Market Trials: Real-Time Energy Market (RTEM) in the Energy Market Interface (EMI) User Interface (UI)

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Introduction

This document outlines the test cases to be executed in the Energy Market Interface as part of Market Trials Phase 1. In this phase of testing, the primary objective is for Market Participants to confirm that certain functionality to the submission of Real-Time Energy Market (RTEM) information in the Energy Market Interface (EMI) User Interface (UI) are working as intended.

It is highly recommended that Market Participants start with the Standing Bid submission test cases and then execute test cases in the following order: Daily Dispatch Data (DDD), Real-Time Energy Market (RTEM), Forebay, Operating Reserve (OR) and Schedules.

Market Participants should ensure that they submit any defects via qTest or in the Market Trials Issue Log Template. This will contribute significantly to the overall improvement of the IESO tools. For more information on how submit defects via qTest, Market Participants can refer to the Quick Take: Submission of Test Case Results and Defects in qTest on the Market Participant Testing web page.

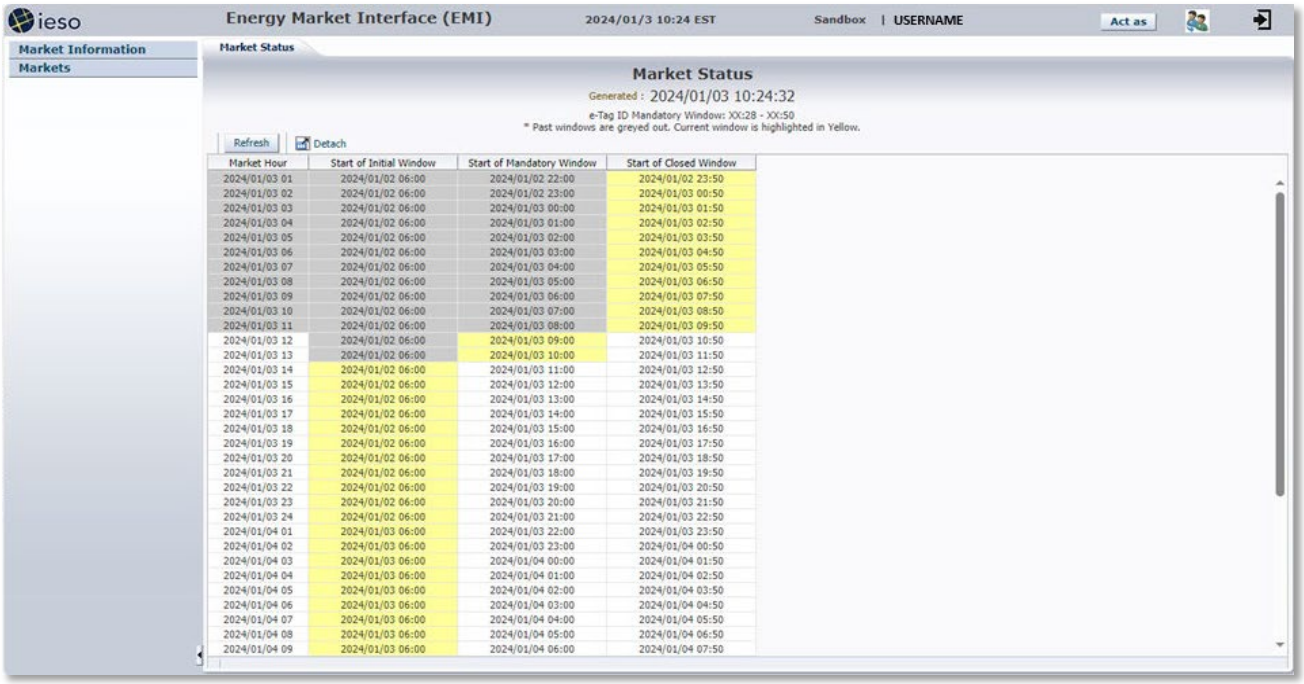
Preconditions:

1. User has access to the IESO's the IESO's Energy Market Interface (EMI) in the Sandbox environment (https://emi-sandboxmrp.ieso.ca/).
2. User has access to IESO Gateway in the Sandbox environment (https://gateway-sbx.ieso.ca/)
3. User has a valid user ID and password for EMI and IESO Gateway.
4. User executed the test cases for EMI Connectivity Testing to validate their access. (https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/Market-Participant-Testing/Test-Cases-for-Connectivity-Testing.zip)
5. For RTEM Submissions, if the submitting resource type is NQS Other, PSU, CT Non-PSU, ST Non-PSU, the Daily Dispatch Data for the corresponding participant, delivery date, and resource must already exist in the system.
6. For Query and Cancel requests, there must be existing data available in EMI for the selected resource.
7. If the submitting resource have operating reserve dispatch data submitted (Reserve class-10N, 10S and 30R), the OR data needs to be canceled individually for all the existing reserve class for that hour and then cancel RTEM for the same hour.
8. The NERC Market relates to the e-tag attributes and is applicable only for ENERGY_IMPORT and ENERGY_EXPORT resources.
9. Real-Time Energy Market data for the corresponding participant, delivery date, resource, and hour are present in the system.

Common Functional Steps

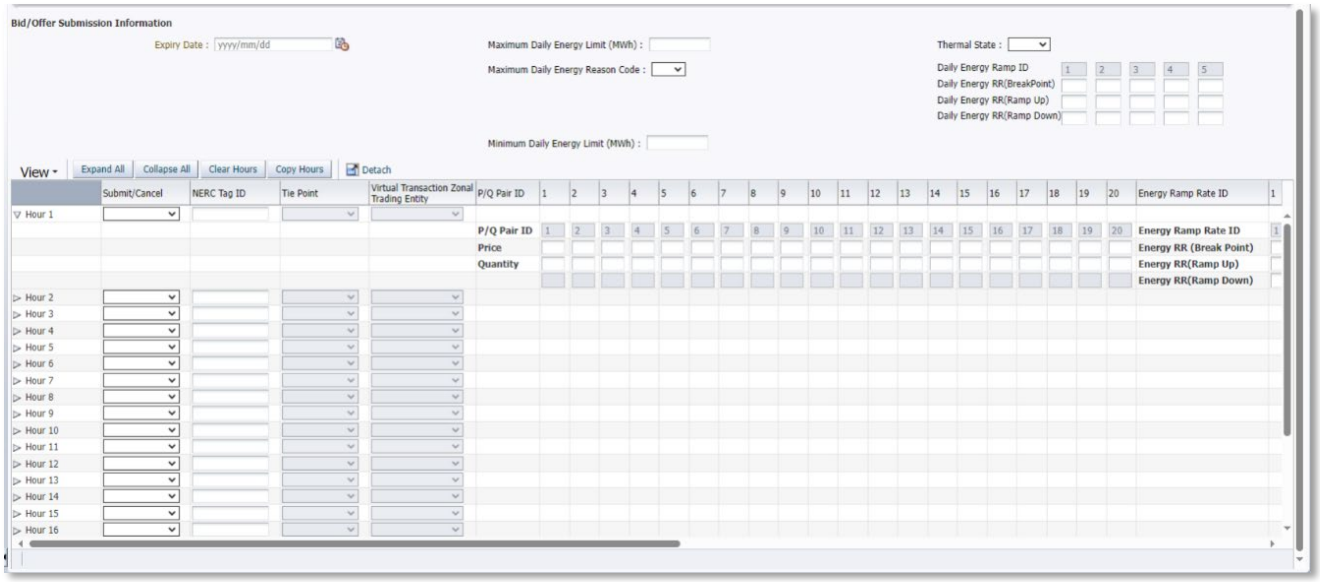
This section lists out the common functional steps when submitting RTEM in EMI. This section will be referenced in the following test cases.

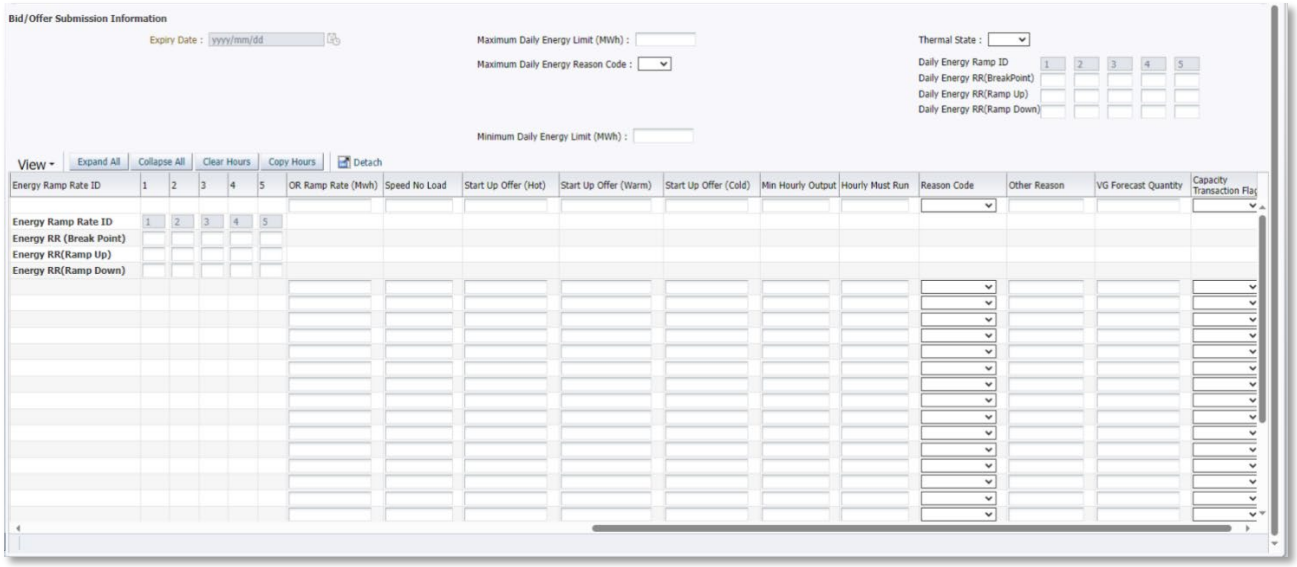
CFS-01: Logging into EMI

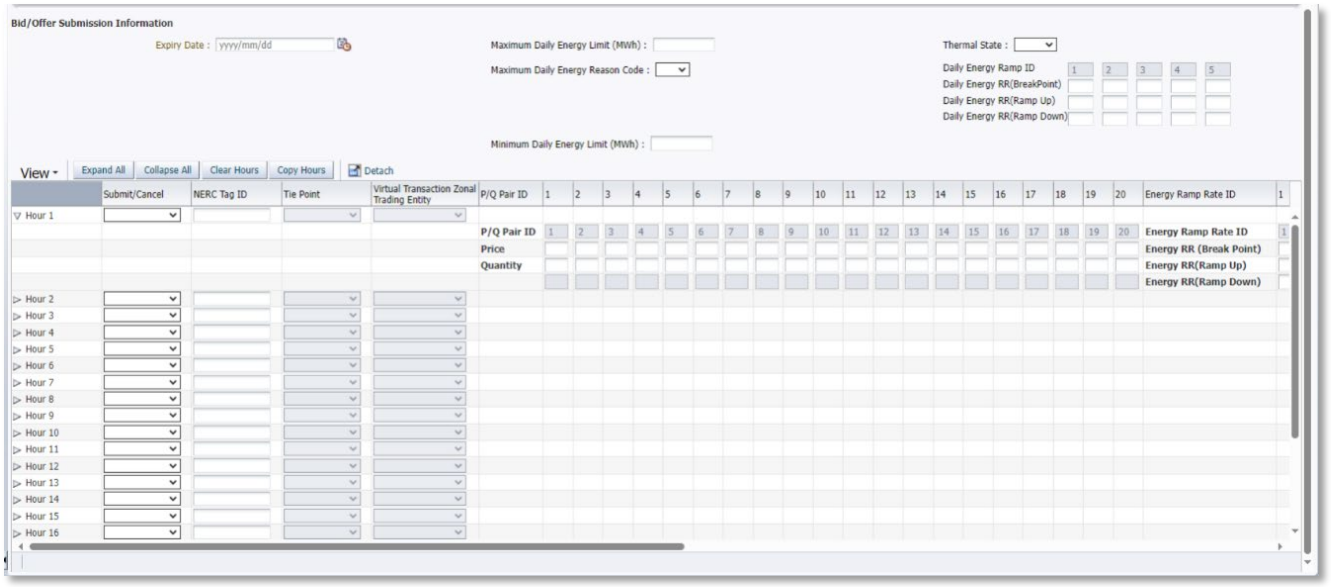
Step	User Instruction	Expected Result
1	Log in to EMI directly through its URL (https://emi-sandboxmrp.ieso.ca/) OR Users can click on the "Energy Market interface for MRP" tile under the IESO Sandbox Gateway dashboard (https://gateway-sbx.ieso.ca/).	User is able to successfully log in to EMI 

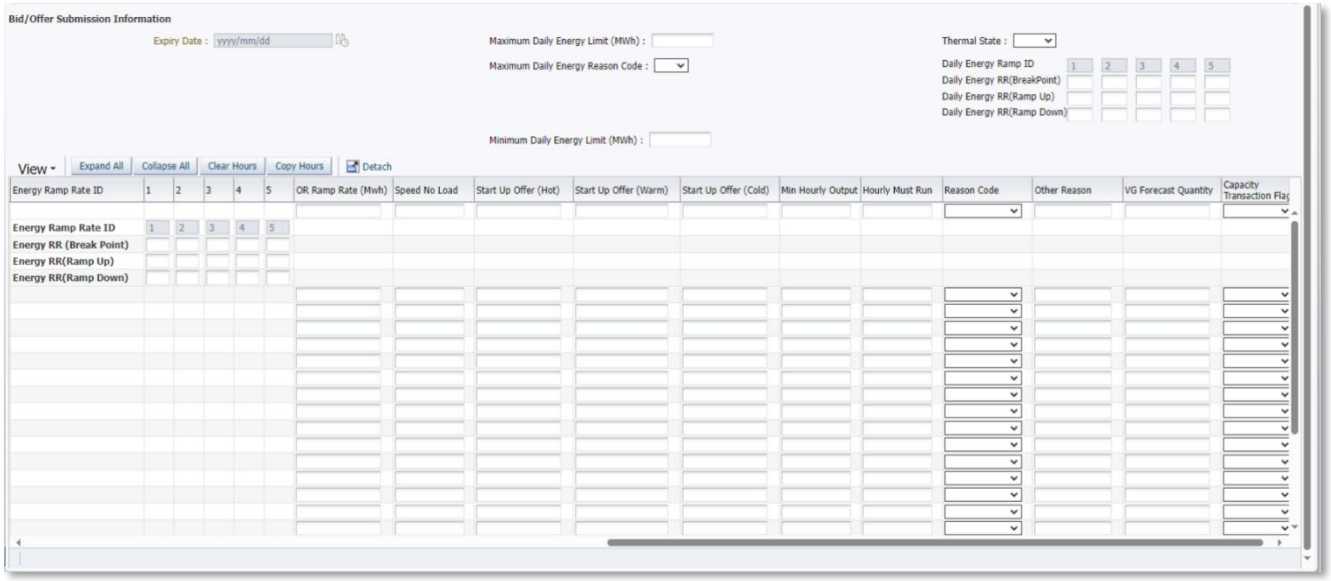
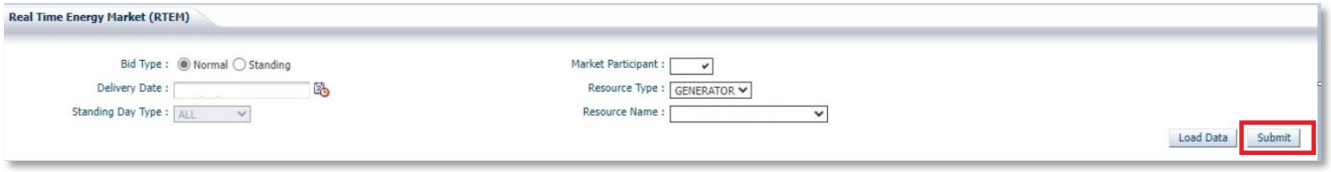
CFS-02: Submitting a Bid for RTEM

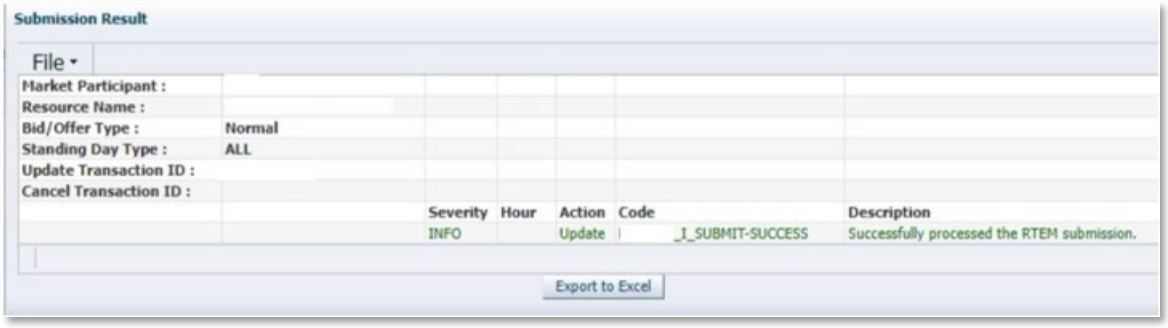
Step	User Instruction	Expected Result
1	Click the **Real Time Energy Markets (RTEM)**.	The "Real Time Energy Markets (RTEM)" screen will display.
2	For "Normal" Bid type: Submit input data in the following mandatory fields in submission header section for RTEM: - Bid Type= Normal - Delivery Date (Calendar pop-up on click)	The input values selected for the given mandatory fields is displayed.

Step	User Instruction	Expected Result
	Select a value from drop-down list for the below: - Market Participant - Resource type - Resource Name	
3	For "Normal" Bid type: Submit hourly data in the "Bid/Offer Submission Information" section 1. Expand required hours 2. Select "Submit" from Submit/Cancel drop-down 3. Enter values in the hourly input fields based on the submitting resource type	The input values entered for the hourly input fields is displayed and the action type for the submitting hours is submit. 

Step	User Instruction	Expected Result
		
4	For "Standing" Bid type: Submit input data in the following mandatory fields in submission header section for RTEM: - Bid Type= Standing Select a value from drop-down list for the below, - Standing day type - Market Participant	The input values selected for the given mandatory fields is displayed.

Step	User Instruction	Expected Result
	- Resource type - Resource Name	
5	For "Standing" Bid type: Submit hourly data in the "Bid/Offer Submission Information section" 1. Select Expiry Date (Calendar pop-up on click) 2. Expand required hours 3. Select "Submit" from Submit/Cancel drop-down 4. Enter values in the hourly input fields based on the submitting resource type	The input values entered for the hourly input fields is displayed and the action type for the submitting hours is submit. 

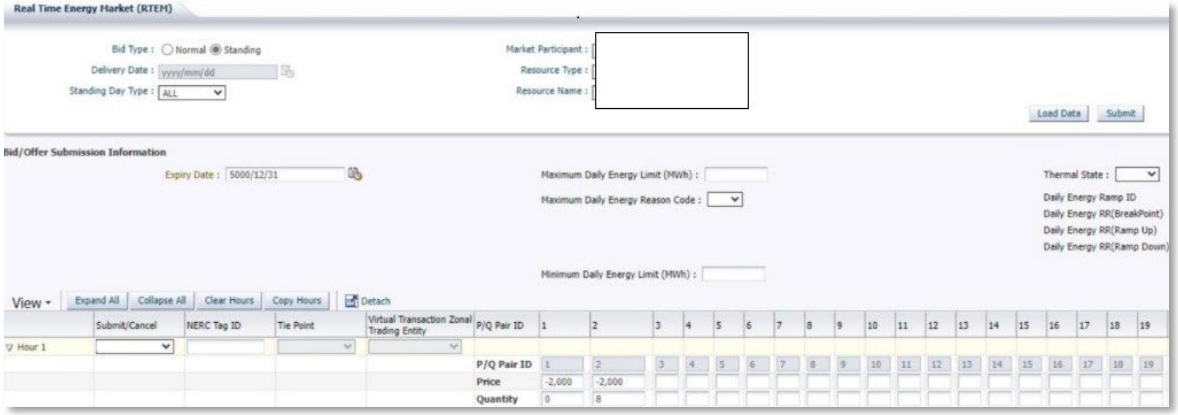
Step	User Instruction	Expected Result
		
6	For both a "Normal" Bid type and a "Standing" Bid type: Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the response "Successfully processed the RTEM submission". 

Step	User Instruction	Expected Result
		

CFS-03: Query a Bid in RTEM

Step	User Instruction	Expected Result
1	Click the **Real Time Energy Markets (RTEM)**.	The "Real Time Energy Markets (RTEM)" screen will display.

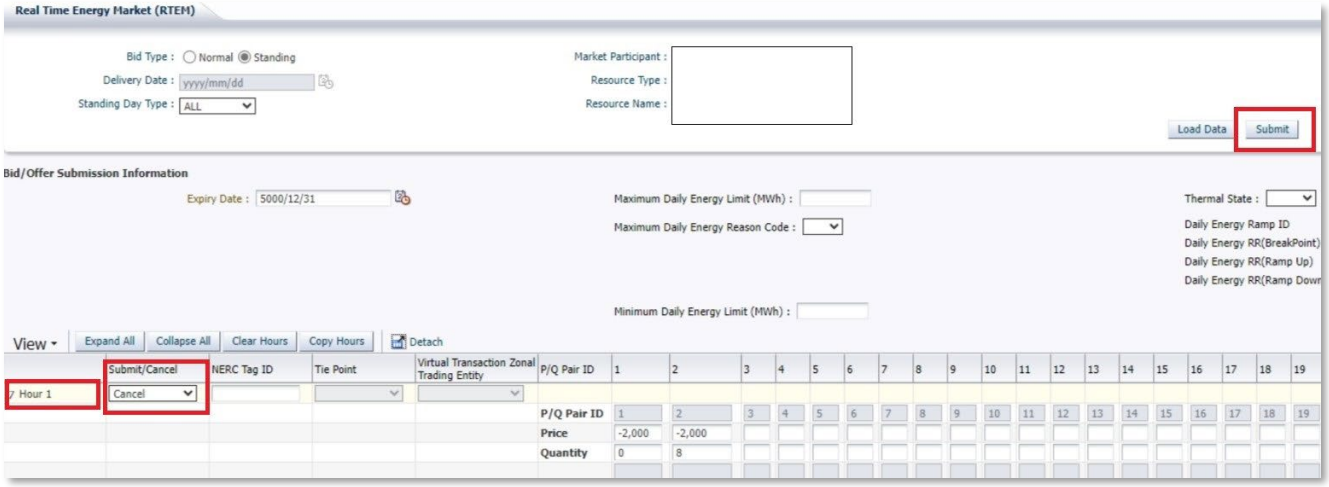
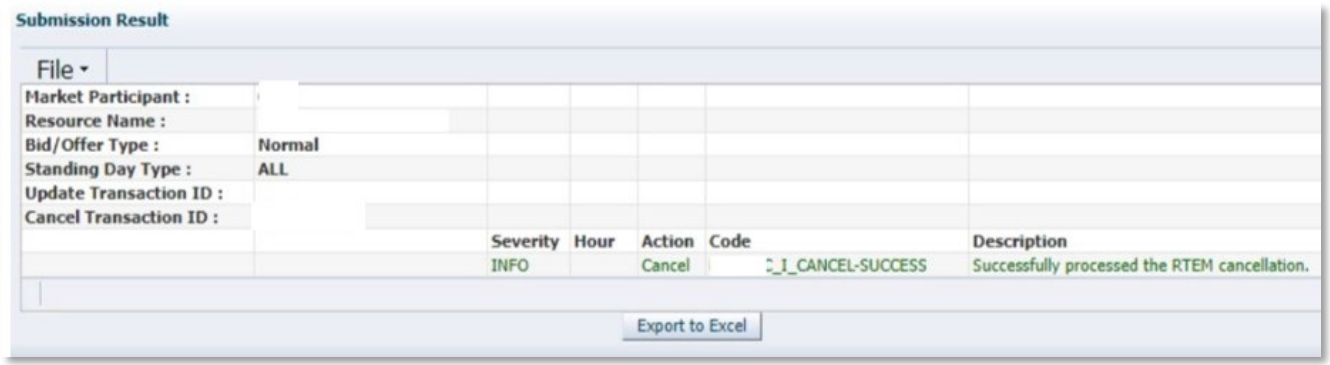
Step	User Instruction	Expected Result
2	For a "Normal" Bid type: Submit input data in the following mandatory fields in submission header section for RTEM: - Bid Type = Normal - Delivery Date (Calendar pop-up on click) Select a value from drop-down list for the below, - Market Participant - Resource type - Resource Name	The input values selected for the given mandatory fields is displayed.

Step	User Instruction	Expected Result
3	For a "Standing" Bid type: Submit input data in the following mandatory fields in submission header section for RTEM: - Bid Type = STANDING Select a value from drop-down list for the below, - Standing Day Type - Market Participant - Resource type - Resource Name	The input values selected for the given mandatory fields is displayed.
4	For both a "Normal" Bid type and a "Standing" Bid type: Click on the **Load Data** button in the header submission section.	The RTEM page displays the queried data values for the selected resource and delivery date. 

CFS-04: Cancel a Bid in RTEM

Step	User Instruction	Expected Result
1	Check to see if the submitting resource has standing operating reserve dispatch data submitted. If it does, the standing OR data needs to be cancelled first for that hour and then cancel RTEM for the same hour.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day, and hour.
2	Click on the **Real Time Energy Markets (RTEM)**.	The "Real Time Energy Markets (RTEM)" screen will display.
3	For a "Normal" Bid type: Submit input data in the following mandatory fields	The input values selected for the given mandatory fields is displayed.

Step	User Instruction	Expected Result
	in submission header section for RTEM: - Bid Type = Normal - Delivery Date (Calendar pop-up on click) Select a value from drop-down list for the below, - Market Participant - Resource type - Resource Name	
4	For a "Standing" Bid type: Submit input data in the following mandatory fields in submission header section for RTEM: - Bid Type = STANDING Select a value from drop-down list for the below, - Standing Day Type - Market Participant - Resource type - Resource Name	The input values selected for the given mandatory fields is displayed.

Step	User Instruction	Expected Result
5	In the "Bid/Offer Submission Information section" 1. Expand required hours 2. Select "CANCEL" from Submit/Cancel drop-down	The action type for the submitting hours is cancelled. 
6	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the response "Successfully processed the RTEM cancellation" 

Test Cases

TC01: Verify that Real-Time Energy Market Non-Standing bid (Normal) data can be successfully submitted for an eligible resource

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-3, and 6 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the RT_INITIAL window.	

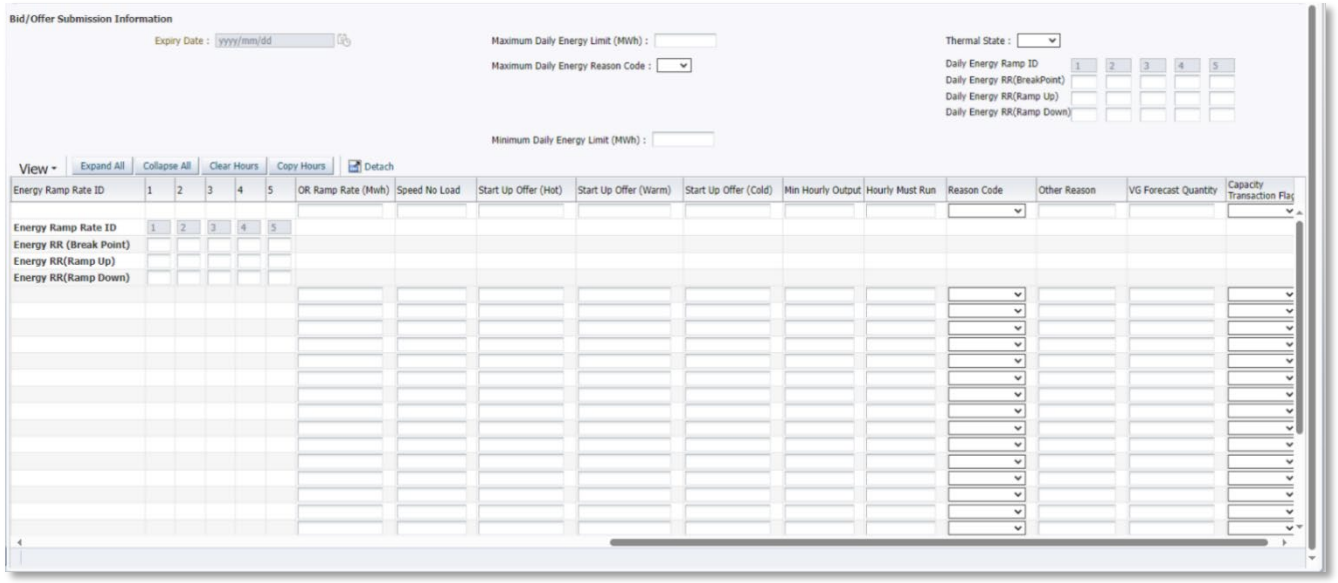
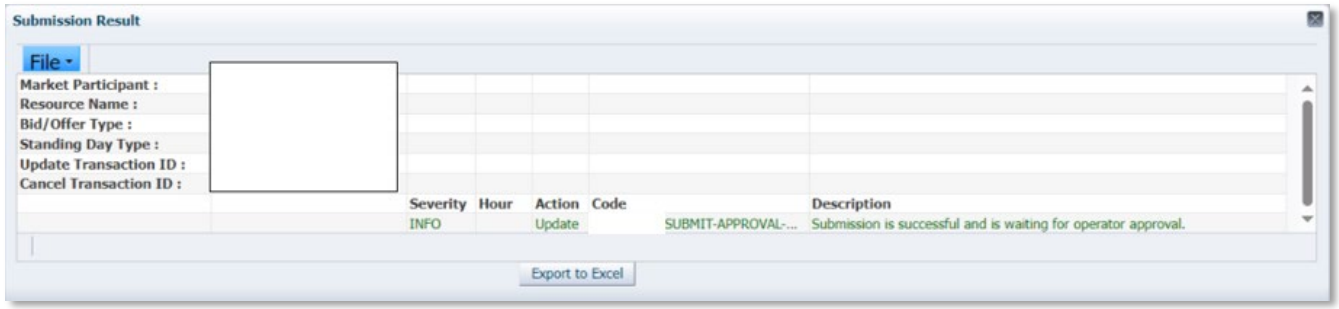
TC02: Verify that Real-Time Energy Market Standing bid can be successfully submitted for an eligible resource.

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1, 4, and 5-6 from CFS-02 from the Common Functional Steps section.	

TC03: Verify for a Real-Time Energy Market data submission: if the RT window for the specified/submitted hour is in a DA_RESTRICTED window state and there is a change in the hourly level values in comparison to daily and hourly data (excluding NercTag, ForecastQuantity, Reason and Other Reason), then the submission is subject to operator approval

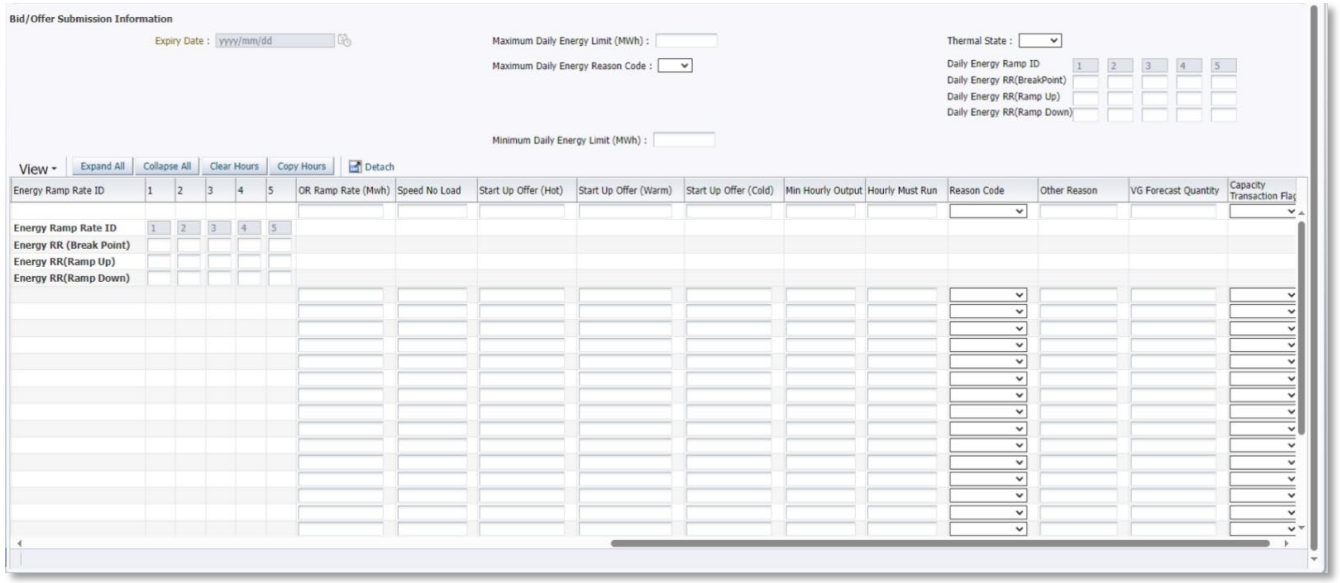
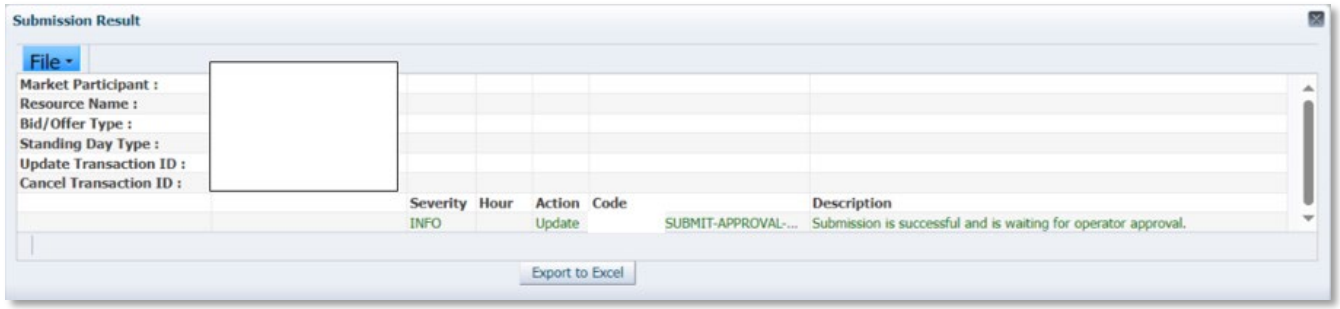
Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	

Step	User Instruction	Expected Result
2	Note: TC01 must be executed before proceeding to this step. Execute Steps 1-2 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the DA_RESTRICTED window for the submitting delivery date and hours.	
3	Submit hourly data in the "Bid/Offer Submission Information section" 1. Expand required hours 2. Select "Submit" from the Submit/Cancel drop-down field. 3. Enter values in the hourly input fields with a change in values in comparison to daily and hourly data (excluding NercTag, ForecastQuantity, Reason and Other Reason for these fields values can remain same)	The input values entered for the hourly input fields is displayed and action type for the submitting hours is submit.

Step	User Instruction	Expected Result
		
4	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the response "Submission is successful and is waiting for operator approval". 

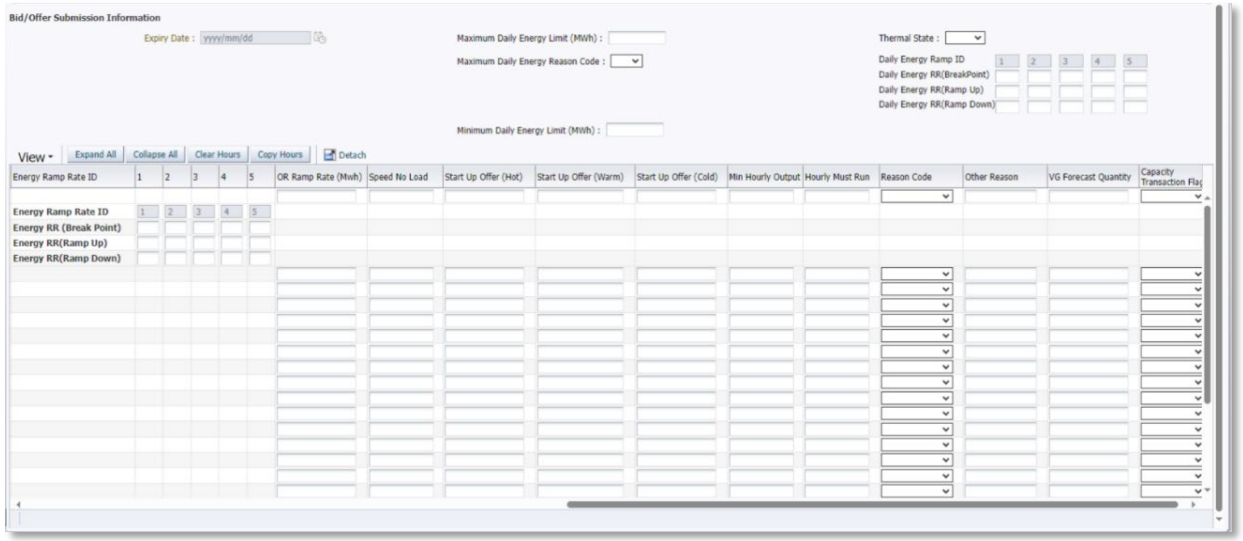
TC04: Verify for a Real-Time Energy Market data submission: if the RT window for the specified/submitted hour is in a RT _MANDATORY window state and there is a change in the hourly level values in comparison to daily and hourly data (excluding NercTag, ForecastQuantity, Reason and Other Reason), then the submission is subject to operator approval

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Note: TC01 must be executed before proceeding to this step. Execute Steps 1-2 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the RT_MANDATORY window for the submitting delivery date and hours.	
3	Submit hourly data in the "Bid/Offer Submission Information section" 1. Expand submitting hours 2. Select "Submit" from Submit/Cancel drop-down field.	The input values entered for the hourly input fields is displayed, action type for the submitting hours is submit.

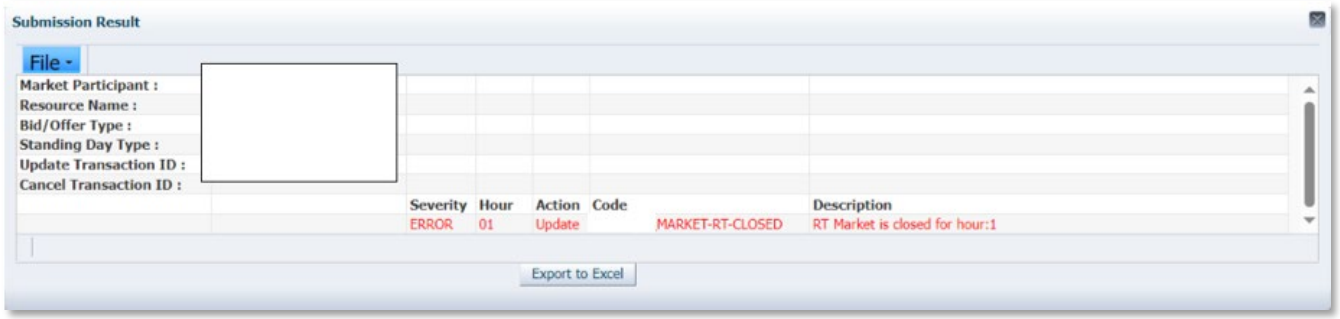
Step	User Instruction	Expected Result
	3. Enter values in the hourly input fields with a change in values in comparison to daily and hourly data (excluding NercTag, ForecastQuantity, Reason and Other Reason for these fields no changes required)	
4	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the response "Submission is successful and is waiting for operator approval". 

TC05: Verify for Real-Time Energy Market data submission: if the NERC window for the specified/submitted hour is in NERC_MANDATORY state and there is a change in NercTag value, then the NercTag change is subject to operator approval

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-3, and 6 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the NERC_INITIAL window for the submitting delivery date and hours.	
3	Submit another RTEM bid to make changes to the NercTag field value. Note: Physical Market is in the NERC_MANDATORY window for the submitting hour.	NercTag changes are displayed.

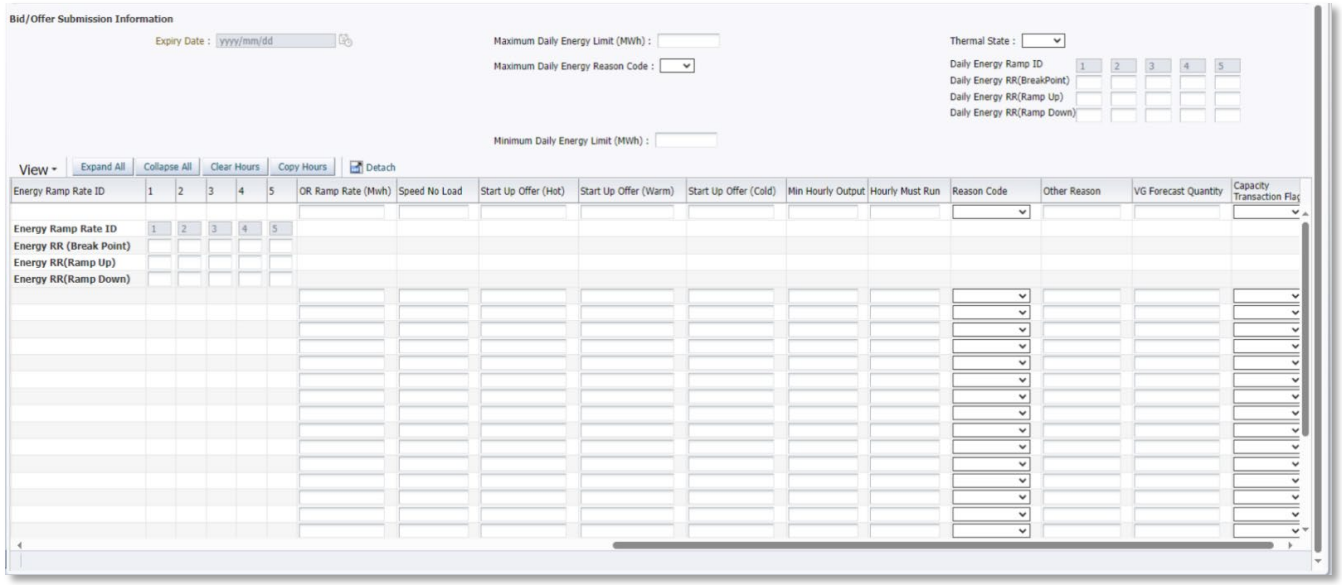
Step	User Instruction	Expected Result
		
4	Execute Step 6 from CFS-02 from the Common Functional Steps section.	

TC06: Verify that an error response is received for a Real-Time Energy Market data submission when the submitted hours are in the RT_CLOSE window

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-3 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the RT_CLOSE window for the submitting delivery date and hours.	
3	Click on the **SUBMIT** button in the header submission section.	Submission is not successful and submission result pop-up displays the error response "RT Market is closed for hour:XX" 

TC07: Verify that the submission for the dispatch hours specified in the RT_UNRESTRICTED1 Window is processed successfully for RTEM data submitted for Dispatch Day + 1.

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-2 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the RT_UNRESTRICTED1 window for the submitting delivery date and hours.	
3	Submit hourly data in the "Bid/Offer Submission Information section" 1. Expand the submitting hour that are within the RT_UNRESTRICTED1 window 2. Select "Submit" from Submit/Cancel drop-down 3. Enter values in the hourly input fields based on the submitting resource type	The input values entered for the hourly input fields is displayed and the action type for the submitting hours is submit.

Step	User Instruction	Expected Result
		
4	Execute Step 6 from CFS-02 from the Common Functional Steps section.	

TC08: Verify that Real-Time Energy Market Non-Standing (Normal) bid data can be successfully queried for the selected resource

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-2, and 4 from CFS-03 from the Common Functional Steps section.	

TC09: Verify that Real-Time Energy Market data can be successfully queried for Standing bid data

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1, 3, and 4 from CFS-03 from the Common Functional Steps section.	

TC10: Verify Real-Time Energy Market Non-Standing bid data can be successfully cancelled for an eligible resource

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Verify pre-condition 7 to proceed with the RTEM cancellation. Real-Time Energy cannot be cancelled if the corresponding Operating Reserve exists in system.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
3	Execute Steps 1-3, and 5-6 from CFS-04 from the Common Functional Steps section. Note: Physical Market is in the RT_INITIAL window.	

TC11: Verify Real-Time Energy Market Standing bid data can be successfully cancelled for eligible resource type

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Verify pre-condition 7 to proceed with the RTEM cancellation. Real-Time Energy cannot be cancelled if the corresponding Operating Reserve exists in system.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
3	Execute Steps 1-2, and 4-6 from CFS-04 from the Common Functional Steps section.	

TC12: Verify that Real-Time Energy Market start up offer data can be successfully submitted for a GOG-eligible resource

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Step 1-3, and 6 from CFS-02 from the Common Functional Steps section. Note: Physical Market is in the RT_INITIAL window.	

TC13: Verify that Real-Time Energy Market data for a GOG-eligible resource can be queried successfully

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Step 1-2, and 4 from CFS-02 from the Common Functional Steps section.	
3	Click on the **LOAD DATA** button in the header submission section.	The RTEM page displays the queried data values for the selected resource and delivery date.

TC14: If the RT window for the specified hour is in DA_RESTRICTED state, then an RTEM data cancellation is subject to operator approval

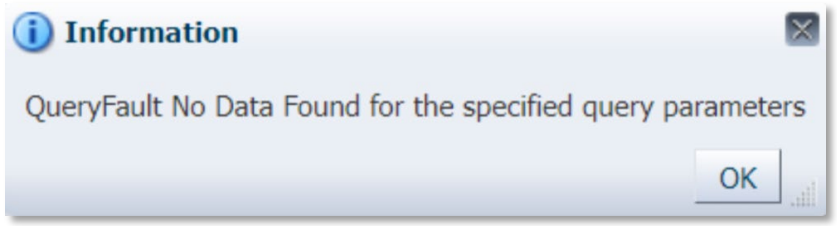
Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	

Step	User Instruction	Expected Result
2	Verify pre-condition 7 to proceed with the RTEM cancellation. Note: if OPRES cancellation is submitted during the DA_Restricted window then the submission is subject to operator approval.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
3	Execute Step 1-3, and 5 from CFS-04 from the Common Functional Steps section. Note: Physical Market is the DA_RESTRICTED window.	
4	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the response "Cancellation is successful and is waiting for operator approval."

TC15: If the RT window for the submitted hour is in the RT_Mandatory state, then the RTEM data cancellation is subject to operator approval

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Verify pre-condition 7 to proceed with the RTEM cancellation. Note: if OPRES cancellation is submitted during the RT_Mandatory window then the submission is subject to operator approval.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
3	Execute Steps 1-3, and 5 from CFS-04 from the Common Functional Steps section.	
4	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the response "Cancellation is successful and is waiting for operator approval.”

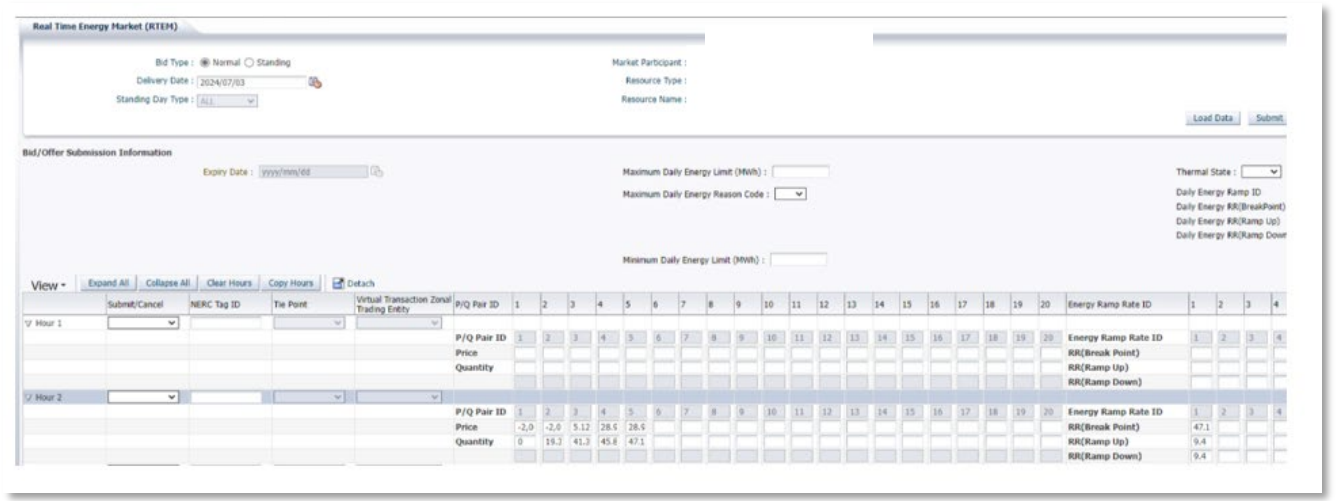
TC16: Verify that an error response is provided for an RTEM query for a resource that does not exist in the system

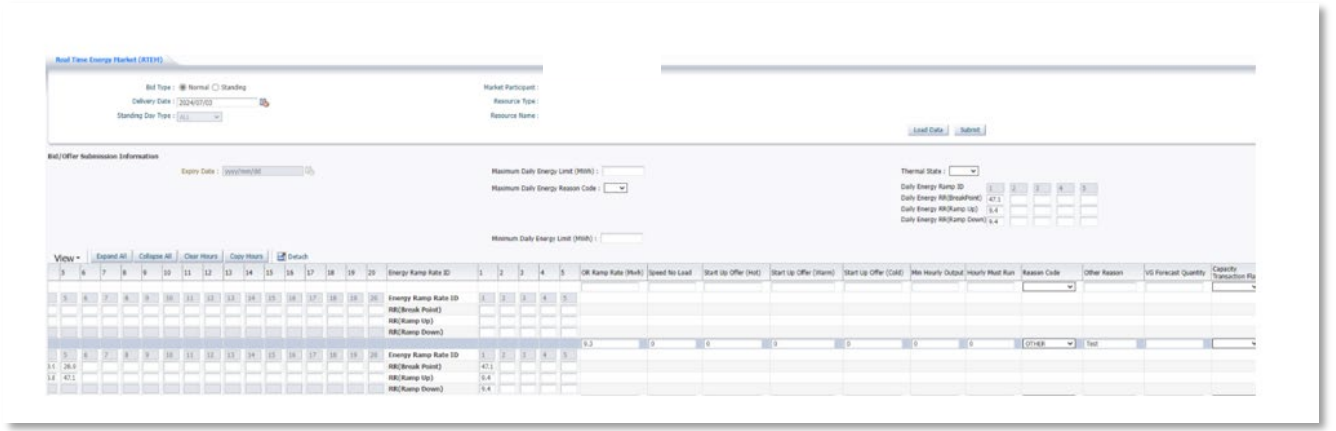
Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Pre-condition 9 is applied. Execute Steps 1-2 from CFS-03 from the Common Functional Steps section.	
3	Click on the **LOAD DATA** button in the header submission section.	An information pop-up with the message- QueryFault No Data Found for the specified query parameters is displayed in UI. 

TC17: Verify that after the cancellation of an RTEM bid data, it is successfully removed from the system for the selected delivery date and delivery hour

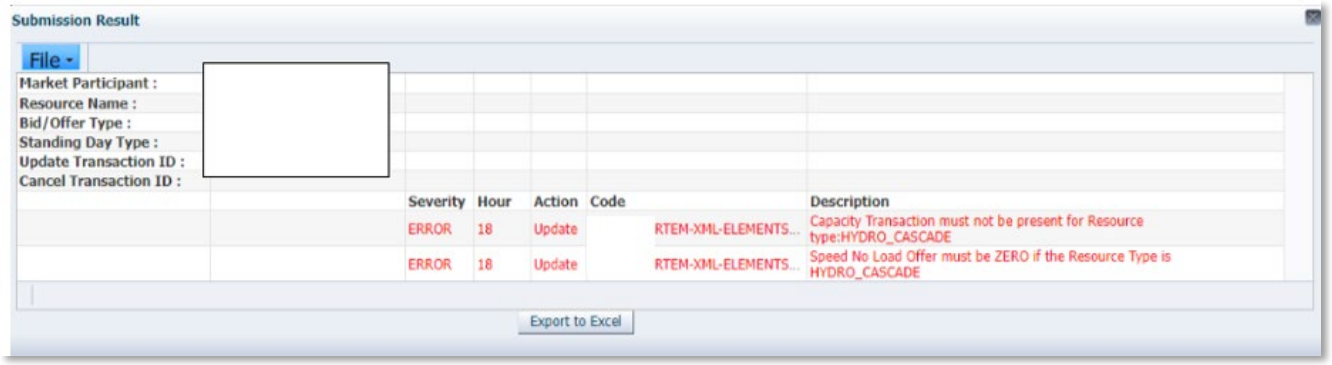
Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Verify pre-condition 7 to proceed with the RTEM cancellation. Real-Time Energy cannot be cancelled if the corresponding Operating Reserve exists in system.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
3	Execute Steps 1-3, and 5-6 from CFS-04 from the Common Functional Steps section. Note: Physical Market is in the RT_INITIAL window.	
4	Execute Step 1 and 6 from CFS-04 and click the **LOAD DATA** button in the header submission section.	The RTEM page displays the queried data values only for the non-cancelled hours of the given resource and delivery date. For the hours cancelled, the input fields are blank in UI.

Step	User Instruction	Expected Result

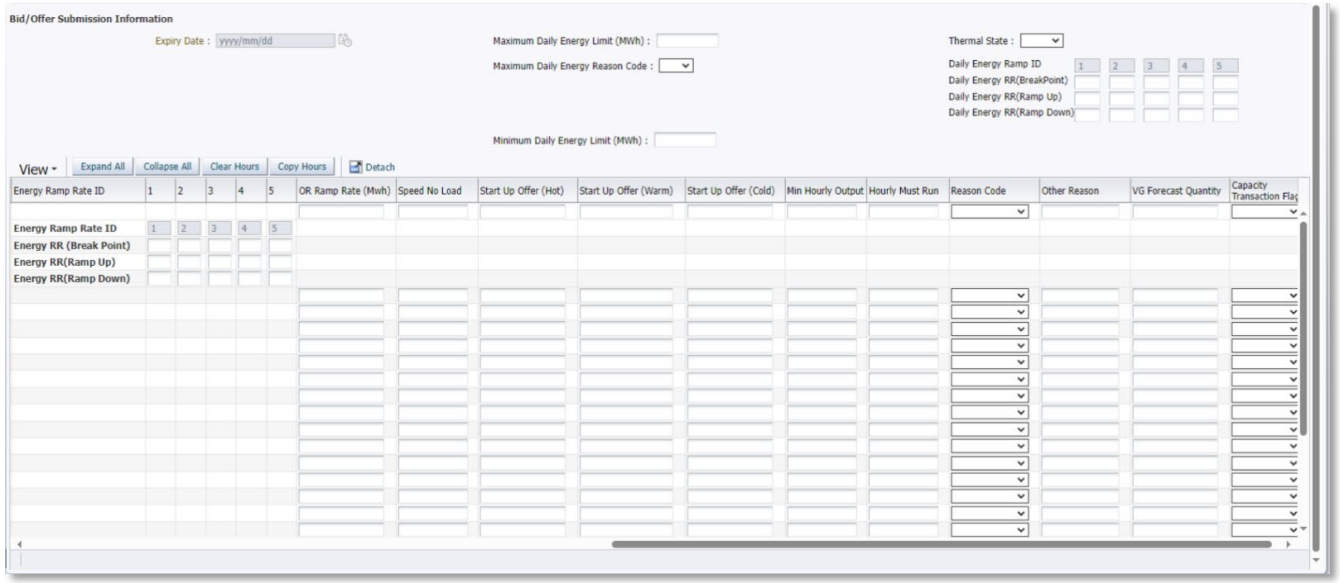


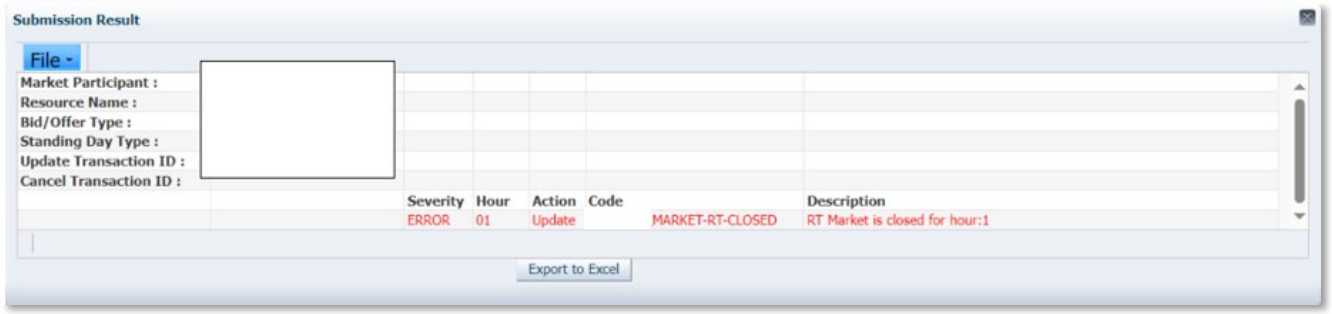


TC18: Verify an error message is displayed when invalid data is entered for an RTEM submission of a Non-Standing (Normal) bid for a resource

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-3 from CFS-02 from the Common Functional Steps section.	
3	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays individual error responses for the respective input fields where data validation failed. For example, below is the error response for the input fields (Capacity Transaction flag and Speed No Load Offer) where the validation failed. 

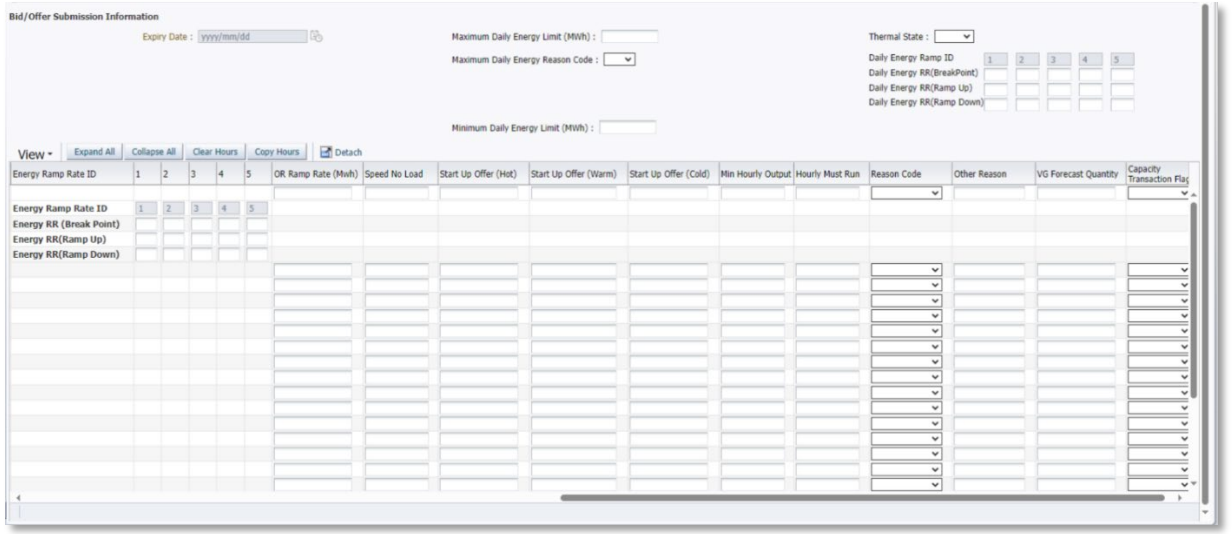
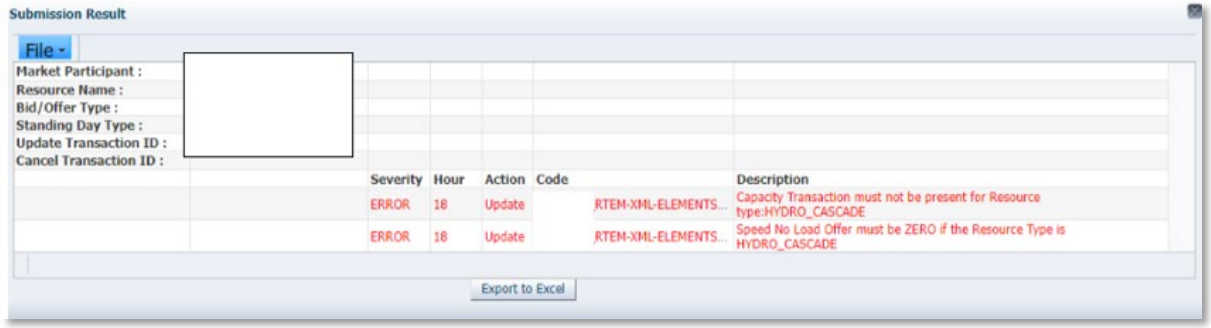
TC19: Verify that an error response message is displayed for a Real-Time Energy Market data cancellation request where the selected hours are in RT_CLOSE state

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1-2 from CFS-02 from the Common Functional Steps section.	
3	Submit hourly data in the "Bid/Offer Submission Information section" 1. Expand the submitting hour (Note: The hours must be in the **RT_CLOSE** window) 2. Select "Cancel" from Submit/Cancel drop-down	The action type for the submitting hours is cancel. 

Step	User Instruction	Expected Result
4	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays the error response "RT Market is closed for hour:XX." 

TC20: Verify that an error response message is returned when invalid data is entered for an RTEM submission of a Standing bid for a resource.

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS-01 from the Common Functional Steps section.	
2	Execute Steps 1 and 4 from CFS-02 from the Common Functional Steps section.	

Step	User Instruction	Expected Result
3	In the "Bid/Offer Submission Information section" 1. Expand required hours 2. -Select "SUBMIT" from Submit/Cancel drop-down 3. Enter invalid values in the hourly input fields based on values outside the acceptable value range for the submitting resource type	The input values entered for the hourly input fields is displayed and the action type for the submitting hours is submit. 
4	Click on the **SUBMIT** button in the header submission section.	Submission result pop-up displays individual error responses for the respective input fields where data validation failed. 

Additional Resources

- MRP Market Trials Test Plan
- Energy Market Interface/Market Information Management
    - Submitting and Revising Daily Dispatch Data
    - Submitting, Revising and Cancelling Energy Bids
    - Submitting, Revising and Cancelling Energy Offers
    - Submitting, Revising and Cancelling Import Offers and Export
    - Submitting and Revising Forebay Dispatch Data
    - Submitting, Revising and Cancelling Operating Reserve Offers
    - Submitting, Revising and Cancelling Schedules and Forecasts
- Test Cases for Connectivity Testing (.zip)
    Quick Take: Submission of Test Case Results and Defects in qTest

Independent Electricity System Operator
1600-120 Adelaide Street West
Toronto, Ontario M5H 1T1

Phone: 905.403.6900
Toll-free: 1.888.448.7777
E-mail: customer.relations@ieso.ca

ieso.ca

@IESO_Tweets
linkedin.com/company/IESO

ieso
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