, BUS, METER_REGISTER, 1, NMI, METER_SERIAL, FIELDID, VALUE,
3 D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MANUFACTURER, EMAIL,
4 D, BUT, METER_REGISTER, 1, N123456789, 123-AZ56, MODEL, A200,
5 C, END OF REPORT, 5

```

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## 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.

# Information to provide

Please provide the following information when requesting Support Hub assistance:

- The resolver group to direct your ticket to. You can find this information in the **Need to Know** section of the application's online help or the **Needing Help** section of the pdf guide.
- 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)

# Support hub resolver group

If you contact [AEMO's Support Hub](#) for support about CSV Data Format Standard ask them to direct your ticket to one of the following resolver groups:

- Business: n/a
- IT: Enterprise Application Services' teams

## MSUG meetings

The Market Systems User Group (MSUG) is an industry user group established to discuss NEM wholesale and retail IT systems releases. Its purpose is to facilitate the continuing improvement of AEMO's IT systems by seeking feedback and collaboration from participants.

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

## Feedback

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

# Terms

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## Rules and procedure terms

You can find the following terms defined in the relevant [Energy rules](#) and procedures.

AEMO	i
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Registered Participants	3

## Glossary

This glossary lists common terms, acronyms, abbreviations, and measurements. For more terms, see [Industry Terminology](#) on AEMO's website.

### AES

Advanced Encryption Standard

### AEST

Australian Eastern Standard Time (market time)

**aseXML**

A standard for energy transactions in XML. A set of schemas and usage guidelines that define how data should be exchanged under FRC in the gas and electricity industries in Australia.

**Blind Update Tool**

Used for updating current MSATS Standing Data.

**BUT**

Blind Update Tool

**csv**

Comma Separated Values. A file format for data using commas as delimiters.

**csv payload**

Payload

**EMMS**

Electricity Market Management System (formerly MMS); software, hardware, network and related processes.

**Integer**

A whole number, as distinguished from a fraction or a mixed number.

**Market Time**

Refers to the related csv payload Market.

**MSATS**

Retail Market Settlement and Transfer Solution

**NEM Retail**

MSATS and B2B systems

**NEM Wholesale**

Markets Portal, EMMS, Data Model systems

## **Payload**

The content in the csv file. For example: For APIs, it is the data sent by a POST request that sits after the API header. For MSATS transactions, it is the data wrapped in the standard aseXML wrapper. For NEM reports it is the csv payload compressed in a zip file.

## **Real numbers**

Include natural numbers, whole numbers, integers, rational numbers, and irrational numbers. For example, 3, 0, 1.5,  $3/2$ ,  $\sqrt{5}$ , and so on are real numbers.

## **Zip**

A compressed file, with the zip extension. A zip file usually contains one file with a filename extension of XML or csv.

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# Data interchange and data model resources

## Market data

[NEMWEB](#), publicly available market data at no cost. The public data published on AEMO's website is the same as distributed through the participant file server with the exception of participants' private data. The data is in CSV format in many files along with some graphical summaries.

## Software

You can find Data Interchange software in the following locations:

- Data Interchange Help > [Software Releases](#).
- Releases directory on the participant file server: FTP to 146.178.211.2 > Data Interchange, pdrBatcher, pdrLoader, or pdrMonitor.
- Full install: [Data Interchange Online Help > Software Releases](#).

## Reports

- Data Interchange Help > [Data Model Reports](#).

## Releases

- Data Interchange Help > [Release Documents](#).

# Help

- [Data interchange online help](#)

## MSATS resources

[aseXML Standards](#), links to guidelines, schemas, change process, sample files, and white papers.

[Blind Update Tool \(BUT\)](#), **coming soon**. Used for updating current **MSATS Standing Data**.

[Guide to Blind Update Tool \(BUT\)](#), **coming soon**. How to use the BUT Tool.

[Guide to MSATS Reports](#), explains the purpose, attributes, request, and delivery methods for MSATS participant retail reports.

[MSATS Standing Data](#), provides a detailed description of the data items populated in the MSATS NMI Standing Data tables.

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