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# STEM & BILATERAL SUBMISSION VALIDATION

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**Version 1.0**

January 2024

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# Important notice

## PURPOSE

AEMO has prepared this document to provide information about the STEM and Bilateral submission validations for the new Wholesale Electricity Market.

## DISCLAIMER

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## VERSION CONTROL

Version	Release date	Changes
0.1	08/06/2023	Initial release for Market Participant Test
1.0	11/01/2024	Updated version number to reflect the deployment of STEM to Production on Oct 1 2023

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# 1. Introduction

This document outlines the validation applicable to Bilateral & STEM submissions made through file exchange in the Western Australian Wholesale Electricity Market System (WEMS). The tables below detail the data which is being validated, the action taken if the validation is not met, the stage which the validation will be implemented as well as the relevant error codes and messages to be displayed within file exchange.

## 2. Information messages

In addition to the errors and warning messages outlined in the subsequent sections, the system will also provide "Information Messages" to the user. The intention of these messages is to provide a general summary of status of the whole submission. These messages include:

Information Message	Message Code	Message
Indicates that the submission file has been received by AEMO.	I0001	File Uploaded to AEMO Server - Starting File Processing
Indicates that the submission file has passed all relevant validations and has been successfully submitted.	I0002	File Processing Completed Successfully
Indicates that the submission file has been successfully submitted.	I0003	File Processing Completed Successfully with Warnings
Indicates that part of the submission file has been successfully submitted.	I0004	File Processing Completed Successfully with Errors
Indicates that the submission file has been rejected due to critical validations not being passed.	I0005	File Processing Failed - File Rejected
Indicates that a specific facility within the submission has been successfully processed.	I0101	Submission for facility {0} has been successfully processed

## 3. File Format Errors

Submissions made by participants must conform to the relevant XSD or CSV format as prescribed by AEMO. Where submission files do not meet the XSD or CSV format requirements, the file will be rejected automatically.

For CSV submissions, the following validation checks are performed on all uploaded files:

Validations	Consequence	Message Code	Message
CSV file must be of the correct form and syntax	Reject File	E0301	File processing error
CSV must contain data in the right form for the given submission type	Reject File	E0303	Submission does not contain any data
CSV header row must have the right number of columns for a given submission type	Reject File	E0304	Header row has incorrect number of columns for a <submission type> submission
CSV column names must be valid for the given submission type	Reject File	E0305	Invalid column name used for <submission type> submission

## 4. Bilateral Submissions, Queries and Cancellations

When submitting an XML query or cancellation or CSV cancellation, the compulsory fields are application\_type, trading\_date, participant\_name, user\_name and version\_no, where applicable. Optional fields (nullable for CSV submissions and can be excluded from XML submissions) include standing\_flag, start\_hr, start\_int, end\_hr, end\_int and standing type.

Note: Queries are only available through XML submissions.

Bilateral submission validations are performed by legacy ABB code and consequently have inherent limitations. If submission files contain errors, the submitting user will receive Message Code E9993 or Message Code E9992 – System Error instead of the message code and message directly related to the field error.

### 4.1 General Validations

Validations	Consequence	Message Code	Message
1. The sum of supply quantity mwh and demand quantity mwh must equal zero	Reject file	No message code	The supply_quantity_mwh sum of {0} MWh plus the demand_quantity_mwh sum of {1} MWh must equal 0 MWh from start_hr {2}, start_int {3} to end_hr {4}, end_int {5}
2. Username and participant name must match those of the user who has logged on	Reject file	No message code	The Participant and User {0} from the certificate does not match the participant_name and user_name in XML message body
3. The same consumer (participant) name must not appear more than once within the same submission	Reject file	No message code	The participant_name {0} may only occur once in trade_period element

## 4.2 Field Validations

Attribute/Field	Validations	Consequence	Message Code	Message
application_type (XML ONLY)	Must be BILATERAL	Reject file	No message code	One or more elements in the following do not match application_type {0}
trading_date	Trading date must be of the correct format – YYYY-MM-DD (XML ONLY) and DD/MM/YYYY (CSV ONLY)	Reject file	No message code	XML Schema validation - No message for XML submissions Trading expiry date CSV format does not match DD/MM/YYYY
	The market for normal submissions for the given application type must be open for the trading date submitted	Reject file	No message code	Market Window for normal submissions is not open for trading_date {0} and application_type {1}
	The market for standing submissions for the given application type must be open for the trading date submitted	Reject file	No message code	Standing data submission must have Trading Day of {0}
	If submitting a query, trading date must be within a range of 7 days prior and 8 days after the current trading day	Reject file	No message code	The trading_date {0} is invalid. It must fall within the past {1} days and future {2} days
participant_name (XML ONLY)	Must match the name of a participant in registration	Reject file	No message code	The participant_name {0} in trade_detail element is invalid
user_name (XML ONLY)	Must match a username within user management for the participant name submitted	Reject file	No message code	The Participant and User {0} from the certificate does not match the participant_name and user_name in XML message body
	User must have the correct privileges to make the submission	Reject file	No message code	The user_name {0} for participant_name {1} does not have system access privileges to participate in Market Trading for trading_date {2}
version_no (XML ONLY)	Must be set to "1.0"	Reject file	No message code	No Message - XML Schema validation
action (CSV ONLY)	Must only contain SUBMIT or CANCEL	Reject file	E0017	Action request invalid
standing_flag	Must only contain true or false	Reject file	No message code	No Message - XML Schema validation
standing_day_type/type	Standing day type can only contain "ALL" or a combination of "MON", "TUE", "WED", "THU", "FRI", "SAT" and "SUN"	Reject file	No message code	No Message - XML Schema validation

Attribute/Field	Validations	Consequence	Message Code	Message
	If submission successful with standing day type of "ALL" unable to subsequently submit day type that is not "ALL". If submission successful with a combination of "MON", "TUE", "WED", "THU", "FRI", "SAT" and "SUN", unable to subsequently submit with day type "ALL"	Reject file	No message code	Submitted Standing Data with type {0} conflicts with existing Standing Data with type {1} for trading_date {2}
	If a submission has a day type with "ALL", no other day type can be submitted.	Reject file	No message code	In multiple Standing Data Submissions, type "ALL" conflicts with other type {0}
	Standing day type must be included if standing flag = true	Reject file	No message code	Standing Element must be present when standing_flag is set to true
	Standing flag must be true if standing element exists	Reject file	No message code	Standing_flag must be set to true when Standing Element is present
	Must be NULL if standing flag = false (Only for CSV)	Reject file	No message code	Standing type must be NULL when action is set to CANCEL
	Must not be included if standing flag = false (Only for XML)	Reject file	No message code	No Message - XML Schema validation
standing_expiry_date/expiry date	Standing expiry date must be of the correct format – YYYY-MM-DD (XML ONLY) and DD/MM/YYYY (CSV ONLY)	Reject file	No message code	No Message - XML Schema validation Standing expiry date CSV format does not match DD/MM/YYYY
	Standing day type must be included if standing flag = true	Reject file	No message code	Standing Element must be present when standing_flag is set to true
	Standing expiry date must be in the future	Reject file	No message code	The expiry_date {0} must be in the future
	Must be NULL if standing flag = false (Only for CSV)	Reject file	No message code	Standing expiry date must be NULL when action is set to CANCEL
	Must not be included if standing flag = false (Only for XML)	Reject file	No message code	No Message - XML Schema validation
start_hr	Start hour can only contain integers from 0 to 23	Reject file	No message code	No Message - XML Schema validation
start_int	Must only contain integers 1 and 2	Reject file	No message code	No Message - XML Schema validation

Attribute/Field	Validations	Consequence	Message Code	Message
end_hr	End hour must not be earlier than the start hour. Where the order is 8...23,0...7 (i.e. hour 0 is later than hour 23)	Reject file	No message code	Invalid combination of start_hr {0} and end_hr {1}
	End hour can only contain integers from 0 to 23	Reject file	No message code	No Message - XML Schema validation
end_int	Must only contain integers 1 and 2	Reject file	No message code	No Message - XML Schema validation
	The combination of start_hour/start_interval has to be before or the same as the combination of end_hour/end_interval	Reject file	No message code	Invalid combination of start_int {0} and end_int {1} for start_hr in {2} and end_hr in {3}
supply_quantity_mwh (XML ONLY)	Supply quantity MWh must be in XXXX.XXXMWh format	Reject file	No message code	No Message - XML Schema validation
	Supply quantity MWh must be a number data type	Reject file	No message code	No Message - XML Schema validation
	Supply quantity MWh must be greater than or equal to zero	Reject file	No message code	The supply_quantity_mwh value of {0} MWh must be greater than or equal to 0 MWh from start_hr {1}, start_int {2} to end_hr {3}, end_int {4}
wp_load_mwh	WP load MWh must be in XXXX.XXXMWh format	Reject file	No message code	No Message - XML Schema validation format
	WP load MWh must be a number data type	Reject file	No message code	No Message - XML Schema validation
part_consumer	Part consumer must match a name of a Market Participant per the registration system.	Reject file	No message code	The participant_name {0} in trade_detail element is invalid
demand_quantity_mwh	Demand quantity MWh must be in XXXX.XXXMWh format	Reject file	No message code	No Message - XML Schema validation
	Demand quantity MWh must be a number data type	Reject file	No message code	No Message - XML Schema validation
	Demand quantity MWh must be less than or equal to zero	Reject file	No message code	The demand_quantity_mwh value of {0} MWh must be a negative value for participant_name {1}



# 5. STEM Submissions, Queries and Cancellations

When submitting an XML query or cancellation or CSV cancellation, the compulsory fields are application\_type, trading\_date, participant\_name, user\_name and version\_no, where applicable. Optional fields (nullable for CSV submissions and can be excluded from XML submissions) include standing\_flag, start\_hr, start\_int, end\_hr, end\_int and standing type.

Note: Queries are only available through XML submissions.

STEM submission validations are performed by legacy ABB code and consequently have inherent limitations. If submission files contain errors, the submitting user will receive Message Code E9993 or Message Code E9992 – System Error instead of the message code and message directly related to the field error.

## 5.1 General Validations

Validations	Consequence	Message Code	Message
1. The hour and intervals specified in the stem detail must match the hour and intervals specified in the declaration	Reject file	No message code	The following Hours and Intervals did not match between the stem_detail element and the declaration element: {0}
2. Maximum number of Supply Curve Price-Quantity pairs is 30	Reject file	No message code	The amount of Price-Quantity pairs submitted ({0}) must not exceed 30 in the period starting in hour and Interval {2} and ending in hour and Interval {3}
3. There must be at least one Supply Curve Price-Quantity pairs	Reject file	No message code	XML Schema validation - No message for XML submissions
4. Maximum number of Demand Curve Price-Quantity pairs is 30	Reject file	No message code	The amount of Price-Quantity pairs submitted ({0}) must not exceed 30 in the period starting in hour and Interval {2} and ending in hour and Interval {3}
5. There must be at least one Demand Curve Price-Quantity pairs	Reject file	No message code	XML Schema validation - No message for XML submissions
6. Username and participant name must match those of the user who has logged on	Reject file	No message code	The Participant and User {0} from the certificate does not match the participant_name and user_name in XML message body

## 5.2 Field Validations

Attribute/Field	Validations	Consequence	Message Code	Message
application_type (XML ONLY)	Must be STEM	Reject file	No message code	One or more elements in the following do not match application_type {0}
trading_date	Trading date must be of the correct format – YYYY-MM-DD (XML ONLY) and DD/MM/YYYY (CSV ONLY)	Reject file	No message code	XML Schema validation - No message for XML submissions Trading expiry date CSV format does not match DD/MM/YYYY
	The market for normal submissions for the given application type must be open for the trading date submitted	Reject file	No message code	Market Window for normal submissions is not open for trading_date {0} and application_type {1}
	The market for standing submissions for the given application type must be open for the trading date submitted	Reject file	No message code	Standing data submission must have Trading Day of {0}
	If submitting a query, trading date must be within a range of 7 days prior and 8 days after the current trading day	Reject file	No message code	The trading_date {0} is invalid. It must fall within the past {1} days and future {2} days
participant_name (XML ONLY)	Must match the name of a participant in registration	Reject file	No message code	Invalid combination of participant_name {0} and user_name {1} for trading_date {2}
user_name (XML ONLY)	Must match a username within user management for the participant name submitted	Reject file	No message code	Invalid combination of participant_name {0} and user_name {1} for trading_date {2}
	User must have the correct privileges to make the submission	Reject file	No message code	The user_name {0} for participant_name {1} does not have system access privileges to participate in Market Trading for trading_date {2}
version_no (XML ONLY)	Must be set to "1.0"	Reject file	No message code	No Message - XML Schema validation
action (CSV ONLY)	Must only contain SUBMIT or CANCEL	Reject file	E0017	Action request invalid
standing_flag	Must only contain true or false	Reject file	No message code	No Message - XML Schema validation
standing_day_type/type	Standing day type can only contain "ALL" or a combination of "MON", "TUE", "WED", "THU", "FRI", "SAT" and "SUN"	Reject file	No message code	No Message - XML Schema validation

Attribute/Field	Validations	Consequence	Message Code	Message
	If submission successful with standing day type of "ALL" unable to subsequently submit day type that is not "ALL". If submission successful with a combination of "MON", "TUE", "WED", "THU", "FRI", "SAT" and "SUN", unable to subsequently submit with day type "ALL"	Reject file	No message code	Submitted Standing Data with type {0} conflicts with existing Standing Data with type {1} for trading_date {2}
	If a submission has day type with "ALL", no other day type can be submitted.	Reject file	No message code	In multiple Standing Data Submissions, type "ALL" conflicts with other type {0}
	Standing day type must be included if standing flag = true	Reject file	No message code	Standing Element must be present when standing_flag is set to true
	Standing flag must be true if standing element exists	Reject file	No message code	Standing_flag must be set to true when Standing Element is present
	Must be NULL if standing flag = false (Only for CSV)	Reject file	No message code	Standing type must be NULL when action is set to CANCEL
	Must not be included if standing flag = false (Only for XML)	Reject file	No message code	No Message - XML Schema validation
standing_expiry_date/expiry date	Standing expiry date must be of the correct format – YYYY-MM-DD (XML ONLY) and DD/MM/YYYY (CSV ONLY)	Reject file	No message code	No Message - XML Schema validation Standing expiry date CSV format does not match DD/MM/YYYY
	Standing day expiry must be included if standing flag = true	Reject file	No message code	Standing Element must be present when standing_flag is set to true
	Standing expiry date must be in the future	Reject file	No message code	The expiry_date {0} must be in the future
	Must be NULL if standing flag = false (Only for CSV)	Reject file	No message code	Standing expiry date must be NULL when action is set to CANCEL
	Must not be included if standing flag = false (Only for XML)	Reject file	No message code	No Message - XML Schema validation
start_hr	Start hour can only contain integers from 0 to 23	Reject file	No message code	No Message - XML Schema validation
start_int	Must only contain integers 1 and 2	Reject file	No message code	No Message - XML Schema validation

Attribute/Field	Validations	Consequence	Message Code	Message
end_hr	End hour must not be earlier than the start hour. Where the order is 8...23,0...7 (i.e. hour 0 is later than hour 23)	Reject file	No message code	Invalid combination of start_hr {0} and end_hr {1}
	End hour can only contain integers from 0 to 23	Reject file	No message code	No Message - XML Schema validation
end_int	Must only contain integers 1 and 2	Reject file	No message code	No Message - XML Schema validation
	The combination of start_hour/start_interval has to be before or the same as the combination of end_hour/end_interval	Reject file	No message code	Invalid combination of start_int {0} and end_int {1} for start_hr in {2} and end_hr in {3}
supply_curve_price	Supply curve price must be of \$XXXX.XX format	Reject file	No message code	No Message - XML Schema validation
	Supply curve price must be a number data type	Reject file	No message code	No Message - XML Schema validation
	Supply curve price must be greater than or equal to the Minimum STEM price	Reject file	No message code	The price value of {0} in the {1} must be greater than or equal to the Minimum STEM Price value of {2} for the period starting from {3} and ending at {4}
	Supply curve price for liquid fuel facilities must be less than or equal to the Alternative Maximum STEM price	Reject file	No message code	The price value of {0} in the supply_portfolio_curve must not exceed the Alternative Maximum STEM Price value of {1} for the period starting from {2} and ending at {3}
	The submission must not include duplicate supply curve prices	Reject file	No message code	The following prices can not have the same value of {1} for the period starting from {2} and ending at {3}:
supply_curve_quantity	Supply curve quantity must be of XXXX.XXXMWh format	Reject file	No message code	No Message - XML Schema validation
	Supply curve price must be a number data type	Reject file	No message code	No Message - XML Schema validation

Attribute/Field	Validations	Consequence	Message Code	Message
	If standing flag = false, sum of all quantities (price-quantity pairs) must be less than or equal to Max(0, ( Maximum Supply Capability - total of unavailable_capacity_mwh) per interval. Max Supply Capability is defined in the participants_limits table.	Reject file	No message code	The {0} can not be validated because no {1} is defined in resource_limits table for facility_name {2}, Hour {3} and Interval {4}  And/or  The sum of the quantity values in the supply_portfolio_curve {0} must not exceed the Maximum Supply Capability value of {1} for Hour {2} and Interval {3}
	Supply curve quantity must be greater than or equal to zero	Reject file	No message code	The value {0} of {1} MWh must be greater than or equal to 0 MWh from start_hr {2}, start_int {3} to end_hr {4}, end_int {5}
demand_curve_price	Demand curve price must be of \$XXXX.XX format	Reject file	No message code	No Message - XML Schema validation
	Demand curve price must be a number data type	Reject file	No message code	No Message - XML Schema validation
	Demand curve price must be greater than or equal to the Minimum STEM price	Reject file	No message code	The price value of {0} in the {1} must be greater than or equal to the Minimum STEM Price value of {2} for the period starting from {3} and ending at {4}
	Demand curve price must be less than or equal to the Alternative Maximum STEM price	Reject file	No message code	The price value of {0} in the demand_portfolio_curve must not exceed the Alternative Maximum STEM Price value of {1} for the period starting from {2} and ending at {3}
	The submission must not include duplicate demand curve prices	Reject file	No message code	The following prices can not have the same value of {1} for the period starting from {2} and ending at {3}:
demand_curve_quantity	Demand curve quantity must be of XXXX.XXXMWh format	Reject file	No message code	No Message - XML Schema validation
	Demand curve quantity must be a number data type	Reject file	No message code	No Message - XML Schema validation
	Demand curve quantity must be less than the Maximum Consumption Quantity	Reject file	No message code	The sum of the quantity values in the demand_portfolio_curve {0} must not exceed the Maximum Consumption Capability value of {1} for Hour {2} and Interval {3}

Attribute/Field	Validations	Consequence	Message Code	Message
	Demand curve quantity must be greater than or equal to zero	Reject file	No message code	The value {0} of {1} MWh must be greater than or equal to 0 MWh from start_hr {2}, start_int {3} to end_hr {4}, end_int {5}
facility_name	Facility name must match a name of a registered facility and must be registered to the Market Participant which the user has logged in on behalf of	Reject file	No message code	The facility_name {0} is invalid
	A facility name must only appear once within a single submission	Reject file	No message code	The {0} facility may only occur once in any STEM submission
	Must not be included if submitting a query or cancel (Only for XML)	Reject file	No message code	No Message - XML Schema validation
facility_type	Must not be included if submitting a query or cancel (Only for XML)	Reject file	No message code	No Message - XML Schema validation
fuel_in_use	Must only contain LIQUID or NON-LIQUID	Reject file	No message code	No Message - XML Schema validation