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

August 7, 2024

Version 2.0



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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 <u>Quick</u> <u>Take: Submission of Test Case Results and Defects in qTest</u> on the <u>Market Participant Testing</u> 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://gatewaysbx.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

User is able to successfully log in to EMI

1 Log in to EMI directly through its URL (<u>https://emi-</u> <u>sandboxmrp.ieso.ca/</u>)

OR

Users can click on the "Energy Market interface for MRP" tile under the IESO Sandbox Gateway dashboard (https://gatewaysbx.ieso.ca/).

eso	Energy Ma	arket Interface (EMI) 202	4/01/3 10:24 EST	Sandbox	I USERNAME	Act as	22	+
Market Information	Market Status								
Markets				Market Status					
			Gen	erated : 2024/01/03 10:24	4:32				
				g ID Mandatory Window: XX:28 - :					
	Refresh	Detach	Past windows an	e greyed out. Current window is h	ighlighted in Yellow.				
	Market Hour	Start of Initial Window	Start of Mandatory Window	Start of Closed Window					
	2024/01/03 01	2024/01/02 06:00	2024/01/02 22:00	2024/01/02 23:50					
	2024/01/03 02	2024/01/02 06:00	2024/01/02 23:00	2024/01/03 00:50					
	2024/01/03 03	2024/01/02 06:00	2024/01/03 00:00	2024/01/03 01:50					
	2024/01/03 04	2024/01/02 06:00	2024/01/03 01:00	2024/01/03 02:50					
	2024/01/03 05	2024/01/02 06:00	2024/01/03 02:00	2024/01/03 03:50					
	2024/01/03 06	2024/01/02 06:00	2024/01/03 03:00	2024/01/03 04:50					
	2024/01/03 07	2024/01/02 06:00	2024/01/03 04:00	2024/01/03 05:50					
	2024/01/03 08	2024/01/02 06:00	2024/01/03 05:00	2024/01/03 06:50					
	2024/01/03 09	2024/01/02 06:00	2024/01/03 06:00	2024/01/03 07:50					
	2024/01/03 10	2024/01/02 06:00	2024/01/03 07:00	2024/01/03 08:50					
	2024/01/03 11	2024/01/02 06:00	2024/01/03 08:00	2024/01/03 09:50					
	2024/01/03 12	2024/01/02 06:00	2024/01/03 09:00	2024/01/03 10:50					
	2024/01/03 13	2024/01/02 06:00	2024/01/03 10:00	2024/01/03 11:50					
	2024/01/03 14	2024/01/02 06:00	2024/01/03 11:00	2024/01/03 12:50					
	2024/01/03 15	2024/01/02 06:00	2024/01/03 12:00	2024/01/03 13:50					
	2024/01/03 16	2024/01/02 06:00	2024/01/03 13:00	2024/01/03 14:50					
	2024/01/03 17	2024/01/02 06:00	2024/01/03 14:00	2024/01/03 15:50					
	2024/01/03 18	2024/01/02 06:00	2024/01/03 15:00	2024/01/03 16:50					
	2024/01/03 19	2024/01/02 06:00	2024/01/03 16:00	2024/01/03 17:50					
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	2024/01/03 22	2024/01/02 06:00	2024/01/03 19:00	2024/01/03 20:50					
	2024/01/03 23	2024/01/02 06:00	2024/01/03 20:00	2024/01/03 21:50					
	2024/01/03 24	2024/01/02 06:00	2024/01/03 21:00	2024/01/03 22:50					
	2024/01/04 01	2024/01/03 06:00	2024/01/03 22:00	2024/01/03 23:50					
	2024/01/04 02	2024/01/03 06:00	2024/01/03 23:00	2024/01/04 00:50					
	2024/01/04 03	2024/01/03 06:00	2024/01/04 00:00	2024/01/04 01:50					
	2024/01/04 04	2024/01/03 06:00	2024/01/04 01:00	2024/01/04 02:50					
	2024/01/04 05	2024/01/03 06:00	2024/01/04 02:00	2024/01/04 03:50					
	2024/01/04 06	2024/01/03 06:00	2024/01/04 03:00	2024/01/04 04:50					
	2024/01/04 07	2024/01/03 06:00	2024/01/04 04:00	2024/01/04 05:50					
	2024/01/04 08	2024/01/03 06:00	2024/01/04 05:00	2024/01/04 06:50					
	2024/01/04 09	2024/01/03 06:00	2024/01/04 06:00	2024/01/04 07:50					

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. Market Information Market Status Market Message Markets Real Time Energy Market (RTEM) Operating Reserve (OPRES) Schedule (SCH) Daily Dispatch Data (DDD) Bilateral (BLT) Forebay Dispatch Data (FDD)
2	For "Normal" Bid type: Submit input data in the following mandatory fields in submission header section for RTEM:	The input values selected for the given mandatory fields is displayed.

- Bid Type= Normal
- Delivery Date (Calendar pop-up on click)

Select a value from dropdown list for the below:

- Market Participant
- Resource type
- Resource Name

For "Normal" Bid type:

3

Submit hourly data in the "Bid/Offer Submission Information" section

Expand required hours
 Select "Submit" from
 Submit/Cancel drop-down
 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.

	Expiry	Date : yyyy/mm/de	1 0	0		Maximum D	aily E	nergy Li	mit (M	Wh): [The	rmal Sta	ate : [`	•				
						Maximum D					,]								Dail Dail	y Energ	y RR(E y RR(F	p ID BreakPoi Ramp Up Ramp Do)			3 4 5	
View -	Expand All Collapse A	I Clear Hours	Copy Hours																									
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						Quantity	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	Energy RR(Ramp Up)	-
						Quantry.																					Energy RR(Ramp Down)	÷
Hour 2	~	-		4	×																							
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		Expiry	Date	yyy	y/mm/	dd	G.			Maximum Daily En	ergy Limit (MWh) :			Thermal State :	*		
											ergy Reason Code :	v		Daily Energy Ramp 1 Daily Energy RR(Bre Daily Energy RR(Ran Daily Energy RR(Ran	np Up)		
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nergy Ramp Rate ID	1	1	2	3	4	5	OR Ramp Ra	ite (Mwh)	Speed No Load	Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output Hourly Must Run	Reason Code	Other Reason	VG Forecast Quantity	Capacity Transaction Fl
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For "Standing" Bid type:

4

Submit input data in the following mandatory fields in submission header section for RTEM:

- Bid Type= Standing

Select a value from dropdown list for the below,

- Standing day type
- Market Participant

The input values selected for the given mandatory fields is displayed.

Bid Type : O Normal Standing Delivery Date : yyyy/mm/dd	Market Participant : Resource Type :	
Standing Day Type : ALL	Resource Name :	
		Load Data Submit

Step	User Instruction	Expected Result
	- Resource type	
	- Resource Name	
5	For "Standing" Bid type: Submit hourly data in the	The input values entered for the hourly input fields is displayed and the action type for the submiting hours is submit.
	"Bid/Offer Submission Information section" 1. Select Expiry Date (Calendar pop-up on click)	Bid/Offer Submission Information Expiry Date: yyyy/mm/dd Maximum Daily Energy Limit (MiVh): Maximum Daily Energy Reason Code: Daily Energy RR(Emp U) Daily E
	Expand required hours	Minimum Daily Energy Limit (MWh):
	 Expand required hours Select "Submit" from 	View - Expand Al Collapse All Gear Hours Copy Hours Cop
	 Select "Submit" from Submit/Cancel drop-down Enter values in the 	View - Expand Al Clear Hours Coop Hours<
	 Select "Submit" from Submit/Cancel drop-down 	View - Dopand All Clear Hours Coop Hours
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on 	View - Expand Al Cear Hours Coop Hours </td
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View - Expand Al Cear Hours Coop Hours Cear Hours Coop Hours Cear Hours </td
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View - Expand Al Cear Hours Copy Hours Cear Hours Copy Hours Cear Hours Copy Hours Cear Hours </td
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on 	View Dopand Al Clear Hours Copy Hours Centry Ramp Cate Submit(Cancel NERC Top ID Te Point Thinkal Transaction Zond P/Q Pair ID 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 9 2 Energy Ramp Rate ID V Hour 1 V </td
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View Dopand All Cear Hours Coop Hours Pitcal Transaction Zond Pig Par ID 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Energy Ramp Rate ID V Hour 1
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View - Expand All Cear Hours Copy Hours Pirtual Transaction Zohal Pirtual Transaction Zoh
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	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View Boand Al Clear Hous Copy Hous Clear Hous Copy Hous Clear Hous
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View Dopad Al Cear Hous Coop Hous Pice Detail Submit/Cancel NERC Top ID Tie Point Yebal Tiensection 2000 P/Q Pair ID 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17 8 9 10 11 12 13 14 15 16 17
	 Select "Submit" from Submit/Cancel drop-down Enter values in the hourly input fields based on the submitting resource 	View Boand Al Clear Hous Copy Hous Clear Hous Copy Hous Clear Hous

		Exp	iry Date	: 1993	y/mm/	dd	6			ergy Limit (MWh) :			Thermal State :	*		
									Maximum Daily En	ergy Reason Code :	v		Daily Energy Ramp Daily Energy RR(Br Daily Energy RR(Ra Daily Energy RR(Ra	eakPoint) mp Up)		
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nergy Ramp I	Rate ID	1	2	3	4	5	OR Ramp Rate (Mw) Speed No Load	Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output Hourly Must Ru		Other Reason	VG Forecast Quantity	Transaction Pi
ergy Ram	Rate ID	1	2	3	4	5							~			
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For both a "Normal" Bid type and a "Standing" Bid type:

6

Click on the **SUBMIT** button in the header submission section.

Submission result pop-up displays the response "Successfully processed the RTEM submission".

Bid Type : Normal Standing	Market Participant :	
Delivery Date :	Resource Type : GENERATOR 🗸	
Standing Day Type : ALL 😽	Resource Name : 🗸	

ile •							
rket Participant :							
source Name :							
/Offer Type :	Normal						
nding Day Type :	ALL						
date Transaction ID :							
cel Transaction ID :							
		Severity	Hour	Action	Code		Description
		INFO		Update	1	_I_SUBMIT-SUCCESS	Successfully processed the RTEM submissi
			Hour			I_SUBMIT-SUCCESS	

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.



For a "Normal" Bid type:

2

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 dropdown list for the below,

- Market Participant
- Resource type
- Resource Name

The input values selected for the given mandatory fields is displayed.

Bid Type : Normal Standing Delivery Date : 2024/07/02	Market Participant : Resource Type :	
Standing Day Type : ALL 💗	Resource Name :	Load Data Submit
		Load Data Submit

User Instruction Expected Result Step The input values selected for the given mandatory fields is displayed. 3 For a "Standing" Bid type: Submit input data in the Real Time Energy Market (RTEM) following mandatory fields Bid Type : O Normal @ Standing Market Participant in submission header Delivery Date : yyyy/mm/dd Resource Type Standing Day Type : ALL 👻 Resource Name section for RTEM: Load Data Submit - Bid Type = STANDING Select a value from dropdown list for the below, - Standing Day Type - Market Participant - Resource type - Resource Name

For both a "Normal" Bid type and a "Standing" Bid type:

4

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.

Real Time	Energy Market (R	TEM)																				_			
	Bid Type Delivery Date Standing Day Type	: yyyyy/	rmal (®) Standing mm/dd ❤				Re	t Participant source Type ource Name													L	ad Dat	ta	Submit	
Bid/Offer Sul	bmission Informa	tion																							
		Expir	y Date : 5000/12	/31	60			Maximum	Daily Energy	Limit (M	Wh) :											Therma	al State	: [~
								Maximum	Daily Energy	Reason (Code :	*									1	Daily E	nergy R nergy R	amp ID R(Break R(Ramp R(Ramp	(Point) (Up)
								Minimum	Daily Energy	Limit (MV	vh) : [_													
View •	Expand All Co	silapse All	Clear Hours	Copy Hours	De	etach																			
	Submit/Can	cel	NERC Tag ID	Tie Point	V	Virtual Transaction Zonal Trading Entity	P/Q Pair ID	1	2	3	4	5	6	7 8	9	10	11	12	13	14	15	16	17	18	19
V Hour 1		*			*	*																			
							P/Q Pair ID		2	3	4	5	6	7 8	9	10	11	12	13	14	15	16	17	18	19
							Price	-2,000	-2,000																
							Quantity	0	8																

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. Market Information Market Status Market Message Markets Real Time Energy Market (RTEM) Operating Reserve (OPRES) Schedule (SCH) Daily Dispatch Data (DDD) Bilateral (BLT) Forebay Dispatch Data (FDD)
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:	Real Time Energy Market (RTEH) Bid Type :
	- Bid Type = Normal	Delivery Date : 2024/07/02 Resource Type : Standing Day Type : ALL Load Data Submit
	 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:	The input values selected for the given mandatory fields is displayed.
	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	

In the "Bid/Offer Submission Information section"		tion type	for the	submi	tting hours	is can	celle	d.		_			_		_	_	_	_	_	_		_
1. Expand required hours		Bid Type : ON	lormal 🔘 Standing	1		Market	Participant															
2. Select "CANCEL" from		Delivery Date : yyyy		E6			ource Type															
	5	Standing Day Type : ALL	*			Reso	ource Name															
Submit/Cancel drop-down																			Loa	ad Data	Subm	nit
	Bid/Offer Subr	mission Information																				
		Exp	iry Date : 5000/1	2/31	120		Maximum	Daily Energy I	Limit (MWI	h):									т	hermal SI	tate :	~
							Maximum	Daily Energy I	Reason Co	de : 🚺	*									1000	gy Ramp 1	
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							Minimum (Daily Energy L	.imit (MWh):												
	View •	Expand All Collapse A	dl Clear Hours	Copy Hours	Detach																	
		Submit/Cancel	NERC Tag ID	Tie Point	Virtual Transaction Zona Trading Entity	P/Q Pair ID	1	2	3	4 5	6	7	8 9	10	11	12	13	14	15	16 17	18	19
	7 Hour 1	Cancel 🗸	-		× ×			1.0				1			1 1 2 2	1.00	100		-	-		-
						P/Q Pair ID Price	-2,000	-2,000	3	4	0		8 9	9 10	11	12	13	14	15	16 1	/ 18	19
						Quantity	0	8														

Click on the **SUBMIT** button in the header submission section.

5

6

Submission result pop-up displays the response "Successfully processed the RTEM cancellation"

File -							
Market Participant :							
Resource Name :							
Bid/Offer Type :	Normal						
Standing Day Type :	ALL						
Update Transaction ID :							
Cancel Transaction ID :							
		Severity	Hour	Action	Code		Description
		INFO		Cancel		L_I_CANCEL-SUCCESS	Successfully processed the RTEM cancellation
			Hour		1	LCANCEL-SUCCESS	

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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1-3, and 6 from CFS-02 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1, 4, and 5-6 from CFS-02 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> 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.

/Offer Subm	ission Inion															
		Exp	iry Date	11 (YY)	yy/mm	dd	60		Maximum Daily En	ergy Limit (MWh) :			Thermal State :	~		
										ergy Reason Code :	J		Daily Energy Ramp 1 Daily Energy RR(Bre Daily Energy RR(Rar Daily Energy RR(Rar	akPoint)		
view •		Collaps	se All					1								Capacity
nergy Ramp Rat	te ID	1	2	3	4	5	OR Ramp Rate (Mwh) Speed No Load	Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output Hourly Must Run		Other Reason	VG Forecast Quantity	Capacity Transaction Fl
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Click on the **SUBMIT** button in the header submission section.

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Submission result pop-up displays the response "Submission is successful and is waiting for operator approval".

File •							
Market Participant : Resource Name :							
Bid/Offer Type :							
standing Day Type :							
Update Transaction ID : Cancel Transaction ID :							
	Severity	Hour	Action	Code		Description	
	INFO		Update		SUBMIT-APPROVAL	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 <u>Common</u> <u>Functional Steps</u> section.	
2	Note: TC01 must be executed before proceeding to this step.	
	Execute Steps 1-2 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> 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)

	Exp	piry Date	: уу	yy/mm/	dd	6		Maximum Daily En	ergy Limit (MWh) :			Thermal State :	~		
								Maximum Daily En	ergy Reason Code :	~		Daily Energy Ramp I Daily Energy RR(Bre Daily Energy RR(Ran Daily Energy RR(Ran	akPoint)		
View - Expand All	Collap	ise All	Clear	r Hours	Cop	y Hours 🛃 Detac	h	Minimum Daily Ene	rgy Limit (MWh) :						
nergy Ramp Rate ID	1	2	3	4	5	OR Ramp Rate (Mwh)	Speed No Load	Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output Hourly Must Run	Reason Code	Other Reason	VG Forecast Quantity	Capacity Transaction Fl
nergy Ramp Rate ID	1	2	3	4	5							~			
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Click on the **SUBMIT** button in the header submission section.

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Submission result pop-up displays the response "Submission is successful and is waiting for operator approval".

Severity	Hour	Action	Code		Description	
INFO		Update		SUBMIT-APPROVAL	Submission is successful and is waiting for operator approval.	
	the second s	Severity Hour				

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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1-3, and 6 from CFS-02 from the <u>Common Functional Steps</u> 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.	NercTag changes are displayed.
	Note: Physical Market is in the NERC_MANDATORY window for the submitting hour.	

	Exp	iry Date	: 199	ry/mm/	đđ	B			ergy Limit (MWh) :	T			Thermal State : Daily Energy Ramp	V ID 1	2 3 4 5	
									rgy Limit (MWh) :				Daily Energy RR(Bro Daily Energy RR(Ra Daily Energy RR(Ra	eakPoint) mp Up)		
View • Expand All nergy Ramp Rate ID	Collap	se All	Clear 3	Hours 4	Cos 5	OR Ramp Rate (M	ach (h) Speed No Load	Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output	Hourly Must Run	Reason Code	Other Reason	VG Forecast Quantity	Capacity Transaction Flag
							1						×			
Energy Ramp Rate ID	1	2	3	4	5											
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Execute Step 6 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> section.

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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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1-3 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> 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"
		File - Market Participant : Resource Name : Bid/Offer Type : Standing Day Type : Update Transaction ID : Severity Hour Action Code Description
		ERROR 01 Update MARKET-RT-CLOSED RT Market is closed for hour:1

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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1-2 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> 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.

/Offer Submission Infor	mation	n														
	Exp	iry Date	: YY	/y/mm	dd	6		Maximum Daily En	ergy Limit (MWh) :				Thermal State :	~		
								Maximum Daily Er	ergy Reason Code :	v			Daily Energy Ramp Daily Energy RR(Br Daily Energy RR(Rr Daily Energy RR(Rr	eakPoint) mp Up)	2 3 4 5	
/iew • Expand All	Collap	se All	Clear	Hours	Cop	py Hours 🔄 🛃 De	tach	Minimum Daily En	ergy Limit (MWh) :							
ergy Ramp Rate ID	1	2	3	4	5	OR Ramp Rate (M	vh) Speed No Load	Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output	Hourly Must Run	Reason Code	Other Reason	VG Forecast Quantity	Capacity Transaction F
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ergy Ramp Rate ID ergy RR (Break Point)	1	2	3	4	5											
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ergy RR(Ramp Down)				-												
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4 Execute Step 6 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.				
2	Execute Steps 1-2, and 4 from CFS-03 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.						
2	Execute Steps 1, 3, and 4 from CFS-03 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> 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 <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> 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 <u>Common Functional Steps</u> section.	

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

Step	User Instruction	Expected Result
1	Execute Step 1 from CFS- 01 from the <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Step 1-3, and 6 from CFS-02 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Step 1-2, and 4 from CFS-02 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.	

Step	User Instruction	Expected Result
2	Verify pre-condition 7 to proceed with the RTEM cancellation.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
	Note: if OPRES cancellation is submitted during the DA_Restricted window then the submission is subject to operator approval.	
3	Execute Step 1-3, and 5 from CFS-04 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.	
2	Verify pre-condition 7 to proceed with the RTEM cancellation.	The RTEM resource does not have operating reserve dispatch data present for the submitting resource, delivery day and hour.
	Note: if OPRES cancellation is submitted during the RT_Mandatory window then the submission is subject to operator approval.	
3	Execute Steps 1-3, and 5 from CFS-04 from the <u>Common Functional Steps</u> 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 <u>Common</u> <u>Functional Steps</u> section.	
2	Pre-condition 9 is applied.	
	Execute Steps 1-2 from CFS-03 from the <u>Common</u> <u>Functional Steps</u> 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.
	Submission Section.	(i) Information
		QueryFault No Data Found for the specified query parameters

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 <u>Common</u> <u>Functional Steps</u> 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 <u>Common Functional Steps</u> 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.

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Offer Submissi	usion Information																									Ĩ
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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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1-3 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> 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 da validation failed. For example, below is the error response for the input fields (Capacity Transaction flag and Speed N Load Offer) where the validation failed.
		Submission Result
		Submission Result File - Market Participant : Image: Colspan = Image:
		Submission Result File Market Participant : Resource Name : Image: Colspan="2">Colspan="2" Market Participant : Colspan="2">Colspan="2" Bid/Offer Type : Colspan="2">Colspan="2" Standing Day Type : Colspan="2">Colspan="2" Colspan="2">Colspan="2" Update Transaction ID : Colspan="2">Colspan="2" Colspan="2">Colspan="2" Colspan="2" Cancel Transaction ID : Severity Hour Action Code Description Capacity Transaction must not be present for Resource type:HYDRO_CASCADE Capacity Transaction must not be present for Resource type:HYDRO_CASCADE Capacity Transaction for the Resource type is Colspan="2" Colspa="2" Colspan="2" Colspa=
		Submission Result File - Market Participant : Image: Colspan = Image:

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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1-2 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> 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)	The action type for the submitting hours is cancel.
	window) 2. Select "Cancel" from Submit/Cancel drop-down	View Example Alt Column Alt </th

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."									
		Update Transaction ID : Cancel Transaction ID :									
			Severity		Action	Code		Description			
			ERROR		Update Export to	Excel	MARKET-RT-CLOSED	RT Market is closed for hour:1			

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 <u>Common</u> <u>Functional Steps</u> section.	
2	Execute Steps 1 and 4 from CFS-02 from the <u>Common</u> <u>Functional Steps</u> section.	

In the "Bid/Offer Submission Information section"

3

4

 Expand required hours
 -Select "SUBMIT" from Submit/Cancel drop-down
 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.

		yyy/mm/	aa	Po Po			ergy Limit (MWh) :	~		Daily Energy Ramp I	V 1 2	3 4 5	
lapse A						Maximum Daily En	ergy Reason Code :	~			ID 1 2	3 4 5	
llapse A	1 0									Daily Energy RR(Bre Daily Energy RR(Ran	mp Up)	3888	3
нарзе м		ar blaum	Daily Energy RR(Ramp Down) Daily Energy RR(Ramp Down) Minimum Daily Energy Limit (MVM) :										
2	3	4		OR Ramp Rate (Mwh)		Start Up Offer (Hot)	Start Up Offer (Warm)	Start Up Offer (Cold)	Min Hourly Output Hourly Must Run	Reason Code	Other Reason	VG Forecast Quantity	Capacity Transaction F
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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.

File - arket Participant :			-				-
source Name :							
d/Offer Type :							
anding Day Type :							
date Transaction ID :							
ncel Transaction ID :							
	Severity	Hour	Action	Code		Description	
	ERROR	18	Update		RTEM-XML-ELEMENTS	Capacity Transaction must not be present for Resource type:HYDRO_CASCADE	
	ERROR	18	Update		RTEM-XML-ELEMENTS	Speed No Load Offer must be ZERO if the Resource Type is HYDRO_CASCADE	
			Export to	Evcel			

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
 - o Submitting, Revising and Cancelling Energy Offers
 - o Submitting, Revising and Cancelling Import Offers and Export
 - Submitting and Revising Forebay Dispatch Data
 - o Submitting, Revising and Cancelling Operating Reserve Offers
 - Submitting, Revising and Cancelling Schedules and Forecasts
- <u>Test Cases for Connectivity Testing (.zip)</u> <u>Quick Take: Submission of Test Case Results and Defects in qTest</u>

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