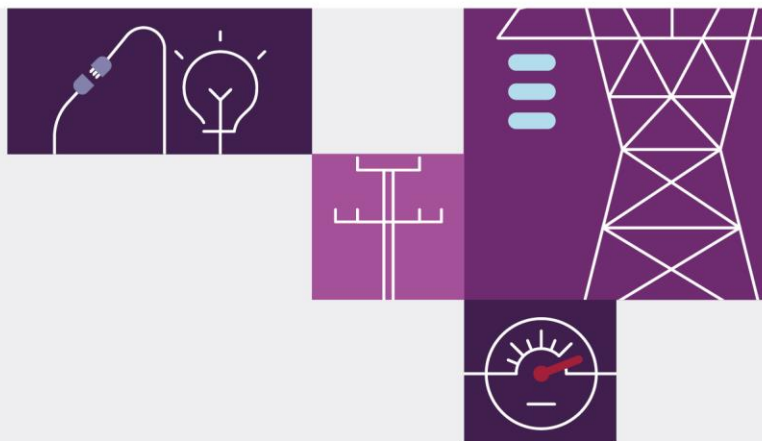# WEMS Submission Specification

September 2022

Version 6.13

Important notice

Purpose

AEMO has prepared this document to provide information about the Wholesale Electricity Market System (WEMS) submission formats required to participate in the Wholesale Electricity Market, as at the date of publication.

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This document or the information in it may be subsequently updated or amended. This document does not constitute legal or business advice, and should not be relied on as a substitute for obtaining detailed advice about the Wholesale Electricity Market Rules or any other applicable laws, procedures or policies. AEMO has made every effort to ensure the quality of the information in this document but cannot guarantee its accuracy or completeness.

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Version control

Version	Release date	Changes
#6.7	02/09/2020	Updated Section 10.1 CRC Application Fields
#6.8	23/09/2020	Updated for RCM 1.18
#6.9	26/11/2020	Updated Section 3 Bilateral
#6.10	29/03/2021	Updated for WEMS 3.38
#6.11	22/11/2021	Updated for RCM 1.24
#6.12	9/03/2022	Updated for RCM 1.26
#6.13	7/09/2022	Updated for RCM 1.29

Contents

1 Introduction

This document describes the file formats used for data exchange between Market Participants and AEMO through the WEMS. File Exchange facilitates the exchange of XML and CSV files for Bilateral, STEM, Balancing and Load Following with functionality within the systems to allow users to perform submit and cancellation requests for each of these submission types.

Bilateral and STEM submission types also allow the user to make query requests to view the current state of the submission. Similar features are also available to Balancing and Load Following submission types through the reporting web services and through the Market Participant Interface (MPI).

2 Submission format details

2.1 XML format

XML documents must conform to an XML schema definition file 'XSD file' (e.g. the mint.xsd) which is available separately to this document. The XSD file contains the format definitions for XML document submission. This document describes the format in a less formal, but more descriptive manner.

Two XSD schema files provide the formal XML specifications for submissions:

- For Bilateral, STEM, and Reserve Capacity submissions (excluding Certification and Bilateral Declarations) this is the **mint.xsd**.

- For Balancing submissions and Load Following submissions, and Bilateral Declarations, this is the **wems-1.x.xsd**.

This document provides example XML files with references to relevant parts of the schemas. Standing submissions and variation submissions cannot be made within the same submission files and therefore separate uploads must be performed for these submissions.

2.1.1 Common mint.xsd XML elements

The mint.xsd file covers validation of Bilateral, STEM and Reserve Capacity (excluding Certification and Bilateral Declarations).

Other submissions that are covered within this document are validated by separate XML Schema Definition XSD files (described later within this document).

Submissions using the mint.xsd must have a root element of <bids_offers> containing a single element of <market_submit>, <market_query> or <market_cancel>.

This is shown in the examples below:

```
<?xml version="1.0" encoding="UTF-8"?>
<bids_offers>
<market_submit trading_date="2011-07-14" application_type="[APPLICATION TYPE]"
participant_name="[PARTICIPANT]"user_name="[USER NAME]">
    [SUBMISSION CONTENT]
</market_submit>
</bids_offers>
```

```
<?xml version="1.0" encoding="UTF-8"?>
<bids_offers>
<market_query trading_date="2011-07-14" application_type="[APPLICATION TYPE]"
participant_name="[PARTICIPANT]"user_name="[USER NAME]">
    [SUBMISSION CONTENT]
</market_query>
</bids_offers>
```

```xml
<?xml version="1.0" encoding="UTF-8"?>
<bids_offers>
<market_cancel trading_date="2011-07-14" application_type="[APPLICATION TYPE]"
participant_name="[PARTICIPANT NAME]"user_name="[USER NAME]">
    [SUBMISSION CONTENT]
</market_cancel>
</bids_offers>
```

The APPLICATION TYPE referenced in the above example varies depending on whether the submission is for Bilateral, STEM or Reserve Capacity. The valid values are shown below:

Submission type	Application type
STEM	STEM
Bilateral	BILATERAL
Reserve Capacity	RESV_CAP_ALLOCATION RESV_CAP_CONFIRM_ALLOCATION RESV_CAP_OFFER LONG_TERM_SPA CAPACITY_CREDITS

The values for this attribute will be covered in the relevant section. Likewise, the submission content varies depending on the type of submission and will be covered in the relevant section.

The PARTICIPANT NAME referenced in the above example refers to the submitting market participant and is validated accordingly.

The USER NAME referenced in the above example refers to the submitting user for the market participant and is validated accordingly.

The top level elements must contain the trading date in the trading_date attribute in 'YYYY-MM-DD' format. For a variation submission, this indicates the trading date on which the variation applies, while for a standing submission, this indicates the date on which the standing submission first applies.

2.1.2   Standing submissions in mint.xsd

When a submission is a standing submission, an XML element detailing the submission will be placed in an element. The submission content element (i.e. the top-level element in the SUBMISSION CONTENT placeholder in Section 2.1.1) must have the standing_flag attribute set to true.

For example, a Bilateral submission may appear as follows:

```xml
<bilateral version_no="1.0" standing_flag="true">
```

A child element is required when the submission is a standing submission containing the standing submission details. These are defined in the standing element in the mint.xsd file, an example of which follows below.

```xml
<standing expiry_date="2011-11-22" type="ALL"/>
```

The details of the standing submission fields are given below:

Attribute	Element	Type	Constraints	Comments
standing_flag	Submission specific element	Boolean	Not required, defaults to false if not present	Whether the submission is a standing submission (true) or a variation submission (false)
expiry_date	standing	Date (YYYY-MM-DD)	Required if standing element is present and not required if cancelling a submission	Expiry of the standing submission
type	standing	String	Valid values: MON, TUE, WED, THU, FRI, SAT, SUN, ALL	The day on which the standing submission applies. ALL is for every day.

If a submission is a **standing submission**, the 'standing_flag' must be set to the value 'true' and the 'type' and 'expiry_date' columns populated with valid values. If the submission is a **variation submission** or a **variation cancel submission**, the 'standing_flag' column must be omitted or set to the value 'false', and the 'type' and 'expiry_date' values omitted.

To **cancel a Standing Submission**, the 'standing_flag' must be set to 'true', 'type' must be specified and 'expiry_date' must be omitted.

2.2 CSV format

All CSV files will consist of a header line, followed by zero or more detail lines.

Depending on the type of submission being made, one or more of the files may be omitted. This will be documented in the specific CSV file format sections, where relevant. The header line of each individual CSV file must contain the comma-separated list of header field names. All fields that are defined for a CSV file format must be present and no fields may be omitted from the header.

All detail lines must contain exactly the same number of fields as specified in the header, i.e. no fields may be omitted in the detail lines, though field values may be omitted if the field is optional.

Standing submissions and variation submissions cannot be made in the same set of files, therefore separate files must be made for each type of submission.

2.2.1 Standing submissions in CSV

Standing submissions for CSV files that are the equivalent of XML files defined in mint.xsd (i.e. Bilateral, STEM and Reserve Capacity submissions) have common fields, as shown below:

Field name	Type	Constraints	Comments
standing_flag	Boolean	Required	Whether the submission (true) is a standing, or (false) a variation submission
standing_day_type	String	Required if standing_flag = true	Valid values: 'MON','TUE', 'WED', 'THU', 'FRI', 'SAT', 'SUN' or 'ALL'
standing_expiry_date	Date (DD/MM/YYYY)	Required if standing_flag = true and action = "SUBMIT"	The date until which the standing submission is valid.

If a submission is a **standing submission**, the 'standing_flag' must be set to the value 'true' and the 'standing_day_type' and 'standing_expiry_date' columns populated with valid values. If the submission is a **variation submission** or a **variation cancel submission**, the 'standing_flag' column must be set to the value 'false' and the 'standing_day_type' and 'standing_expiry_date' values omitted.

To **cancel a Standing Submission**, the standing_flag must be set to true, standing_day_type must be specified and standing_expiry_date must not be set.

2.3 XML and CSV differences

The major difference between fields in XML and CSV submission is in the date format.

XML files require dates to be specified in ISO-8601 format of YYYY-MM-DD. This is the default date format of XML schema definitions (XSD files). CSV files are specified in DD/MM/YYYY format as this is a common format used in Microsoft Excel, which can be used to export CSV files.

XML functionality within the File Exchange covers the ability to submit, query or cancel for Bilateral, STEM and Reserve Capacity (for Balancing and LFAS, no query function is provided as this functionality is covered by another web service and in the MPI). However, CSV functionality within the File Exchange only provides the ability to submit and cancel (for all files).

File Exchange can be made using either one XML file per submission, or one or more CSV files, depending on the submission type.

3 Bilateral

The bilateral submission allows participants to submit their bilateral levels for the trading day into the WEMS. Participants are also able to query and cancel submissions for an individual trading interval, or a range of trading intervals.

3.1 XML format

The XML format is specified by mint.xsd.

The following table contains the details of the nesting structure of elements that comprise a bilateral submission, and the number of times that each element can occur within the context of its parent element.

3.1.1 Structure

Element	mint.xsd type	Min	Max
bilateral	BilateralWaSubmit	1	1
standing	StandingSubmit	0	1
trade_period	TradePeriod	1	48
trade_detail	TradeDetail	1	Unlimited

Attribute details are shown for each element that comprises a bilateral submission. The attributes of the standing element are not covered here, as this is detailed in Section 2.1.2.

Bilateral element

Attribute	Type	Constraints	Comments
version_no	String	Required	Must be set to '1.0'
standing_flag	Boolean	Attribute not required if a variation submission	If true, there must be a standing element contained within the bilateral element – See Section 2.1.2

Trade period element

Attribute	Type	Constraints	Comments
start_hr	Integer	Required	Starting hour, between 0 and 23
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
supply_quantity_mwh	Number	Required	Quantity supplied for bilateral contracts (MWh). Clause of the WEM Rules 6.7.1 (c) i.
wp_load_mwh	Number	Required	Participants must specify a value of 0.

Trade detail element

Attribute	Type	Constraints	Comments
participant_name	String	Required	The name of the other participant in the bilateral contract Clause of the WEM Rules 6.7.1 (c) ii.
demand_quantity_mwh	Number	Required	The quantity of demand requested of the other participant (MWh). Clause of the WEM Rules 6.7.1 (c) iii.

3.1.2 Sample (standing)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="mint.xsd">
    <market_submit trading_date="2011-05-07" application_type="BILATERAL" participant_name="TESTGEN2"
user_name="TESTUSER">
        <bilateral version_no="1.0" standing_flag="true">
            <standing expiry_date="2011-05-28" type="SUN" />
            <trade_period start_hr="8" start_int="1" end_hr="7" end_int="2" wp_load_mwh="10.0"
supply_quantity_mwh="150.0">
                <trade_detail demand_quantity_mwh="-50.0" participant_name="TESTCONS1" />
                <trade_detail demand_quantity_mwh="-100.0" participant_name="TESTCONS2" />
            </trade_period>
        </bilateral>
    </market_submit>
</bids_offers>
```

3.1.3 Sample (standing cancellation)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="mint.xsd">
    <market_cancel trading_date="2011-05-07" application_type="BILATERAL" participant_name="TESTGEN2"
user_name="TESTUSER">
        <bilateral version_no="1.0" standing_flag="true">
            <standing type="SUN">
            </standing>
        </bilateral>
    </market_cancel>
</bids_offers>
```

3.1.4 Sample (variation)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="mint.xsd">
    <market_submit trading_date="2011-05-07" application_type="BILATERAL" participant_name="TESTGEN2"
user_name="TESTUSER">
        <bilateral version_no="1.0" standing_flag="false">
            <trade_period start_hr="8" start_int="1" end_hr="7" end_int="2" wp_load_mwh="10.0"
supply_quantity_mwh="150.0">
                <trade_detail demand_quantity_mwh="-50.0" participant_name="TESTCONS1" />
                <trade_detail demand_quantity_mwh="-100.0" participant_name="TESTCONS2" />
            </trade_period>
        </bilateral>
    </market_submit>
</bids_offers>
```

3.1.5 Sample (variation cancellation)

This sample submission is for illustration purposes only.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="mint.xsd">
    <market_cancel trading_date="2011-05-07" application_type="BILATERAL" participant_name="TESTGEN2"
user_name="TESTUSER">
    </market_cancel>
</bids_offers>
```

3.1.6 Sample (query)

This sample submission is for illustration purposes only.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="mint.xsd">
    <market_query trading_date="2011-05-07" application_type="BILATERAL" participant_name="TESTGEN2"
user_name="TESTUSER">
        <bilateral start_hr="8" start_int="1" end_hr="10" end_int="2" standing_flag="false"
version_no="1.0" />
    </market_query>
</bids_offers>
```

3.2 CSV format

The bilateral CSV submission consists of a single file. Field details for the CSV file are shown below for each element that comprises a bilateral submission. Note that only submit and cancel actions are permitted and no query action is permitted for the CSV transaction. For bilateral CSV submissions, values for supply_quantity_mwh are derived from the negative demand_quantity_mwh value, hence the field is not required in CSV submissions.

3.2.1 Field details

Bilateral.csv

Field name	Type	Constraints	Comments
trading_date	Date (DD/MM/YYYY)	Required	The trading date of the bilateral submission. For standing submissions, the trading date that the standing submission is effective from.
action	String	Required	Either "SUBMIT" for submission, or "CANCEL" for cancel.
standing_flag	Boolean	Required	Whether the submission is a standing (true) or variation (false) submission.
standing_day_type	String	Required if standing_flag = true	Valid values: 'MON', 'TUE', 'WED', 'THU', 'FRI', 'SAT', 'SUN' or 'ALL'. Clause of the WEM Rules 6.7.1 (b) ii.
standing_expiry_date	Date (DD/MM/YYYY)	Required if standing_flag = true and action = "SUBMIT"	The date until which the standing submission is valid. Clause of the WEM Rules 6.7.1 (b) ii.
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
wp_load_mwh	Number	Required	Participants must specify a value of 0.

Field name	Type	Constraints	Comments
participant_name	String	Required	The name of the other participant in the bilateral contract. Clause of the WEM Rules 6.7.1 (c) ii.
demand_quantity_mwh	Number	Required	The quantity demanded by the other participant. Clause of the WEM Rules 6.7.1 (c) iii.

3.2.2 Structure

The following table lists the fields that are relevant for each section contained in the CSV file.

Field group	Fields
Submission	trading_date, action, standing_flag, standing_day_type, standing_expiry_date
Trade Period	start_hr, start_int, end_hr, end_int, wp_load_mwh
Trade Detail	participant_name, demand_quantity_mwh

3.2.3 Constraints

All lines in the file must be specified and contain the same values for the submission fields as specified in the 'Field Group' in 3.2.2 above (i.e. trading_date, action, standing_flag, standing_day_type and standing_expiry_date fields). A submission must be either a standing or a variation submission, not a combination.

All trade details for the same trade period must have the same 'Trade Period' fields, as specified in the 'submission' field group in 3.2.2 above (i.e. start_hr, start_int, end_hr, end_int and wp_load_mwh fields).

When cancelling a Bilateral Standing Submission (action="CANCEL"), the cancellation must be for the same standing_day_type as originally submitted. If standing_day_type = "MON" the cancellation must reference this value.

3.2.4 Sample (standing)

This sample submission is for illustration purposes only.

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,wp_load_mwh,participant_name,demand_quantity_mwh
07/05/2011,submit,true,SUN,28/05/2011,8,1,7,2,10,TESTCONS1,-50
07/05/2011,submit,true,SUN,28/05/2011,8,1,7,2,10,TESTCONS2,-100
```

3.2.5 Sample (standing cancellation)

This sample submission is for illustration purposes only.

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,wp_load_mwh,participant_name,demand_quantity_mwh
07/05/2011,cancel,true,ALL, 7/05/2011,8,1,7,2,0,TESTCONS1,0
07/05/2011,cancel,true,MON, 7/05/2011,8,1,7,2,0,TESTCONS1,0
07/05/2011,cancel,true,TUE, 7/05/2011,8,1,7,2,0,TESTCONS1,0
```

3.2.6 Sample (variation)

This sample submission is for illustration purposes only.

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,wp_load_mwh,participant_name,demand_quantity_mwh
07/05/2011,submit,false,,,8,1,7,2,10,TESTCONS1,-50
07/05/2011,submit,false,,,8,1,7,2,10,TESTCONS2,-100
```

3.2.7 Sample (variation cancellation)

This sample submission is for illustration purposes only.

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,wp_load_mwh,participant_name,demand_quantity_mwh
07/05/2011,cancel,false,,,,,,,,,
```

4 STEM

The STEM submission allows participants to submit details on their intent in the Short Term Energy Market. STEM contains details on facilities, ancillary services, supply portfolio curve and demand portfolio curve. Participants are able to query and cancel submissions for an individual trading interval, or a range of trading intervals.

4.1 XML format

4.1.1 Structure

The XML format is specified by mint.xsd.

The following table contains the details of the nesting structure of elements that comprise a STEM submission, and the number of times that each element can occur within the context of its parent element.

Element	mint.xsd type	Min	Max
Stem	StemSubmit	1	1
Standing	StandingSubmit	0	1
stem_detail	StemDetail	1	48
ancillary_service	AncillaryService	0	1
supply_portfolio_curve	PqCurveWa	1	1
Point	PqPoint	1	Unlimited
demand_portfolio_curve	PqCurveWa	1	1
Point	PqPoint	1	Unlimited
stem_facility_detail	StemFacilityDetail	0	Unlimited
Declaration	DeclarationStem	1	48

Attribute details are shown for each element that comprises a STEM submission. The attributes of the standing element are not covered here as this is detailed in Section 2.1.2.

STEM element

Attribute	Type	Constraints	Comments
version_no	String	Required. Must be set to '1.0'.	
standing_flag	Boolean	Attribute not required if a variation submission	If true, there must be a standing element contained within the stem element. – See Section 2.1.2.

STEM detail element

Attribute	Type	Constraints	Comments
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.

Ancillary service element

Attribute	Type	Constraints	Comments
total_liquid_mwh	Number	Required	Energy reserved for ancillary services from liquid fuelled plant in Megawatt hours (MWh). Clause of the WEM Rules 6.6.1 (c) iii and 6.6.1 (d) iii.
total_non_liquid_mwh	Number	Required	Energy reserved for ancillary services from non-liquid fuelled plant in Megawatt hours (MWh). Clause of the WEM Rules 6.6.1 (c) iii and 6.6.1 (d) iii.

Supply portfolio curve element

There are no attributes for this element; it contains a collection of point elements, as described below.

Demand portfolio curve element

There are no attributes for this element; it contains a collection of point elements, as described below.

Point element

Attribute	Type	Constraints	Comments
price	Number	Required	Energy price at the point in the supply or demand curve in $/MWh. Clause of the WEM Rules 6.6.1 (c) iv & v and 6.6.1 (d) iv & v.
quantity	Number	Required	Quantity of energy at the point in the supply or demand curve in Megawatt hours (MWh). Clause of the WEM Rules 6.6.1 (c) iv & v and 6.6.1 (d) iv & v.

Stem Facility detail element

Attribute	Type	Constraints	Comments
facility_name	String (2 to 32 characters)	Required	Name of the facility. Clause of the WEM Rules 6.6.1 (a).
facility_type	String	Required	Valid values: 'SCHED_GEN', 'NON_SCHED_GEN', 'INTMNT_GEN', 'DISP_LOAD', 'NON_DISP_LOAD', 'CURT_LOAD', 'INTRPT_LOAD', 'INTMNT_NON_DISP_LOAD', 'INTMNT_CURT_LOAD', or 'INTMNT_INTRPT_LOAD'. Clause of the WEM Rules 6.6.1 (a).

Declaration element

Attribute	Type	Constraints	Comments
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
fuel_in_use	String	Required	Valid values: 'LIQUID', 'NON-LIQUID'. Clause of the WEM Rules 6.6.1 (c) i and 6.6.1 (d) i.
unavailable_capacity_mwh	Number	Optional	Capacity which is unavailable. Default is 0. Clause of the WEM Rules 6.6.1 (c) ii and 6.6.1 (d) ii.

4.1.2 Sample (standing)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation="mint.xsd">
    <market_submit application_type="STEM" trading_date="2011-03-09" participant_name="TESTGEN1"
user_name="TESTERG1">
        <stem standing_flag="true" version_no="1.0">
            <standing expiry_date="2011-11-22" type="ALL" />
            <stem_detail start_hr="8" start_int="1" end_hr="7" end_int="2">
                <ancillary_service total_liquid_mwh="0.0" total_non_liquid_mwh="20.0" />
                <supply_portfolio_curve>
                    <point price="0.0" quantity="25.392" />
                </supply_portfolio_curve>
                <demand_portfolio_curve>
                    <point price="435.0" quantity="25.392" />
                </demand_portfolio_curve>
            </stem_detail>
            <stem_facility_detail facility_name="TESTFAC1" facility_type="SCHED_GEN">
                <declaration start_hr="8" start_int="1" end_hr="7" end_int="2" fuel_in_use="NON-LIQUID"
unavailable_capacity_mwh="0.0" />
            </stem_facility_detail>
        </stem>
    </market_submit>
</bids_offers>
```

4.1.3 Sample (standing cancellation)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers>
    <market_cancel application_type="STEM" trading_date="2011-03-09" participant_name="TESTGEN1"
user_name="TESTERG1">
        <stem standing_flag="true" version_no="1.0">
            <standing type="ALL" />
        </stem>
    </market_cancel>
</bids_offers>
```

4.1.4 Sample (variation)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers>
    <market_submit application_type="STEM" trading_date="2011-03-09" participant_name="TESTGEN"
user_name="TESTUSER">
        <stem standing_flag="false" version_no="1.0">
            <stem_detail start_hr="8" start_int="1" end_hr="7" end_int="2">
                <ancillary_service total_liquid_mwh="0.0" total_non_liquid_mwh="20.0" />
                <supply_portfolio_curve>
                    <point price="0.0" quantity="25.392" />
                </supply_portfolio_curve>
                <demand_portfolio_curve>
                    <point price="435.0" quantity="25.392" />
                </demand_portfolio_curve>
            </stem_detail>
            <stem_facility_detail facility_name="TESTFAC1" facility_type="SCHED_GEN">
                <declaration start_hr="8" start_int="1" end_hr="7" end_int="2" fuel_in_use="NON-LIQUID"
unavailable_capacity_mwh="0.0" />
            </stem_facility_detail>
        </stem>
    </market_submit>
</bids_offers>
```

4.1.5 Sample (variation cancellation)

This sample submission is for illustration purposes only.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers>
    <market_cancel application_type="STEM" trading_date="2011-03-09" participant_name="TESTGEN1"
user_name="TESTERG1">
        <stem standing_flag="false" version_no="1.0">
        </stem>
    </market_cancel>
</bids_offers>
```

4.1.6 Sample (query)

This sample submission is for illustration purposes only.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<bids_offers>
    <market_query application_type="STEM" trading_date="2011-03-09" participant_name="TESTGEN1"
user_name="TESTERG1">
        <stem standing_flag="true" version_no="1.0">
            <standing type="ALL" />
        </stem>
    </market_query>
</bids_offers>
```

4.2 CSV format

The STEM CSV format consists of four files that contain details on the STEM submission, including ancillary services, supply portfolio curve, demand portfolio curve and facility declarations. Not all CSV files are required to make up a complete STEM submission. The following table indicates which files are required. Note that only submit and cancel actions are permitted and no query is permitted for the CSV transaction.

File	Required
stem_facility_detail.csv	Not Required
stem_ancillary_service.csv	Not Required
stem_supply_portfolio_curve.csv	Required
stem_demand_portfolio_curve.csv	Required (unless a cancel submission)

4.2.1 Field details

stem_facility_detail.csv

Field name	Type	Constraints	Comments
facility_name	String (2 to 32 characters)	Required	The name of the facility whose details are supplied. Clause of the WEM Rules 6.6.1 (a).
facility_type	String	Required	Valid values: 'SCHED_GEN', 'NON_SCHED_GEN', 'INTMNT_GEN', 'DISP_LOAD', 'NON_DISP_LOAD', 'CURT_LOAD', 'INTRPT_LOAD', 'INTMNT_NON_DISP_LOAD', 'INTMNT_CURT_LOAD', or 'INTMNT_INTRPT_LOAD'. Clause of the WEM Rules 6.6.1 (a).
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.

Field name	Type	Constraints	Comments
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
fuel_in_use	String	Required	Valid values: 'LIQUID', 'NON-LIQUID'. Clause of the WEM Rules 6.6.1 (c) i and 6.6.1 (d) i.
unavailable_capacity_mwh	Number	Optional	Default is 0. Clause of the WEM Rules 6.6.1 (c) ii and 6.6.1 (d) ii.

stem_ancillary_service.csv

Field name	Type	Constraints	Comments
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
total_liquid_mwh	Number	Required	Energy reserved for ancillary services from liquid fuelled plant in Megawatt hours (MWh). Clause of the WEM Rules 6.6.1 (c) iii and 6.6.1 (d) iii.
total_non_liquid_mwh	Number	Required	Energy reserved for ancillary services from non-liquid fuelled plant in Megawatt hours (MWh). Clause of the WEM Rules 6.6.1 (c) iii and 6.6.1 (d) iii.

stem_supply_portfolio_curve.csv

The supply portfolio curve file contains the trading date of the submission, and standing submissions standing details as there will always be at least one supply portfolio curve record.

Field name	Type	Constraints	Comments
trading_date	Date (DD/MM/YYYY)	Required	The trading date of the bilateral submission. For standing submissions, the trading date that the standing submission is effective from.
action	String	Required	Either "SUBMIT" for submission, or "CANCEL" for cancel.
standing_flag	Boolean	Required	Whether the submission is a standing submission (true) or a variation submission (false).
standing_day_type	String	Required if standing_flag = true	Valid values: 'MON', 'TUE', 'WED', 'THU', 'FRI', 'SAT', 'SUN' or 'ALL'. Clause of the WEM Rules 6.3C.6A.
standing_expiry_date	Date (DD/MM/YYYY)	Required if standing_flag = true	The final date on which the standing submission is valid. Clause of the WEM Rules 6.3C.6A.
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
price	Number	Required if action = "SUBMIT"	Energy price at the point in the supply curve in $/MWh. Clause of the WEM Rules 6.6.1 (c) iv & v.
quantity	Number	Required if action = "SUBMIT"	Quantity of energy at the point in the supply curve in Megawatt hours (MWh).

Field name	Type	Constraints	Comments
			Clause of the WEM Rules 6.6.1 (c) iv & v.

stem_demand_portfolio_curve.csv

Field name	Type	Constraints	Comments
start_hr	Integer	Required	Starting hour, between 0 and 23.
start_int	Integer	Required	Starting interval within the start hour. Valid values: 1 and 2.
end_hr	Integer	Required	Ending hour, between 0 and 23.
end_int	Integer	Required	Ending interval within the end hour. Valid values: 1 and 2.
price	Number	Required	Energy price at the point in the demand curve in $/MWh. Clause of the WEM Rules 6.6.1 (d) iv & v.
quantity	Number	Required	Quantity of energy at the point in the demand curve in Megawatt hours (MWh). Clause of the WEM Rules 6.6.1 (d) iv & v.

4.2.2 Structure

The following table shows the sections within the STEM submission, the files in which the sections are contained and the fields in each section.

Section	Files	Fields
STEM submission	stem_supply_portfolio_curve.csv	trading_date, action,standing_flag, standing_day_type, standing_expiry_date
STEM detail	stem_ancillary_service.csv stem_supply_portfolio_curve.csv stem_demand_portfolio_curve.csv	start_hr, start_int, end_hr, end_int
Ancillary Services	stem_ancillary_service.csv	total_liquid_mwh, total_non_liquid_mwh
Supply Portfolio Curve	stem_supply_portfolio_curve.csv	price, quantity
Demand Portfolio Curve	stem_demand_portfolio_curve.csv	price, quantity
Facility Detail	stem_facility_detail.csv	facility_name, facility_type
Facility Declaration	stem_facility_detail.csv	start_hr, start_int, end_hr, end_int, fuel_in_use, unavailable_capacity_mwh

4.2.3 Constraints

All lines in the stem_supply_portfolio_curve.csv file must contain the same values for the 'STEM submission' section, as specified above (i.e. trading_date, action, standing_flag, standing_day_type and standing_expiry_date fields). A submission must be either a standing or variation, not a combination.

The trading_date, action, standing_flag, standing_day_type and standing_expiry_date must have the same values for all rows in the stem_supply_portfolio_curve.csv file.

The stem_ancilliary_service.csv, stem_supply_portfolio_curve.csv and stem_demand_portfolio_curve.csv files contain the start and end trading intervals for which the details apply. If these intervals are duplicated in the separate files, a common stem detail will be created that becomes the parent of the ancillary service, supply portfolio or demand portfolio.

The start and end hour and interval ranges must have the same values across all CSV submission files.

4.2.4 Sample (standing)

These sample submissions are for illustration purposes only.

Sample stem_facility_detail.csv

```
facility_name,facility_type,start_hr,start_int,end_hr,end_int,fuel_in_use,unavailable_capacity_mwh
STHRNCRS_EG,SCHED_GEN,8,1,8,1,NON-LIQUID,0
STHRNCRS_EG,SCHED_GEN,8,2,8,2,NON-LIQUID,0
```

Sample stem_ancillary_service.csv

```
start_hr,start_int,end_hr,end_int,total_liquid_mwh,total_non_liquid_mwh
8,1,7,2,0,25
```

Sample stem_supply_portfolio_curve.csv

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,price,quantity
9/03/2011,submit,true,ALL,22/11/2011,8,1,7,2,0,4.392
```

Sample stem_demand_portfolio_curve.csv

```
start_hr,start_int,end_hr,end_int,price,quantity
8,1,7,2,435,4.392
```

4.2.5 Sample (standing cancellation)

Note: Only a 'stem_supply_portfolio_curve.csv' file is required as part of a STEM cancel submission.

This sample submission is for illustration purposes only.

Sample stem_supply_portfolio_curve.csv

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,price,quantity
9/03/2011,cancel,true,ALL,30/06/2011,8,1,7,2,,
```

4.2.6 Sample (variation)

These sample submissions are for illustration purposes only.

Sample stem_facility_detail.csv

```
facility_name,facility_type,start_hr,start_int,end_hr,end_int,fuel_in_use,unavailable_capacity_mwh
STHRNCRS_EG,SCHED_GEN,8,1,8,1,NON-LIQUID,0
STHRNCRS_EG,SCHED_GEN,8,2,8,2,NON-LIQUID,0
```

Sample stem_ancillary_service.csv

```
start_hr,start_int,end_hr,end_int,total_liquid_mwh,total_non_liquid_mwh
8,1,7,2,0,25
```

Sample stem_supply_portfolio_curve.csv

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_in
t,price,quantity
9/03/2011,submit,false,,,8,1,7,2,0,4.392
```

Sample stem_demand_portfolio_curve.csv

```
start_hr,start_int,end_hr,end_int,price,quantity
8,1,7,2,435,4.392
```

4.2.7 Sample (variation cancellation)

Note: Only a 'stem_supply_portfolio_curve.csv' file is required as part of a STEM cancel submission.

This sample submission is for illustration purposes only.

Sample stem_supply_portfolio_curve.csv

```
trading_date,action,standing_flag,standing_day_type,standing_expiry_date,start_hr,start_int,end_hr,end_int,price,quantity
17/03/2021,cancel,false,,,8,1,7,2,,
```

5 Balancing variation submissions

Balancing variation submissions allow participants to provide their available capacity for Balancing and also declare some or all of their capacity as unavailable. Participants are also able to cancel all Balancing variation submissions for an individual trading interval, or a range of trading intervals. Note that the cancel function will not remove any Balancing standing submissions.

5.1 XML format

5.1.1 Structure

The XML format is specified by wems-1.x.xsd.

The following table contains the details of the nesting structure of elements that comprise a Balancing variation submission, and the number of times that each element can occur within the context of its parent element.

Element	mint.xsd type	Min	Max
balancingVariationSubmission	balancingVariationSubmissionType	1	Unlimited
resourceSubmission	variationSupplyCurveResourceSubmissionType	1	Unlimited
supplyCurve	variationSupplyCurveType	1	48
tranche	trancheType	0	35

BalancingVariationSubmissions element

The balancingVariationSubmissions element is the root element of the document and has no attributes. It contains resourceSubmission elements.

ResourceSubmission element

Attribute	Type	Constraints	Comments
resourceName	resourceName	Required	The name of the Balancing resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
tradingDate	Date (YYYY-MM-DD)	Required	The trading date on which the submissions apply.
action	action	Required	The action types are: "SUBMIT" "CANCEL"

SupplyCurve element

Attribute	Type	Constraints	Comments
startHour	Integer (0 to 23)	Required	The hour within the delivery date that the capacity is effective from.
startInterval	Integer (1 to 2)	Required	The interval within the hour that the capacity is effective from.
endHour	Integer (0 to 23)	Required	The hour within the delivery date that the capacity is effective to.
endInterval	Integer (1 to 2)	Required	The interval within the hour that the capacity is effective to.

Attribute	Type	Constraints	Comments
unavailable	megawattQuantity	Optional	The unavailable capacity of the resource for the interval range in Megawatts (MW). Defaults to 0 if the attribute is not present.

Tranche element

Attribute	Type	Constraints	Comments
price	balancingPriceType	Required	Tranche Price, in $/MWh OR the STRING 'MIN' or 'MAX'. Note that 'MIN' and 'MAX' will use the latest min and max Balancing prices for the submission for the particular fuel type.
quantity	balancingMegawattQuantity	Required	Tranche Size in MW. (Note if used in conjunction with ancillaryPurpose, this is the amount of MW required to be cleared to enable the respective services – i.e. LFAS). Values are sent out MW (not loss adjusted).
maxRamp	rampRate	Required	The maximum rate at which the resource can change its output level in MW/minute.
fuelType	fuelType	Required	Generation fuel type: NON_LIQUID – Non-Liquid LIQUID – Liquid All other values are invalid.
ancillaryPurpose	ancillaryPurpose	Optional	Notification that the submission must be cleared to allow resource to provide Ancillary Services. For IPPs (other than Synergy SAF): LFAS – Load Following For Synergy SAF: OTHER – Other Ancillary Services LFAS – Load Following For Synergy Portfolio: OTHER – Ancillary Services LFAS – Load Following Note that all Ancillary Service quantities must be submitted at either the Minimum STEM price cap or the Alternative Maximum STEM price cap. *Commissioning Tests:* The field is also be used to declare plant undergoing commissioning testing. In such cases, the following shall be entered in this field: COMTEST

5.1.2   Constraints

No trading interval ranges can overlap within a file submission for a given resource.

All tranches for an interval for a specific resource must have the same maxRamp value.

All variation cancel submissions must contain only the 'ResourceSubmission' and 'SupplyCurve' elements (i.e. no Tranche elements).

5.1.3 Sample (variation)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0"?>
<balancingVariationSubmission>
    <resourceSubmission resourceName="TESTGEN1" tradingDate="2005-09-09" action="SUBMIT">
        <supplyCurve startHour="14" startInterval="1" endHour="14" endInterval="1" unavailable="30">
            <tranche price="MAX" quantity="100" maxRamp="2" fuelType="NON_LIQUID" ancillaryPurpose="LFAS"
/>
            <tranche price="MAX" quantity="100" maxRamp="2" fuelType="NON_LIQUID"
ancillaryPurpose="OTHER" />
        </supplyCurve>
        <supplyCurve startHour="14" startInterval="2" endHour="14" endInterval="2">
            <tranche price="200" quantity="250" maxRamp="2" fuelType="NON_LIQUID" />
            <tranche price="100" quantity="350" maxRamp="2" fuelType="NON_LIQUID" />
        </supplyCurve>
    </resourceSubmission>
    <resourceSubmission resourceName="TESTGEN2" tradingDate="2005-09-09" action="SUBMIT">
        <supplyCurve startHour="14" startInterval="2" endHour="14" endInterval="2">
            <tranche price="200" quantity="250" maxRamp="2" fuelType="NON_LIQUID" />
            <tranche price="100" quantity="350" maxRamp="2" fuelType="NON_LIQUID" />
        </supplyCurve>
    </resourceSubmission>
</balancingVariationSubmission>
```

5.1.4 Sample (variation cancellation)

This sample submission is for illustration purposes only.

```xml
<?xml version="1.0"?>
<balancingVariationSubmission>
    <resourceSubmission resourceName="TESTGEN1" tradingDate="2005-09-09" action="CANCEL">
        <supplyCurve startHour="14" startInterval="1" endHour="14" endInterval="1">
        </supplyCurve>
    </resourceSubmission>
</balancingVariationSubmission>
```

5.2 CSV format

5.2.1 Field details

Balancing variation submissions in CSV format comprise a single CSV file. Note that only submit and cancel actions are permitted.

Multiple submissions for the same facility for the same trading interval are allowed in a single CSV file; however, a warning is issued to advise of potential errors.

Note: When the action is "CANCEL", only 'resource_name' and trading date/time fields are required to be populated.

bal_var_sub.csv

Field name	Type	Constraints	Comments
action	String	Required	Either "SUBMIT" for submission, or "CANCEL" for cancel.
resource_name	String	Required	The name of the Balancing resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
trading_date	Date (DD/MM/YYYY)	Required	The trading date on which the submissions apply.

Field name	Type	Constraints	Comments
start_hour	Integer (0 to 23)	Required	The hour within the trading date that the capacity is effective from.
start_interval	Integer (1 to 2)	Required	The interval within the hour that the capacity is effective from.
end_hour	Integer (0 to 23)	Required	The hour within the trading date that the capacity is effective to.
end_interval	Integer (1 to 2)	Required	The interval within the end hour that the capacity is effective to.
submission_type	String	Required (except for action "CANCEL" when it must be omitted)	Submission identifier: BAL – Balancing Submission UNAV – Unavailable declaration (full or partial outage) All other values are invalid.
price	String	Optional	Tranche Price, in $/MWh OR the STRING 'MIN' or 'MAX'. Note that 'MIN' and 'MAX' will use the latest min and max Balancing prices for the submission for the particular fuel type.
quantity	String	Optional	For Balancing: Tranche Size in MW (Note if used in conjunction with ancillary_purpose, this is the amount of MW required to be cleared to enable the respective services – i.e. LFAS) Values are sent out MW (not loss adjusted). For Unavailability: Unavailable amount to be excluded from Balancing in MW Values are sent out MW (not loss adjusted).
max_ramp	Number	Optional	The maximum rate at which the resource can change its output level in MW/minute.
fuel_type	String	Optional	Generation fuel type: NON_LIQUID – Non-Liquid LIQUID - Liquid All other values are invalid
ancillary_purpose	String	Optional	Notification that the submission must be cleared to allow resource to provide Ancillary Services. For IPPs (other than VSAF): LFAS – Load Following For VSAF: OTHER – Other Ancillary Services LFAS – Load Following For Synergy Portfolio: OTHER – Other Ancillary Services LFAS – Load Following Note that all Ancillary Service quantities must be submitted at either the Minimum STEM price cap or the Alternative Maximum STEM price cap *Commissioning Tests:* The field is also be used to declare plant undergoing commissioning testing. In such cases, the following shall be entered in this field: COMTEST

5.2.2　Constraints

All tranches submitted for a trading interval (or intervals) for a specific resource must have the same values in the action, resource_name, start_hour, start_interval, end_hour and end_interval fields.

No trading interval ranges can overlap within a file submission for a given resource.

All cancel submissions must not provide submission_type, price, quantity, max_ramp, fuel_type and ancillary_purpose values.

A cancel submission cancels all Balancing and Unavailability submissions for the date range provided.

All tranches for an interval for a specific resource must have the same max_ramp value.

5.2.3　Sample (variation)

This sample submission is for illustration purposes only.

```
action,resource_name,trading_date,start_hour,start_interval,end_hour,end_interval,submission_type,price,q
uantity,max_ramp,fuel_type,ancillary_purpose
SUBMIT,resource1,24/03/2011,8,1,8,2,BAL,10,5,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,8,1,8,2,BAL,20,10,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,8,1,8,2,BAL,40,20,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,8,1,8,2,BAL,50,5,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,9,1,9,2,BAL,39.95,15,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,9,1,9,2,BAL,49.95,25,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,10,1,10,2,BAL,MIN,10,1,NON_LIQUID,
SUBMIT,resource1,24/03/2011,10,1,10,2,BAL,50,5,1,NON_LIQUID,
SUBMIT,resource1,24/03/2011,10,1,10,2,BAL,100,5,1,NON_LIQUID,
SUBMIT,resource1,24/03/2011,10,1,10,2,BAL,MAX,20,1,NON_LIQUID,
SUBMIT,resource1,24/03/2011,0,1,7,2,BAL,100,10,5,LIQUID,
SUBMIT,resource1,24/03/2011,0,1,7,2,BAL,MAX,30,5,LIQUID,
SUBMIT,resource1,25/03/2011,8,1,8,1,BAL,MIN,12,1,NON_LIQUID,
SUBMIT,resource1,25/03/2011,8,1,8,1,BAL,100,28,1,NON_LIQUID,
SUBMIT,resource2,25/03/2011,8,1,8,1,BAL,-200,25,1,NON_LIQUID,LFAS
SUBMIT,resource2,25/03/2011,8,1,8,1,BAL,-100,25,1,NON_LIQUID,LFAS
SUBMIT,resource2,25/03/2011,8,1,8,1,BAL,-10,50,1,NON_LIQUID,LFAS
SUBMIT,resource2,25/03/2011,8,1,8,1,BAL,10,150,1,NON_LIQUID,LFAS
SUBMIT,resource3,25/03/2011,8,1,7,2,UNAV,,100,,,
```

5.2.4　Sample (variation cancellation)

This sample submission is for illustration purposes only.

```
action,resource_name,trading_date,start_hour,start_interval,end_hour,end_interval,submission_type,price,q
uantity,max_ramp,fuel_type,ancillary_purpose
CANCEL,resource1,24/03/2011,8,1,13,2,,,,,,
```

6 Balancing standing submissions

Standing Balancing submissions allow participants to provide their capacity for Balancing and standing declaration of plant unavailability for use whenever variation submissions are not present. Participants are also able to cancel all Balancing (standing and variation) submissions from the start of a trading day, for all future trading days.

6.1 XML format

6.1.1 Structure

The XML format is specified by wems-1.x.xsd.

The following table contains the details of the nesting structure of elements that comprise a standing Balancing submission, and the number of times that each element can occur within the context of its parent element.

Element	mint.xsd type	Min	Max
balancingStandingSubmission	balancingStandingSubmission	0	Unlimited
resourceSubmission	standingResourceSubmission	1	Unlimited
supplyCurve	supplyCurve	0	48
tranche	tranche	0	35

BalancingStandingSubmissions element

The balancingStandingSubmissions element is the root element of the document and has no attributes. It contains resourceSubmission elements.

ResourceSubmission element

Attribute	Type	Constraints	Comments
resourceName	resourceName	Required	The name of the Balancing resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
effectiveTradingDate	Date (YYYY-MM-DD)	Required	The trading date from which the standing submission applies.
action	action	Required	The action types are: "SUBMIT" "CANCEL" Note that a "CANCEL" action will cancel Balancing standing and variation submissions from an effective Trading Interval.

SupplyCurve element

The SupplyCurve element is not required for a cancellation.

Attribute	Type	Constraints	Comments
startHour	Integer (0 to 23)	Required	The hour within trading day that the capacity is effective from.

Attribute	Type	Constraints	Comments
startInterval	Integer (1 to 2)	Required	The interval within the hour that the capacity is effective from.
endHour	Integer (0 to 23)	Required	The hour within the trading day that the capacity is effective to.
endInterval	Integer (1 to 2)	Required	The interval within the hour that the capacity is effective to.
unavailable	megawattQuantity	Optional	The unavailable capacity of the resource for the interval range in Megawatts (MW). Defaults to 0 if the attribute is not present.

Tranche element

The tranche element is not required for a cancellation.

Attribute	Type	Constraints	Comments
price	balancingPriceType	Required	Tranche Price, in $/MWh OR the STRING 'MIN' or 'MAX'. Note that 'MIN' and 'MAX' will use the latest min and max Balancing prices for the submission for the particular fuel type.
quantity	balancingMegawattQuantity	Required	Tranche Size in MW. (Note if used in conjunction with ancillaryPurpose, this is the amount of MW required to be cleared to enable the respective services – i.e. LFAS). Values are sent out MW (not loss adjusted).
maxRamp	rampRate	Required	The maximum rate at which the resource can change its output level in MW/minute.
fuelType	fuelType	Required	Generation fuel type: NON_LIQUID – Non-Liquid LIQUID - Liquid All other values are invalid.
ancillaryPurpose	ancillaryPurpose	Optional	Notification that the submission must be cleared to allow resource to provide Ancillary Services. For IPPs (other than Synergy SAF): LFAS – Load Following For Synergy SAF: OTHER – Other Ancillary Services LFAS – Load Following For Synergy Portfolio: OTHER – Other Ancillary Services LFAS – Load Following Note that all Ancillary Service quantities must be submitted at either the Minimum STEM price cap or the Alternative Maximum STEM price cap. *Commissioning Tests:* The field is also be used to declare plant undergoing commissioning testing. In such cases, the following shall be entered in this field: COMTEST

6.1.2 Constraints

All standing cancel submissions must contain only the 'ResourceSubmission' element (i.e. only attributes: resourceName, effectiveTradingDate, action).

Each standing submission must contain a complete submission covering each trading interval within a trading day in order for the submission to be valid.

All tranches for an interval for a specific resource must have the same maxRamp value.

No trading interval ranges can overlap within a file submission for a given resource.

6.1.3 Sample (standing)

This sample submission is for illustration purposes only.

```
<?xml version="1.0"?>
<balancingStandingSubmission>
    <resourceSubmission resourceName="TESTGEN1" effectiveTradingDate="2011-09-09" action="SUBMIT">
        <supplyCurve startHour="8" startInterval="1" endHour="7" endInterval="2">
            <tranche price="MAX" quantity="100" maxRamp="2" fuelType="NON_LIQUID" />
            <tranche price="MAX" quantity="100" maxRamp="2" fuelType="NON_LIQUID" ancillaryPurpose="LFAS"
/>
        </supplyCurve>
    </resourceSubmission>
</balancingStandingSubmission>
```

6.1.4 Sample (standing cancellation)

This sample submission is for illustration purposes only.

```
<?xml version="1.0"?>
<balancingStandingSubmission>
    <resourceSubmission resourceName="TESTGEN1" effectiveTradingDate="2011-09-09" action="CANCEL">
    </resourceSubmission>
</balancingStandingSubmission>
```

6.2 CSV format

6.2.1 Field details

Standing Balancing submissions in CSV format comprise a single CSV file. Note that only submit and cancel actions are permitted.

Note: When the action is "CANCEL", only 'resource_name' and 'effective_trading_date' fields are required to be populated.

bal_std_sub.csv

Field name	Type	Constraints	Comments
action	String	Required	Either "SUBMIT" for submission, or "CANCEL" for cancel.
resource_name	String	Required	The name of the Balancing resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
effective_trading_date	Date (DD/MM/YYYY)	Required	The trading date from which the standing submission applies.
start_hour	Integer (0 to 23)	Required	The hour within the delivery date that the capacity is effective from.

Field name	Type	Constraints	Comments
		(except for action "CANCEL" when it must be omitted)	
start_interval	Integer (1 to 2)	Required (except for action "CANCEL" when it must be omitted)	The interval within the hour that the capacity is effective from.
end_hour	Integer (0 to 23)	Required (except for action "CANCEL" when it must be omitted)	The hour within the delivery date that the capacity is effective to.
end_interval	Integer (1 to 2)	Required (except for action "CANCEL" when it must be omitted)	The hour within the delivery date that the capacity is effective to.
submission_type	String	Required (except for action "CANCEL" when it must be omitted)	Submission identifier: BAL – Balancing Submission UNAV – Unavailable declaration (full or partial outage) All other values are invalid.
price	String	Optional	Tranche Price, in $/MWh OR the STRING 'MIN' or 'MAX'. Note that 'MIN' and 'MAX' will use the latest min and max Balancing prices for the submission for the particular fuel type.
quantity	String	Optional	For Balancing: Tranche Size in MW. (Note that if used in conjunction with ancillary_purpose, this is the amount of MW required to be cleared to enable the respective services – e.g. LFAS.) Values are sent out MW (not loss-adjusted). For Unavailability: Unavailable amount to be excluded from Balancing in MW. Values are sent out MW (not loss-adjusted).
max_ramp	Number	Optional	The maximum rate at which the resource can change its output level in MW/minute.
fuel_type	String	Optional	Generation fuel type: NON_LIQUID – Non-Liquid LIQUID - Liquid All other values are invalid.
ancillary_purpose	String	Optional	Notification that the submission must be cleared to allow resource to provide Ancillary Services. For IPPs (other than Synergy SAF): LFAS – Load Following For VSAF: OTHER – Other Ancillary Service LFAS – Load Following For Synergy Portfolio: OTHER – Other Ancillary Service LFAS – Load Following

Field name	Type	Constraints	Comments
			Note that all Ancillary Service quantities must be submitted at either the Minimum STEM price cap or the Alternative Maximum STEM price cap.
			Commissioning Tests:
			The field is also be used to declare plant undergoing commissioning testing. In such cases, the following shall be entered in this field:
			COMTEST

6.2.2   Constraints

All tranches submitted for a trading interval (or intervals) for a specific resource must have the same values in the action, resource_name, effective_date, start_hour, start_interval, end_hour and end_interval fields.

No trading interval ranges can overlap within a file submission for a given resource.

All cancel submissions must not provide start_hour, start_interval, end_hour, end_interval, submission_type, price, quantity, max_ramp, fuel_type and ancillary_purpose.

A cancel submission cancels all Balancing and Unavailability standing and variation submissions from the start of the effective_trading_date provided.

All tranches for an interval for a specific resource must have the same max_ramp value.

6.2.3   Sample (standing)

This sample submission is for illustration purposes only.

```
action,resource_name,effective_trading_date,start_hour,start_interval,end_hour,end_interval,submission_ty
pe,price,quantity,max_ramp,fuel_type,ancillary_purpose
SUBMIT,resource1,24/03/2011,8,1,8,2,BAL,50,20,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,8,1,8,2,BAL,100,20,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,9,1,9,2,BAL,10,15,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,9,1,9,2,BAL,50,25,1,NON_LIQUID,OTHER
SUBMIT,resource1,24/03/2011,10,1,10,2,BAL,MIN,10,1,NON_LIQUID,
SUBMIT,resource1,24/03/2011,10,1,10,2,BAL,50,30,1,NON_LIQUID,
SUBMIT,resource1,24/03/2011,0,1,7,2,BAL,50,5,3,LIQUID,
SUBMIT,resource1,24/03/2011,0,1,7,2,BAL,150,35,3,LIQUID,
SUBMIT,resource1,25/03/2011,8,1,8,1,BAL,MIN,5,1,NON_LIQUID,
SUBMIT,resource1,25/03/2011,8,1,8,1,BAL,-100,5,1,NON_LIQUID,
SUBMIT,resource1,25/03/2011,8,1,8,1,BAL,50,10,1,NON_LIQUID,
SUBMIT,resource1,25/03/2011,8,1,8,1,BAL,100,20,1,NON_LIQUID,
SUBMIT,resource2,25/03/2011,8,1,8,1,BAL,-25,20,2,NON_LIQUID,OTHER
SUBMIT,resource2,25/03/2011,8,1,8,1,BAL,50,180,2,NON_LIQUID,OTHER
SUBMIT,resource3,25/03/2011,8,1,7,2,UNAV,,100,,,
```

6.2.4   Sample (standing cancellation)

This sample submission is for illustration purposes only.

```
action,resource_name,effective_trading_date,start_hour,start_interval,end_hour,end_interval,submission_ty
pe,price,quantity,max_ramp,fuel_type,ancillary_purpose
CANCEL,resource1,24/03/2011,,,,,,,,,,
```

7 Load following variation submission

The Load Following variation submission allows participants to submit prices and quantities for use in the Load Following auction that determines which participants are selected to provide the Load Following service. Participants are also able to cancel all Load Following variation submissions for an individual trading interval, or a range of trading intervals. Note that the cancel function will not remove any Load Following standing submissions.

Each submission is full and complete. Any update via a Load Following variation submission for an interval will overwrite any previous Load Following submissions for the same type. For example if an interval previously had both 'LFAS_UP' and 'LFAS_DN' types submitted, then when a new submission is received for only 'LFAS_UP', the effective submission would comprise of the LFAS_DN of the first submission and the LFAS_UP of the second submission.

7.1 XML format

7.1.1 Structure

The XML format is specified by wems-1.x.xsd.

The following table contains the elements that comprise the Load Following variation submission together with the minimum and maximum occurrences of each element in the context of its parent element.

Element	mint.xsd type	Min	Max
loadFollowingVariationSubmission	loadFollowingVariationSubmission	1	1
resourceSubmission	variationLoadFollowingResourceSubmission	1	Unlimited
offer	loadFollowingOffer	1	Unlimited
band	loadFollowingBand	0	Unlimited

LoadFollowingVariationSubmission element

The loadFollowingVariationSubmission element has no attributes. It is the root element that contains resourceSubmission elements.

ResourceSubmission element

Attribute	Type	Constraints	Comments
resourceName	resourceName	Required	The name of the LFAS resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
tradingDate	Date (YYYY-MM-DD)	Required	The trading date on which the submission applies.
action	action	Required	The action types are: "SUBMIT" "CANCEL"

Offer element

Attribute	Type	Constraints	Comments
type	loadFollowingOfferType	Required	The type of submission. LFAS_UP – a Load Following offer up LFAS_DN – a Load Following offer down BACKUP_LFAS_UP – backup Load Following offer up BACKUP_LFAS_DN – backup Load Following offer down CANCEL – cancellation of all Load Following variation submissions for the interval range.
startHour	Integer (0 to 23)	Required	The hour within the delivery date that the submission is effective from.
startInterval	Integer (1 to 2)	Required	The interval within the hour that the submission is effective from.
endHour	Integer (0 to 23)	Required	The hour within the delivery date that the submission is effective to.
endInterval	Integer (1 to 2)	Required	The interval within the hour that the submission is effective to.

Band element (not required for cancel)

Attribute	Type	Constraints	Comments
price	megawattPrice	Required	The enablement price offered for the band in $/MW.
size	megawattQuantity	Optional	The amount of Load Following capacity offered for the band in MW. All 'size' values are positive. (Must not be included for BACKUP_LFAS_UP or BACKUP_LFAS_DN.)

7.1.2   Constraints

No trading interval ranges can overlap within a file submission for a given resource.

All variation cancel submissions must contain only the 'ResourceSubmission' and 'Offer' elements (i.e. no 'Band' elements).

7.1.3   Sample (variation)

This sample submission is for illustration purposes only.

```
<loadFollowingVariationSubmission>
    <resourceSubmission resourceName="TEST1" tradingDate="2011-07-18" action="SUBMIT">
        <offer type="LFAS_UP" startHour="10" startInterval="1" endHour="10" endInterval="2">
            <band size="15" price="350"/>
        </offer>
        <offer type="LFAS_DN" startHour="10" startInterval="1" endHour="10" endInterval="2">
            <band size="25" price="270"/>
        </offer>
    </resourceSubmission>
</loadFollowingVariationSubmission>
```

7.1.4   Sample (variation cancellation)

This sample submission is for illustration purposes only.

```
<loadFollowingVariationSubmission>
    <resourceSubmission resourceName="TEST1" tradingDate="2011-07-18" action="CANCEL">
        <offer type="CANCEL" startHour="10" startInterval="1" endHour="10" endInterval="2">
```

```
            </offer>
        </resourceSubmission>
</loadFollowingVariationSubmission>
```

7.2 CSV format

7.2.1 Field details

Load following variation submissions in CSV format comprise a single CSV file. Note that only submit and cancel actions are permitted.

Multiple submissions for the same facility for the same trading interval will be allowed in a single CSV file, however a warning will be issued to advise of potential errors.

Note: When the action type is "CANCEL", only 'resource_name' and trading date/time fields are required to be populated.

lf_var_sub.csv

Field name	Type	Constraints	Comments
action	String	Required	Either "SUBMIT" for submission, or "CANCEL" for cancel.
resource_name	String	Required	The name of the LFAS resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
trading_date	Date (DD/MM/YYYY)	Required	The trading date on which the submission applies.
start_hour	Integer (0 to 23)	Required	The hour within the delivery date that the submission is effective from.
start_interval	Integer (1 to 2)	Required	The interval within the hour that the submission is effective from.
end_hour	Integer (0 to 23)	Required	The hour within the delivery date that the submission is effective to.
end_interval	Integer (1 to 2)	Required	The interval within the hour that the submission is effective to.
type	String	Required (except for action "CANCEL" when it must be omitted)	The type of submission. LFAS_UP – a Load Following offer up LFAS_DN – a Load Following offer down BACKUP_LFAS_UP – backup Load Following offer up BACKUP_LFAS_DN – backup Load Following offer down
price	Number	Optional	The enablement price offered for the band in $/MW.
size	Number	Optional	The amount of Load Following capacity offered for the band in MW. All 'size' values are positive. Must be omitted for BACKUP submissions.

7.2.2 Constraints

All LFAS bands submitted for a trading interval (or interval range) for a specific resource must contain the same values for action, resource_name, start_hour, start_interval, end_hour, end_interval and type.

No trading interval ranges can overlap within a file submission for a given resource.

All cancel submissions must not provide type, price and size values.

A cancel submission cancels all variation LFAS submissions for the date range provided.

All tranches for an interval must have the same ramp rate.

7.2.3   Sample (variation)

This sample submission is for illustration purposes only.

```
action,resource_name, trading_date, start_hour, start_interval, end_hour, end_interval, type,price,size
SUBMIT,TEST1,18/07/2011,8,1,12,2,LFAS_UP,270,20
SUBMIT,TEST1,18/07/2011,8,1,12,2,LFAS_DN,300,20
```

7.2.4   Sample (variation cancellation)

This sample submission is for illustration purposes only.

```
action,resource_name, trading_date, start_hour, start_interval, end_hour, end_interval, type,price,size
CANCEL,TEST1,18/07/2011,5,1,13,2,,,
```

8 Load Following standing submission

Standing Load Following submissions allow participants to provide price and quantities that will be used in the Load Following auction to determine which participants are selected to provide Load Following. Participants are also able to cancel all Load Following (standing and variation) submissions from an individual trading interval, for all future trading intervals.

Standing LFAS submissions are not mandatory, however if present, these will apply when there are no variation LFAS submissions applicable for a trading interval.

Any update to a standing Load Following submission for an interval will overwrite any previous standing Load Following submissions for the same type for that trading interval. For example if an interval previously had both 'LFAS_UP' and 'LFAS_DN' types submitted, then when a new submission is received for only 'LFAS_UP', the effective submission would comprise of the LFAS_DN of the first submission and the LFAS_UP of the second submission.

8.1 XML format

8.1.1 Structure

The XML format is specified by wems-1.x.xsd.

The following table contains the elements that comprise Load Following standing submissions together with the minimum and maximum occurrences of each element in the context of its parent element.

Element	mint.xsd type	Min	Max
loadFollowingStandingSubmission	loadFollowingStandingSubmission	1	1
resourceSubmission	standingLoadFollowingResourceSubmission	0	Unlimited
offer	loadFollowingOffer	0	Unlimited
band	loadFollowingBand	0	Unlimited

LoadFollowingStandingSubmission element

The loadFollowingStandingSubmission element has no attributes. It is the root element that contains resourceSubmission elements.

ResourceSubmission element

Attribute	Type	Constraints	Comments
resourceName	resourceName	Required	The name of the LFAS resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
effectiveTradingDate	Date (YYYY-MM-DD)	Required	The trading date from which the standing Load Following submission applies.
action	action	Required	The action types are: "SUBMIT" "CANCEL"

Attribute	Type	Constraints	Comments
			Note that a "CANCEL" action will cancel Load Following standing and variation submissions from the effective Trading Date.

Offer element

Attribute	Type	Constraints	Comments
type	loadFollowingOfferType	Required	The type of submission LFAS_UP – A Load Following offer up LFAS_DN – A Load Following offer down BACKUP_LFAS_UP – backup Load Following offer up BACKUP_LFAS_DN – backup Load Following offer down
startHour	Integer (0 to 23)	Required	The hour within the delivery date that the submission is effective from.
startInterval	Integer (1 to 2)	Required	The interval within the hour that the submission is effective from.
endHour	Integer (0 to 23)	Required	The hour within the delivery date that the submission is effective to.
endInterval	Integer (1 to 2)	Required	The interval within the hour that the submission is effective to

Band element

This element is not required for a cancellation submission.

Attribute	Type	Constraints	Comments
price	Number	Required	The enablement price offered for the band in $/MW
size	Number	Optional	The amount of Load Following capacity offered for the band in MW. All 'size' values are positive. Must not be included for BACKUP_LFAS_UP and BACKUP_LFAS_DN.

8.1.2   Constraints

All standing cancel submissions must contain only the 'ResourceSubmission' element (i.e. only attributes: resourceName, effectiveTradingDate, action)

No trading interval ranges can overlap within a file submission for a given resource.

8.1.3   Sample (standing)

This sample submission is for illustration purposes only.

```
<loadFollowingStandingSubmission>
    <resourceSubmission resourceName="TESTGEN1" effectiveTradingDate="2011-07-18" action="SUBMIT">
        <offer type="LFAS_UP" startHour="10" startInterval="1" endHour="10" endInterval="2">
            <band size="15" price="270"/>
        </offer>
        <offer type="LFAS_DN" startHour="10" startInterval="1" endHour="10" endInterval="2">
            <band size="25" price="350"/>
        </offer>
    </resourceSubmission>
</loadFollowingStandingSubmission>
```

8.1.4 Sample (standing cancellation)

This sample submission is for illustration purposes only.

```
<loadFollowingStandingSubmission>
    <resourceSubmission resourceName="TESTGEN1" effectiveTradingDate="2011-07-18" action="CANCEL">
    </resourceSubmission>
</loadFollowingStandingSubmission>
```

8.2 CSV format

8.2.1 Field details

Standing Load Following submissions in CSV format comprise a single CSV file. Note that only submit and cancel actions are permitted.

Note: When the action is "CANCEL", only 'resource_name' and 'effective_trading_date' fields are required to be populated.

lf_std_sub.csv

Field name	Type	Constraints	Comments
action	String	Required	Either "SUBMIT" for submission, or "CANCEL" for cancel.
resource_name	String	Required	The name of the generation resource (the facility name or 'Portfolio' for Synergy Portfolio Supply Curve).
effective_trading_date	Date (DD/MM/YYYY)	Required	The trading date on which the standing submission is effective from.
start_hour	Integer (0 to 23)	Required (except for action 'CANCEL' when it must be omitted)	The hour within the trading day that the submission is effective from.
start_interval	Integer (1 to 2)	Required (except for action 'CANCEL' when it must be omitted)	The interval within the hour that the submission is effective from.
end_hour	Integer (0 to 23)	Required (except for action 'CANCEL' when it must be omitted)	The hour within the trading day that the submission is effective to.
end_interval	Integer (1 to 2)	Required (except for action 'CANCEL' when it must be omitted)	The interval within the hour that the submission is effective to.
type	String	Required (except for action 'CANCEL' when it must be omitted)	The type of submission. LFAS_UP – a Load Following offer up LFAS_DN – a Load Following offer down BACKUP_LFAS_UP – backup Load Following offer up BACKUP_LFAS_DN – backup Load Following offer down All other values are invalid.
price	Number	Optional	The enablement price offered for the band in $/MW.
size	Number	Optional	The amount of Load Following capacity offered for the band in MW. All 'size' values are positive. Must be omitted for Backup submissions.

8.2.2   Constraints

All LFAS bands submitted for a trading interval (or interval range) for a specific resource must contain the same values for action, resource_name, start_hour, start_interval, end_hour, end_interval and type.

No trading interval ranges can overlap within a file submission for a given resource.

All cancel submissions must not provide start_hour, start_interval, end_hour, end_interval, type, price and size values.

A cancel submission cancels all LFAS standing and variation submissions from the start of the effective_trading_date provided.

8.2.3   Sample (standing)

This sample submission is for illustration purposes only.

```
action,resource_name,effective_trading_date,start_hour,start_interval,end_hour,end_interval,type,price,si
ze
SUBMIT,TESTGEN1,18/07/2011,8,1,12,2,LFAS_UP,270,20
SUBMIT,TESTGEN1,18/07/2011,8,1,12,2,LFAS_DN,300,20
```

8.2.4   Sample (standing cancellation)

This sample submission is for illustration purposes only.

```
action,resource_name,effective_trading_date,start_hour,start_interval,end_hour,end_interval,type,price,si
ze
CANCEL,TESTGEN1,18/09/2011,,,,,,,
```

9 Web Services submissions – Balancing and LFAS

9.1 Web Services Submissions – upload and validate

Web service submissions provide the same options and support the same exchange format as the MPI (File Exchange), so given an XML document for a submission, it can either be submitted manually via the MPI or programmatically via the appropriate web service:

https://wems.aemo.com.au/mpi/ws/trading/v1

For each submission type, the web service offers four options:

upload<submission>

e.g. uploadBalancingVariationSubmission

This submits a Balancing variation to WEMS.

validate<submission>

e.g. validateLoadFollowingStandingSubmission

Performs validation of the submission, but does not submit any data. This is useful for testing during system development or fault-finding.

upload<submission>Documents

e.g. uploadLoadFollowingStandingSubmissionDocuments

Allows upload of a set of submissions.

validate<submission>Documents

e.g validateBalancingVariationSubmissionDocuments

Allows validation of a set of submissions.

9.2 Allow Gate Closure violation/discard file on error

The submission message includes two boolean elements which are equivalent to the checkboxes of the same name in the MPI.

Both elements are optional and omitting either from the request is equivalent to setting it to 'false'.

By setting Allow Gate Closure Violation to true, the system will accept the submission even if it is after gate closure.

By setting Discard File on Error to true, the system will discard the entire submission if any tranche is in error. The normal behaviour (discardFileOnError=false) is for the system to accept all valid tranches and ignore the invalid ones.

The element names and locations for these flags are described in the XSD for each submission and also in the examples in the following sections.

Refer to the Balancing and Load Following Submissions - User Guide for more information on these fields.

Note: For LFAS requests, the element is named 'Allow_Gate_Closure_Violation' but for Balancing submissions it is named 'allow_gate_closure_violation'.

9.3 Validation

To validate a submission, the request should be created as follows. This example shows a BalancingVariationSubmission.

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://wems.aemo.com.au/xml/ns/balancing/2.0"
xmlns:ns1="http://wems.aemo.com.au/xml/ns/wems/1.0">
  <soapenv:Header/>
  <soapenv:Body>
   <ns:validateBalancingVariationSubmission>
     <ns:submission_name>Example Submission 123</ns:submission_name>
     <ns:submission_documents>
      <ns1:resourceSubmission resourceName="?" action="?" tradingDate="?">
        <ns1:supplyCurve unavailable="0" startHour="?" startInterval="?" endHour="?" endInterval="?">
         <ns1:tranche price="?" quantity="?" maxRamp="?" fuelType="?" ancillaryPurpose="?"/>
        </ns1:supplyCurve>
      </ns1:resourceSubmission>
     </ns:submission_documents>
     <ns:allow_gate_closure_violation>false</ns:allow_gate_closure_violation>
     <ns:discard_file_on_error>true</ns:discard_file_on_error>
   </ns:validateBalancingVariationSubmission>
  </soapenv:Body>
</soapenv:Envelope>
```

To validate a set of submissions in a single request, the request should be created as follows:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://wems.aemo.com.au/xml/ns/balancing/2.0">
  <soapenv:Header/>
  <soapenv:Body>
   <ns:validateBalancingStandingSubmissionDocuments>
     <ns:submission_name>Submission ABC</ns:submission_name>
     <ns:submission_documents>
       (INSERT ONE OR MORE DOCUMENTS HERE)
     </ns:submission_documents>
     <ns:discard_file_on_error>false</ns:discard_file_on_error>
   </ns:validateBalancingStandingSubmissionDocuments>
  </soapenv:Body>
</soapenv:Envelope>
```

9.4 Upload

To upload a submission via web services, the request (as defined in
https://wems.aemo.com.au/mpi/ws/balancing/submissions/v2?wsdl and
https://wems.aemo.com.au/mpi/ws/lfas/submissions/v2?wsdl) should be of the form:

```
<upload<Type>Submission>
<submission_name>NAME</submission_name>
<submission>
...
</submission>
</discard_file_on_error>BOOLEAN</discard_file_on_error>
</upload<Type>Submission>
```

For example:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://wems.aemo.com.au/xml/ns/balancing/2.0"
xmlns:ns1="http://wems.aemo.com.au/xml/ns/wems/1.0">
  <soapenv:Header/>
  <soapenv:Body>
   <ns:uploadBalancingStandingSubmission>
     <ns:submission_name>SUBMISSION 123</ns:submission_name>
     <ns:submission>
      <ns1:resourceSubmission resourceName="?" action="?" effectiveTradingDate="?">
        <ns1:supplyCurve unavailable="0" startHour="?" startInterval="?" endHour="?" endInterval="?">
         <ns1:tranche price="?" quantity="?" maxRamp="?" fuelType="?" ancillaryPurpose="?"/>
</ns1:supplyCurve>
      </ns1:resourceSubmission>
     </ns:submission>
     <ns:discard_file_on_error>false</ns:discard_file_on_error>
   </ns:uploadBalancingStandingSubmission>
  </soapenv:Body>
</soapenv:Envelope>
To update a set of submissions via web services, the request should be of the form:
<upload<Type>SubmissionDocuments>
<submission_name>NAME</submission_name>
<submission_documents>
<submission/>
<submission/>
...
<submission/>
...
<submission/>
...
...
</submission_documents>
</discard_file_on_error>BOOLEAN</discard_file_on_error>
</upload<Type>SubmissionDocuments>
```

For example:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://wems.aemo.com.au/xml/ns/balancing/2.0">
  <soapenv:Header/>
  <soapenv:Body>
   <ns:uploadBalancingStandingSubmissionDocuments>
     <ns:submission_name>SUBMISSIONS 123to137</ns:submission_name>
     <ns:submission_documents>
      (insert consecutive documents here)
     </ns:submission_documents>
     <ns:discard_file_on_error>false</ns:discard_file_on_error>
   </ns:uploadBalancingStandingSubmissionDocuments>
  </soapenv:Body>
</soapenv:Envelope>
```

10 Certified Reserve Capacity (CRC) applications

CRC Applications are accessible in the RCM portal by navigating through MPI>Reserve Capacity>Reserve Capacity Mechanism. When the certification submission window opens, applications are automatically generated with an "OPEN" status. If an application for CRC from the previous Capacity Year exists, some of the data will be cloned to the current Capacity Year's application.

From the 2021 Reserve Capacity Cycle, CRC applications will consist of Facility level (Section 10.1) and component level (Section 10.2) information. Each Facility (except for Demand Side Programmes) can have multiple components comprised of:

- Non-Intermittent Generating Systems (NIGS).
- Intermittent Generating Systems (IGS).
- Electric Storage Resources (ESR).
- Small Aggregation (AGG).

10.1 CRC Application fields

Scheduled Facility and Semi-Scheduled Facility

Field name	Type	Constraints
Network Access Confirmation	Document	Mandatory
Declared Sent Out Capacity (DSOC)	Numeric input	Mandatory, non-negative, 3 decimals
Contract Expiry	Date	Mandatory
Description of Facility	Document	Mandatory
Nameplate Capacity	Calculated value	Calculated by the system as the sum of nameplate capacity for the components
Operating Restrictions	Document	Mandatory
Is this a Network Augmentation Funding Facility?	Radio button	Mandatory if the Market Participant submitted an Expression of Interest nominating the Facility as a Network Augmentation Funding Facility
Network Augmentation Funding Facility supporting information	Document	Mandatory if Network Augmentation Funding Facility = 'Yes'
Will the Facility be subject to a Non-Co-optimised Essential System Service (NCESS) Contract?	Radio button	Mandatory
NCESS supporting information	Document	Mandatory if NCESS = 'Yes'
Minimum Stable Loading Level	Numeric input	Mandatory for new Facilities, optional for existing Facilities, non-negative, 3 decimals
Minimum stable loading level supporting information	Document	Mandatory if Minimum Stable Loading Level is not null
Commercial Arrangements (if owner and operator differ)	Document	Optional

Field name	Type	Constraints
Offtake/Power Purchase Agreement	Document	Optional
Confirming Conditional CRC	Radio button	Mandatory
Is this a Balancing Facility	Radio button	Mandatory
Balancing Facility Documentation	Document	Optional, available when Balancing Facility = 'Yes'
Decommission Date (if within capacity year)	Date	Optional
Additional Supporting Documentation	Document	Optional
Obligation Date	Date	Mandatory for new applications

Non-Scheduled Facility

Field name	Type	Constraints
Network Access Confirmation	Document	Mandatory
Declared Sent Out Capacity (DSOC)	Numeric input	Mandatory, non-negative, 3 decimals
Contract Expiry	Date	Mandatory
Description of Facility	Document	Mandatory
Nameplate Capacity	Numeric input	Mandatory, non-negative, 3 decimals
Operating Restrictions	Document	Mandatory
Full Operation Date (MR 4.10.1(k)))	Date	Mandatory for new applications, upgrades, or stand-alone Electric Storage Resources/Small Aggregation
Accredited Expert Report	Document	Mandatory for new applications or upgrades
Expected Energy Output by Trading Interval (Single CSV for Application)	Document	Mandatory for new applications or upgrades. See Section 10.3
Nominated Required Level Source	Radio button	Mandatory
5% POE Expected Generation Output	Numeric input	Mandatory, non-negative, 3 decimals
Location of the single TNI for the aggregated ESR	Alphanumeric input	Mandatory when the Facility comprises only ESR or AGG and the Full Operation Date is less than 5 years in the past, up to 4 characters
Minimum Charge Level for each ESR	Document	Mandatory when the Facility comprises only ESR or AGG and the Full Operation Date is less than 5 years in the past
Sent out capacity for each year of the ESR's expected life	Document	Mandatory when the Facility comprises only ESR or AGG and the Full Operation Date is less than 5 years in the past
Evidence that the ESR are expected to discharge during the ESROI	Document	Mandatory when the Facility comprises only ESR or AGG and the Full Operation Date is less than 5 years in the past
Is this a Network Augmentation Funding Facility?	Radio button	Mandatory if the Market Participant submitted an Expression of Interest nominating the Facility as a Network Augmentation Funding Facility
Network Augmentation Funding Facility supporting information	Document	Mandatory if Network Augmentation Funding Facility = 'Yes'
Will the Facility be subject to a Non-Co-optimised Essential System Service (NCESS) Contract?	Radio button	Mandatory
NCESS supporting information	Document	Mandatory if NCESS = 'Yes'

Field name	Type	Constraints
Commercial Arrangements (if owner and operator differ)	Document	Optional
Offtake/Power Purchase Agreement	Document	Optional
Confirming Conditional CRC	Radio button	Mandatory
Is this a Balancing Facility	Radio button	Optional
Balancing Facility Documentation	Document	Mandatory when Balancing Facility = 'Yes'
Decommission Date (if within capacity year)	Date	Optional
Additional Supporting Documentation	Document	Optional
Obligation Date	Date	Mandatory for new and upgrade applications
Environmental Approvals	Document	Optional
All Approvals Finalised Date	Date	Mandatory for new and upgrade applications
All Approvals Finalised Supporting Documents	Document	Optional
Financing Finalised Date	Date	Mandatory for new and upgrade applications
Financing Finalised Supporting Documents	Document	Optional
Site Preparation Start Date	Date	Mandatory for new and upgrade applications
Construction Start Date	Date	Mandatory for new and upgrade applications
Construction Start Date Supporting Documents	Document	Optional
Generation Equipment Installation Completion Date	Date	Mandatory for new and upgrade applications
Commissioning Trials Start Date	Date	Mandatory for new and upgrade applications
Project Plan	Document	Optional
Land Leases	Document	Optional
Financial Commitment and Funding Arrangements	Document	Optional
Local Government Approvals	Document	Optional

Demand Side Programme

Field name	Type	Constraints
Contracted Quantity	Numeric input	Mandatory, non-negative, 3 decimals
Maximum Dispatch Hours Per Year	Numeric input	Mandatory, greater than or equal 200
Maximum Dispatch Hours Per Day	Numeric input	Mandatory, greater than or equal 12
Minimum Dispatch Notice Period	Numeric input	Mandatory, between 0 and 2 (inclusive)
Dispatch Trading Interval Start Time (Business Day)	Drop down list	Mandatory
Dispatch Trading Interval End Time (Business Day)	Drop down list	Mandatory
Dispatch Trading Interval Start Time (Non-Business day)	Drop down list	Mandatory when one or more of nonBusinessDayDispatchSaturday, nonBusinessDayDispatchSunday,

Field name	Type	Constraints
		nonBusinessDayDispatchPublicHoliday is/are checked.
Dispatch Trading Interval End Time (Non-Business day)	Drop down list	Mandatory when one or more of nonBusinessDayDispatchSaturday, nonBusinessDayDispatchSunday, nonBusinessDayDispatchPublicHoliday is/are checked.
Saturday	Check box	Optional
Sunday	Check box	Optional
Public Holiday	Check box	Optional
Ramp Rate Limit of Facility	Numeric input	Mandatory, non-negative, 3 decimals, uses Contracted Capacity as a validation
Single TNI for the Facility	Alphanumeric input	Mandatory, no more than 4 characters
Operating Restrictions	Document	Mandatory
Contracts with Loads	Document	Mandatory
NMI List (Single CSV for Application)	Document	Mandatory, see Section 10.4
Maintenance Intervals for Certification (Single CSV for Application)	Document	See Section 10.5
Maintenance Intervals Evidence	Document	Optional
Will the Facility be subject to a Non-Co-optimised Essential System Service (NCESS) Contract?	Radio button	Mandatory
NCESS supporting information	Document	Mandatory if NCESS = 'Yes'
Commercial Arrangements (if owner and operator differ)	Document	Optional
Confirming Conditional CRC	Radio button	Mandatory
Decommission Date (if within capacity year)	Date	Optional
Additional Supporting Documentation	Document	Optional
Environmental Approvals	Document	Mandatory for new applications
All Approvals Finalised Date	Date	Mandatory for new applications
All Approvals Finalised Supporting Documents	Document	Optional for new applications
Financing Finalised Date	Date	Mandatory for new applications
Financing Finalised Supporting Documents	Document	Optional for new applications
Site Preparation Start Date	Date	Mandatory for new applications
All required control equipment in place date	Date	Mandatory for new applications
Commissioning Trials Start Date	Date	Mandatory for new applications
Obligation Date	Date	Mandatory for new applications
Project Plan	Document	Optional for new applications
Land Leases	Document	Optional for new applications
Financial Commitment and Funding Arrangements	Document	Optional for new applications
Local Government Approvals	Document	Optional for new applications

10.2   CRC application fields – component level

Non-Intermittent Generating System

Field name	Type	Constraints
Include component in CRC application	Check box	Optional
Nameplate Capacity	Numeric input	Mandatory
Is this a Network Augmentation Funding Facility?	Radio button	Mandatory if the Market Participant submitted an Expression of Interest nominating the Facility as a Network Augmentation Funding Facility
Network Augmentation Funding Facility supporting information	Document	Mandatory if Network Augmentation Funding Facility = 'Yes'
Primary Fuel Type	Drop down	Mandatory
Alternate Fuel Type	Drop down	Mandatory when Certified Fuel Type is 'alternate' or 'both'
Certified Fuel Type	Drop down	Mandatory
Fuel Supply	Document	Mandatory
Fuel Transport	Document	Mandatory
Process of Changing Fuels	Document	Mandatory when Certified Fuel Type is 'alternate' or 'both'
Maximum Sent Out Capacity (41°C) at Normal Operation (Primary Fuel)	Numeric input	Mandatory, non-negative, 3 decimals
Maximum Sent Out Capacity (41°C) at Normal Operation (Alternate Fuel)	Numeric input	Mandatory when Certified Fuel Type is 'alternate' or 'both', non-negative, 3 decimals
Temperature Curve	Document	Mandatory
Temperature Measurement Method	Radio button	Mandatory
BOM Station ID - www.bom.gov.au/climate/data/stations/	Numeric input	Mandatory when Temperature Measurement Method is 'BOM Station'
SCADA Information	Text input	Optional when Temperature Measurement Method is 'SCADA'
Expected Forced Outage Rate	Numeric input	Mandatory, percentage, 3 decimals
Expected Unforced Outage Rate	Numeric input	Mandatory, percentage, 3 decimals
Actual Forced Outage Rate	Numeric input	Mandatory, percentage, 3 decimals
Actual Unforced Outage Rate	Numeric input	Mandatory, percentage, 3 decimals
Decommission Date (if within capacity year)	Date	Optional
Environmental Approvals	Document	Optional for new and upgrade components
All Approvals Finalised Date	Date	Mandatory for new and upgrade components
All Approvals Finalised Supporting Documents	Document	Optional for new and upgrade components
Financing Finalised Date	Date	Mandatory for new and upgrade components
Financing Finalised Supporting Documents	Document	Optional for new and upgrade components
Site Preparation Start Date	Date	Mandatory for new and upgrade components
Construction Start Date	Date	Mandatory for new and upgrade components

Field name	Type	Constraints
Construction Start Date Supporting Documents	Document	Optional for new and upgrade components
Generation Equipment Installation Completion Date	Date	Mandatory for new and upgrade components
Commissioning Trials Start Date	Date	Mandatory for new and upgrade components
Obligation Date	Date	Mandatory for new and upgrade components
Project Plan	Document	Optional for new and upgrade components
Land Leases	Document	Optional for new and upgrade components
Financial Commitment and Funding Arrangements	Document	Optional for new and upgrade components
Local Government Approvals	Document	Optional for new and upgrade components

Intermittent Generating System

Field name	Type	Constraints
Include component in CRC application	Check box	Optional
Nameplate Capacity	Numeric input	Mandatory, non-negative, 3 decimals
Decommission Date (if within capacity year)	Date	Optional
Full Operation Date (MR 4.10.1(k)))	Date	Optional
Accredited Expert Report	Document	Mandatory for new or upgrade components.
Expected Energy Output by Trading Interval (Single CSV for Application)	Document	Mandatory for new or upgrade components, see Section 10.3
Nominated Required Level Source	Radio button	Mandatory
5% POE Expected Generation Output	Numeric input	Mandatory, non-negative, 3 decimals
Is this a Network Augmentation Funding Facility?	Radio button	Mandatory if the Market Participant submitted an Expression of Interest nominating the Facility as a Network Augmentation Funding Facility
Network Augmentation Funding Facility supporting information	Document	Mandatory if Network Augmentation Funding Facility = 'Yes'
Environmental Approvals	Document	Optional for new and upgrade components
All Approvals Finalised Date	Date	Mandatory for new and upgrade components
All Approvals Finalised Supporting Documents	Document	Optional for new and upgrade components
Financing Finalised Date	Date	Mandatory for new and upgrade components
Financing Finalised Supporting Documents	Document	Optional for new and upgrade components
Site Preparation Start Date	Date	Mandatory for new and upgrade components
Construction Start Date	Date	Mandatory for new and upgrade components
Obligation Date	Date	Mandatory for new and upgrade components
Construction Start Date Supporting Documents	Document	Optional for new and upgrade components

Field name	Type	Constraints
Generation Equipment Installation Completion Date	Date	Mandatory for new and upgrade components
Commissioning Trials Start Date	Date	Mandatory for new and upgrade components
Project Plan	Document	Optional for new and upgrade components
Land Leases	Document	Optional for new and upgrade components
Financial Commitment and Funding Arrangements	Document	Optional for new and upgrade components
Local Government Approvals	Document	Optional for new and upgrade components

Electric Storage Resource and Small Aggregation

Field name	Type	Constraints
Include component in CRC application	Check box	Optional
Nameplate Capacity	Numeric input	Mandatory, non-negative, 3 decimals
Is this a Network Augmentation Funding Facility?	Radio button	Mandatory if the Market Participant submitted an Expression of Interest nominating the Facility as a Network Augmentation Funding Facility
Network Augmentation Funding Facility supporting information	Document	Mandatory if Network Augmentation Funding Facility = 'Yes'
Maximum Charge Level Capability	Numeric input	Mandatory, non-negative, 3 decimals
Minimum Charge Level Capability	Numeric input	Mandatory, non-negative, 3 decimals
Temperature Dependence Curve	Document	Mandatory
Maximum sent out capacity	Numeric input	Mandatory, non-negative, 3 decimals
Sent out capacity over 4 hours for each year of the ESR's expected life	Document	Mandatory
Nameplate capacity for each year of the ESR's expected life	Document	Mandatory
Minimum Charge Level for each year of the ESR's expected life	Document	Mandatory
Maximum Charge Level for each year of the ESR's expected life	Document	Mandatory
Expected forced outage rate	Numeric input	Mandatory, between 0 and 100
Expected unforced outage rate	Numeric input	Mandatory, between 0 and 100
Outage rates supporting documents	Document	Mandatory
Additional supporting documentation	Document	Optional
Environmental Approvals	Document	Optional for new and upgrade components
All Approvals Finalised Date	Date	Mandatory for new and upgrade components
All Approvals Finalised Supporting Documents	Document	Optional for new and upgrade components
Financing Finalised Date	Date	Mandatory for new and upgrade components
Financing Finalised Supporting Documents	Document	Optional for new and upgrade components
Site Preparation Start Date	Date	Mandatory for new and upgrade components

Field name	Type	Constraints
Construction Start Date	Date	Mandatory for new and upgrade components
Construction Start Date Supporting Documents	Document	Optional for new and upgrade components
Generation Equipment Installation Completion Date	Date	Mandatory for new and upgrade components
Commissioning Trials Start Date	Date	Mandatory for new and upgrade components
Obligation Date	Date	Mandatory for new and upgrade components
Project Plan	Document	Optional for new and upgrade components
Land Leases	Document	Optional for new and upgrade components
Financial Commitment and Funding Arrangements	Document	Optional for new and upgrade components
Local Government Approvals	Document	Optional for new and upgrade components

10.3   Expected Energy Output input file

Non-Scheduled Facility

Column name	Description
Trading Interval	Half-hourly trade interval commencing on the half hour or hour in "dd/mm/yyyy hh:mm" format
Facility	Facility name in WEMS
Estimated Output	Expected Energy Output in MWh, in decimal (12,4)

Intermittent Generating System

Column name	Description
Trading Interval	Half-hourly trade interval commencing on the half hour or hour in "dd/mm/yyyy hh:mm" format
Facility	Facility name in WEMS
Component	Component name
Estimated Output	Expected Energy Output in MWh, in decimal (12,4)

10.4   NMI list input file

Column name	Description
Dsp	DSP Facility name in WEMS
Nmi	10-digit National Meter Identifier associated with the DSP

10.5   Maintenance Intervals for Certification input file

Column name	Description
Dsp	DSP Facility name in WEMS
Nmi	10-digit National Meter Identifier associated with the DSP
Interval	Half-hourly trade interval commencing on the half hour or hour in "dd/mm/yyyy hh:mm" format
Reason	Comment regarding the maintenance

11   Trade declarations

The Trade Declaration display is accessible through the RCM portal by navigating to MPI>Reserve Capacity>Reserve Capacity Mechanism. When the trade declaration submission window opens, trade declarations are automatically generated with an "OPEN" status.

From the 2021 Reserve Capacity Cycle, trade declarations will be required on a component basis for Scheduled Facilities and Semi-Scheduled Facilities. Trade declarations for Non-Scheduled Facilities and Demand Side Programmes will continue to be made for the entire Facility.

11.1   Trade declaration fields

In addition to the constraints for each field, the sum of the Traded and Unavailable fields must equal the component or Facility's (as relevant) assigned CRC.

Field name	Type	Constraints
Traded	Numeric input	Non-negative, 3 decimals
Unavailable	Numeric input	Non-negative, 3 decimals