Market Simulation Summer 2023 Release

Trang Vo

April 27, 2023

Overview

- Market Simulation Support
- Market Simulation Communication
- Market Simulation MAP Stage Availability
- System Impacts
- Interface Change Summary
- Market Simulation Activities
- Market Simulation Settlements
- Initiatives
  - WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 1
  - Energy Storage Enhancements Track 1
  - Hybrid Resources Phase 2C – Settlements
  - Ancillary Service State of Charge Constraint
  - URL Changes (Application Delivery Resiliency)
  - Flexible Ramping Product Refinements
- Next Steps

California ISO

Market Simulation Support

- Business Days 0900 – 1800 PT

- 24x7 Service Desk: (916) 351-2309

- marketsim@caiso.com

- Submit issues to CIDI with 'Functional Environment' = "Market Simulation %"

  - For Summer 2023 Release use "Market Simulation Summer 2023"

Market Simulation Communication

	Monday	Tuesday	Wednesday	Thursday	Friday
May	1	2*	3	4*	5
	8	9*	10	11*	12
	15	16*	17	18*	19
	22	23*	24	25*	26
	29	30*	31	1*	2

ISO Closure

Market Simulation Forum

*Settlements Trade Date

California ISO

Market Simulation MAP Stage Availability

- MAP Stage weekly maintenance window is Friday*

System	UI	API	Comments
ADS			
ALFS	NA		
BAAOP			
BSAP			
CIRA			
CMRI	✓ RSEE2T1 TD 4/17/23 • ASSOCC Deployed 4/26/23 – Pending data	✓ RSEE2T1 TD 4/17/23 • ASSOCC Deployed 4/26/23 – Pending data	Upcoming CMRI UI/API Closure Week of 5/1 – More timing details to come
CRR		NA	
DRRS			
MF			✓ Deployed RSEE2T1 4/17/23
OASIS	✓ RSEE2T1 TD 4/17/23	✓ RSEE2T1 TD 4/17/23	
OMS			
RCBSAP			
RIMS		NA	
SIBR			✓ Deployed RSEE2T1 & ESET1 4/17/23
MRIS			Settlements will be deployed 5/1/23

AVAILABLE

MAINTENANCE

*Maintenance may also occur after 1600 PT on other days and may deviate from the weekly maintenance window as necessary

California ISO

Summer 2023 Release Overview – System Impacts

Project	CMRI	Master File	OASIS	Settlements	Market	SIBR
Energy Storage Enhancements Track 1					**X** MS 4/28/23	**X** ✓ MS 4/17/23
WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 1	**X*** ✓ MS 4/18/23	**X** ✓ MS 4/17/23	**X*** ✓ MS 4/18/23	**X** MS 5/1/23	**X** ✓ MS 4/17/23	**X** ✓ MS 4/17/23
Hybrid Resources2C – Settlements				**X** MS 5/1/23		
Ancillary Service State of Charge Constraint	**X*** ✓ MS 4/26/23 Deployed *Pending Data*			**X** MS 5/1/23	**X** MS 4/28/23	

X* = Technical Specifications

Overview – System Interface Changes – Summer 2023 Release

System	Project	UI	API	Data	Tech Specs	MAPSTAGE
CMRI	RSEE2T1	No new data publication on 2 reports: EIM > Bid Range Capacity Test Results EIM > Flexible Ramp Requirement Sufficiency Test Results	RetrieveEIMTestResults RretrieveEIMTestResults_DocAttach These will not populate new data for EIMBidRangeCapacityTest and EIMFlexibleRampRequirementSufficiencyTest sections	The historical pre-activation data shall still be available via the UI & API. New data won't be published for these. These data are moved to OASIS reports below (WEIM RSE Capacity Tests, FRR Inputs & Outputs)	4/3/23	4/18/23
CMRI	ASSOCC	**New:** Real-Time > Market Active Resource Constraint	**New**: RetrieveMarketActiveResourceConstraintv1 RetrieveMarketActiveResourceConstraintv1_DocAttach	Data retroactive to 9/20/22	4/3/23	**Deployed 4/26/23 Pending Data**
OASIS	RSEE2T1	**New**: Public Bids > Market Bid Caps	**New**: MKT_BID_CAPS_GRP		3/30/23	4/18/23
OASIS	RSEE2T1	Existing: Energy > EIM > WEIM RSE Capacity Tests	Existing: Energy > EIM > WEIM RSE Capacity Tests	> Original data publishing is existing system functionality. > Corrected data publishing is new system functionality that will be published on same existing report as original data. >BAA RSE Capacity Test Failure Upward/Downward Capacity (15-min granularity) >New Column in CSV >New DATA_ITEM in XSD	4/12/23	4/18/23
OASIS	RSEE2T1	Existing: Energy > Flexible Ramping > Flexible Ramp Requirements Inputs and Outputs (WEIM RSE Flexible Ramping Tests)	Existing: Energy > Flexible Ramping > Flexible Ramp Requirements Inputs and Outputs (WEIM RSE Flexible Ramping Tests)	> Original data publishing is existing system functionality. > Corrected data publishing is new system functionality that will be published on same existing report as original data. >BAA RSE Flexible Ramp Test Failure Upward/Downward Capacity (15-min granularity) >New Column in CSV >New DATA_ITEM in XSD	4/12/23	4/18/23

Overview – System Interface Changes – Summer 2023 Release

System	Project	UI	API	Data	Tech Specs	MAPSTAGE
CIDI	RSEE2T1	BAA Assistance Energy Transfer Opt In/Out Checkbox	NA	NA	**NA – Production 4/10/23**	**NA – Production 4/10/23**
MF	RSEE2T1	Existing	Existing	BAA Assistance Energy Transfer Opt In/Out Flag	NA	**4/17/23**
SIBR	ESET1	Existing	Existing	Rules Only	NA	**4/17/23**
SIBR	RSEE2T1	NA	NA	Send RTM Bid Cap data downstream	NA	**4/17/23**
ITS	RSEE2T1	Existing	NA	Exports e-Tagging Submission Requirement > SCs shall be required to e-tag the following as "Firm Provisional Energy (G-FP)", via utilizing Misc. field: o RT economic (RTECON) exports that clear HASP o DA economic (DAECON) exports that clear both RUC and HASP o RTLPT exports that clear HASP o DALPT exports that clear both RUC and HASP > SCs shall be required to e-tag the following as "Firm Energy (G-F)": o RTPT exports that clear HASP o DAPT exports that clear both RUC and HASP	NA	NA

California ISO

Market Simulation Activities

Initiative	Market Simulation	Comments
RSEE2T1	Structured & Unstructured	Leverage settlements TDs
ESET1	Unstructured	No settlements impacts
HR2C	Unstructured	Leverage settlements TDs
ASSOCC	Unstructured	ISO will monitor and intervene as necessary
URL Changes (ADR)	Connectivity/Unstructured	No settlements impacts
FRP Nomograms	Unstructured	No settlements impacts

	Monday	Tuesday *Settlements	Wednesday	Thursday *Settlements	Friday
May	1	2* > **RSEE2T1 S1** Hours TBD	3	4* > **RSEE2T1 S1** Hours TBD	5
	8	9* > **RSEE2T1 S1** Hours TBD	10	11*	12
	15	16*	17	18*	19
	22	23*	24	25*	26
	29 Holiday	30*	31	1	2

ISO Closure	Market Simulation Forum @ 1400 PT

ISO PUBLIC

California ISO

Market Simulation Settlements Calendar

Calendar Day	Day	CMRI T+1B	Submit Meter Data by T+2B 10:00 for Initial	Publish Initial Statement T+5B	Submit Meter Data by T+5B 18:00 for Recalc	Publish Recalc Statement T+8B	Publish Market Invoice
			T+9B	T+9B	T+70B	T+70B	
01-May-23	Monday						
02-May-23	Tuesday						
03-May-23	Wednesday	2-May					
04-May-23	Thursday		2-May				
05-May-23	Friday	4-May					
08-May-23	Monday		4-May				
09-May-23	Tuesday			2-May	2-May		
10-May-23	Wednesday	9-May					
11-May-23	Thursday		9-May	4-May	4-May		
12-May-23	Friday	11-May		Monthly Initial 2-May - 4-May		2-May	Daily Initial 2-May; Daily Initial 4-May; Monthly Initial 2-May - 4-May;
15-May-23	Monday		11-May				
16-May-23	Tuesday			9-May	9-May	4-May	
17-May-23	Wednesday	16-May				Monthly Recalc 2-May - 4-May	Daily Recalc 2-May; Daily Recalc 4-May; Monthly Recalc 2-May - 4-May;
18-May-23	Thursday		16-May	11-May	11-May		
19-May-23	Friday	18-May		Monthly Initial 9-May - 11-May		9-May	Daily Initial 9-May; Daily Initial 11-May; Monthly Initial 9-May - 11-May;
22-May-23	Monday		18-May				
23-May-23	Tuesday			16-May	16-May	11-May	
24-May-23	Wednesday	23-May				Monthly Recalc 9-May - 11-May	Daily Recalc 9-May; Daily Recalc 11-May; Monthly Recalc 9-May - 11-May;
25-May-23	Thursday		23-May	18-May	18-May		
26-May-23	Friday	25-May		Monthly Initial 16-May - 18-May		16-May	Daily Initial 16-May; Daily Initial 18-May; Monthly Initial 16-May - 18-May;
30-May-23	Tuesday		25-May				
31-May-23	Wednesday	30-May		23-May	23-May	18-May	
01-Jun-23	Thursday		30-May			Monthly Recalc 16-May - 18-May	Daily Recalc 16-May; Daily Recalc 18-May; Monthly Recalc 16-May - 18-May;
02-Jun-23	Friday			25-May	25-May		
05-Jun-23	Monday					23-May	
06-Jun-23	Tuesday			30-May	30-May		
07-Jun-23	Wednesday			Monthly Initial 23-May - 30-May		25-May	Daily Initial 23-May; Daily Initial 25-May; Daily Initial 30-May; Monthly Initial 23-May - 30-May;
08-Jun-23	Thursday						
09-Jun-23	Friday					30-May Monthly Recalc 23-May - 30-May	Daily Initial 23-May; Daily Initial 25-May; Daily Initial 30-May; Monthly Initial 23-May - 30-May;

California ISO

WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 1

- Structured & Unstructured Market Simulation
- All non-Settlements changes in MAPSTAGE as of 4/17 & 4/18
- Settlements changes to go to MAPSTAGE 5/1
- BRS
- Market Simulation Scenarios
- Training course held 4/26
  - Presentation
  - Video available on the Learning Center

California ISO

WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 1: Scenario 1

Scenario Number	Structured Scenario	
	Description	Facilitate simulation of assistance energy transfer opt-In functionality.
	ISO Actions	Facilitate failure of upward capacity test and/or flexible ramping test for WEIMs signed up for market sim.
	WEIM Market Participant Actions	1) WEIM market participants should opt-in for the assistance energy transfer functionality via CIDI 2) Facilitate conditions to fail upward capacity test and/or flexible ramping test. 3) Submit ETSR Limits
	ISO Market Participant Actions	N/A
1	Expected Outcome	When opted in, allow that BAA to receive WEIM assistance energy transfer by not enforcing the BAA Import transfer limit in the base scenario. Verify the RSE failure capacities and RTM bid cap in CMRI and OASIS.
	Anticipated Settlement Outcome	Verify assistance energy transfer charges and revenue allocation
	Expected Settlement Outcome	BPM CG CC 6476 Real Time Assistance Energy Transfer Surcharge_5.0 BPM CG CC 6479 Real Time Assistance Energy Transfer Allocation_5.0

California ISO

WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 1: Scenario 2

Scenario Number	Unstructured Scenario	
	Description	Facilitate submission of G-FP Export e-Tagging.
	ISO Actions	N/A
	EIM Market Participant Actions	Market Participants should e-tag several export resources as "Firm Provisional Energy (G-FP)".
	ISO Market Participant Actions	N/A
	Expected Outcome	Market Participants verify G-FP e-tags in their own Web Smart Tag system. CAISO Operators will verify ITS for G-FP e-tags.
	Anticipated Settlement Outcome	N/A
2	Expected Settlement Outcome	N/A

- The required tagging as G-FP or G-F applies to tagging on intertie resources with the ISO (could be market participants and/or WEIM entities) for tags that involve the ISO BA.
- There are no ITS/tagging system changes for RSEE2 Track 1 Summer 2023 Release
  - Tags can be submitted even now with G-FP or G-F
- RSEE2 Track 2 Fall 2023 Release will have ITS/tagging changes to enforce/require the G-FP or G-F in the applicable tags
- References:
  - Tariff: http://www.caiso.com/Documents/Mar31-2023-Tariff-Amendment-ResourceSufficiencyEvaluationEnhancements-ER23-1534.pdf
  - BPM: https://bpmcm.caiso.com/Pages/ViewPRR.aspx?PRRID=1497&IsDlg=0
  - RSEE2T1Training on 4/26: http://www.caiso.com/Pages/Calendar.aspx

California ISO

Energy Storage Enhancements Track 1

- Unstructured Market Simulation

- SIBR changes in MAPSTAGE as of 4/17

- Market changes to go to MAPSTAGE 4/28

- No Settlements impacts

- [BRS](#)

- Training 5/2 on [calendar](#)

- MAPSTAGE is configured to not use telemetry values. This way, the initial conditions for SOC are directly inherited from the solution of the previous optimization.

Hybrid Resources Phase 2C – Settlements

- Unstructured Market Simulation

- Settlements code to go to MAPSTAGE 5/1 for this to be available for Settlements TDs 5/2 and onward for Tuesday/Thursdays thru May

- [BRS](BRS)

- Training Communication (no Training course) to be sent in May

California ISO

Ancillary Service State of Charge Constraint

- Unstructured Market Simulation
- CMRI deployed to MAPSTAGE 4/26, pending data
- Market code to MAPSTAGE 4/28
- Settlements changes to go to MAPSTAGE 5/1
- [BRS](#)
- Training 5/1 on [calendar](#)

California ISO

Ancillary Service State of Charge Constraint

ID#	Guidance on Market Participant Impacts	Source System	Sink System	Reason for Potential Scenario
ASSOC-MSIM001	Storage resource SCs shall submit energy bids and competitive regulation bids (to receive regulation awards) to trigger AS SOC constraint to be binding in RTPD, RTD Potential scenarios include: Energy bids to bid cap Both regulation up and regulation down bids	SIBR	RTM Settlements CMRI	Confirm AS SOC constraint binds

- Due to environment constraints, will not be able to simulation retroactive trade dates from Production or otherwise in MAPSTAGE

- MAPSTAGE is configured to not use telemetry values. This way, the initial conditions for SOC are directly inherited from the solution of the previous optimization.

- ISO is providing guidance to cause ASSOC constraints to bind for market simulation

- The bidding strategies are designed so that they should essentially work in the vast majority of situations but ISO will still monitor the market simulation to make sure the market yields the desired outcomes.

California ISO

ASSOCC Suggested scenario –Modify storage resource bid so its "lower" AS SOC constraint becomes binding

- HE01 to HE08

  - Submit energy (EN) bids covering the entire operational range (Pmin to Pmax) at a bid price of

    - $150/MWh

  - No Ancillary Service (AS) bid

  - Reason: Depletes the SOC

- HE09 to HE16

  - Submit EN bids from Pmin/2 to 0 with a bid price of –$150/MWh (No bid on positive EN range)

  - Bid Reg Up for –Pmin MW at $0/MW.

  - Reason: Enables the lower AS SOC constraint to bind

California ISO

ASSOCC Suggested scenario – Modify storage resource bid so its "upper" AS SOC constraint becomes binding

- HE01 to HE08

  - Submit EN bids covering the entire operational range (Pmin to Pmax) at a bid price of +$1,000/MWh.

  - No AS bid

  - Reason: Charges the SOC

- HE09 to HE16

  - Submit EN bids from 0 to Pmax/2 with a bid price of +$300/MWh (No bid on negative EN range)

  - Bid Reg Down for Pmax MW at $0/MW

  - Reason: Enables the upper AS SOC constraint to bind

URL Changes (Application Delivery Resiliency)

Plan

- MAP-Stage new API URLs will start to roll out ~May 3, 2023
- Please open the entire 45.42.16.0/21 network on ports 80 & 443 for our new IP space to access new API URLs

API	Existing MAPSTAGE	New MAPSTAGE
BAAOP	https://wsmap.caiso.com/sst/baaop	https://mapstage-ws.caiso.com/sst/baaop
BSAP	https://wsmap.caiso.com/sst/bsap	https://mapstage-ws.caiso.com/sst/bsap
CIRA	https://wsmap.caiso.com/sst/cira	https://mapstage-ws.caiso.com/sst/cira
CMRI	https://wsmap.caiso.com/sst/cmri	https://mapstage-ws.caiso.com/sst/cmri
DRRS	https://wsmap.caiso.com/sst/drrs	https://mapstage-ws.caiso.com/sst/drrs
EIDE	https://wsmap.caiso.com/sst/eide	https://mapstage-ws.caiso.com/sst/eide
ALFS	https://wsmap.caiso.com/sst/runtime.asvc	https://mapstage-ws.caiso.com/sst/runtime.asvc
MF	https://wsmap.caiso.com/sst/runtime.asvc	https://mapstage-ws.caiso.com/sst/runtime.asvc
PISOA	https://wsmap.caiso.com/sst/runtime.asvc	https://mapstage-ws.caiso.com/sst/runtime.asvc
RCBSAP	https://wsmap.caiso.com/sst/rcbsap	https://mapstage-ws.caiso.com/sst/rcbsap
RCSERVICES (RCEIDE)	https://wsmap.caiso.com/sst/rcservices	https://mapstage-ws.caiso.com/sst/rcservices
SIBR	https://wsmap.caiso.com/sst/sibr	https://mapstage-ws.caiso.com/sst/sibr
STLMT	https://wsmap.caiso.com/sst/stlmt	https://mapstage-ws.caiso.com/sst/stlmt
OMS	https://wsmap.caiso.com/sst/weboms	https://mapstage-ws.caiso.com/sst/weboms

California ISO

2023 – Application Delivery Resiliency

Remaining API Cutovers

- BAAOP
- BSAP
- CIRA
- CMRI
- DRRS
- EIDE
- ALFS
- MF
- PISOA
- RCBSAP
- RCSERVICES (RCEIDE)
- SIBR
- STLMT
- OMS

Plan

- MAP-Stage and Production will have soft cutovers to have current and new API URLs available in parallel for a window of time ~60 days in each environment
- Current API URLs remain available while new API URLs are introduced as they become verified and ready for customer use
- MAP-Stage new API URLs will start to roll out in May 2023
- Please open the entire 45.42.16.0/21 network on ports 80 & 443 for our new IP space to access new API URLs

Flexible Ramping Product Refinements

- Nomogram constraints are now active in MAPSTAGE and available for unstructured testing
- Production activation for the FRP nomogram constraints is June 1, 2023

California ISO

Next Steps

- Next Market Simulation Forum on Monday, May 1, 2023 at 1400 PT